

## **5.0 ENVIRONMENTAL IMPACTS**

The impacts of the alternatives on different aspects of the affected environment are described below. The various impacts on the scallop resource are described in Section 5.1 and the expected impacts on the physical environment and EFH are summarized in Section 5.2. In addition, the impacts on threatened, endangered and other protected species are summarized in Section 5.3. Section 5.4 includes the economic analyses and Section 5.5 summarizes the social impacts of alternatives under consideration. Lastly, Section 5.6 summarizes other impacts including impacts on non-target species, other fisheries, and enforcement and safety. The cumulative effects of the alternatives considered in this action on all of these valued ecosystem components (VECs) combined is summarized in Section **Error! Reference source not found.**

### **5.1 IMPACTS ON SCALLOP RESOURCE**

#### **5.1.1 Measures to control capacity and mortality in the general category scallop fishery**

##### **5.1.1.1 No Action**

Under this alternative, the general category fishery would remain an open access fishery. No changes to the current permit system for the general category scallop fishery would be implemented under this alternative.

Based on recent trends in the general category fishery, this alternative makes it difficult for the Scallop FMP to prevent overfishing (Alternative 3.1.1). The general category fishery is open access, and if conditions are right in terms of scallop price and availability of resource relatively close to shore, the only limit on general category effort is a possession limit. Currently, approximately 3,000 general category open access permits exist, and these permits could be used to fish for scallops under general category rules 365 days a year (2,950 permits for FY2005). Since Framework 17, a general category vessel is required to have VMS if they want to land more than 40 pounds of scallop meats. This could reduce the number of vessels permitted to land up to 400 pounds a day, but there is nothing in the regulations preventing any vessel from getting a general category VMS permit. Therefore, the capacity and fishing mortality of this portion of the scallop fishery could exceed what is estimated by the management program and risk overfishing of the resource.

The Scallop PDT is able to predict mortality associated with overall catch of scallops. The estimated used for catch per day for the limited access component of the fishery have improved over time and have been relatively accurate in recent years, but the mortality from the general category fishery is for the most part an educated guess because it is an open access fishery and lack of controls complicates this estimate of effort. Under No Action, there is an increased likelihood that overfishing could occur. Under open access it is very difficult to predict the level of effort from the general category fishery, so it is inevitable that estimations will underestimate mortality, especially if levels of general

category effort continue to increase. For example, if regulations in other fisheries increase and vessels decide to fish under general category to recover revenue lost in other fisheries, this component of the scallop fishery may further expand. The estimate of mortality from the general category fishery for FY2006 ended up being close to what actually occurred for that portion of the fishery, but if the estimate were lower, overfishing would have likely occurred in 2006.

It is difficult to estimate quantitative biological consequences of the No Action alternative because the open access nature of the fishery complicates estimating fishing mortality from this component of the fleet. The Scallop PDT considered running the projections with several estimates of general category mortality under No Action, but any value used would be very subjective. As previously stated, open access may increase the risk that estimates could be inaccurate and that fishing mortality estimates could be exceeded. In addition, this component of the fishery tends to fish in nearshore waters, which are currently below average in terms of scallop abundance. The No Action alternative would not help reduce potential fishing pressure in open areas along the coast and could lead to localized overfishing in those areas. In general, the fishing strategy for a general category vessel is different than a limited access vessel because their cost structure is very different. A larger vessel cannot afford to fish in an area with low scallop abundance so they will move. A smaller vessel has lower costs and may continue fishing in an area where scallops are less abundant. This difference could lead to localized overfishing if smaller vessels can still afford to fish in such areas and there is little control on total mortality from those vessels.

In addition, under the No Action alternative there is limited control on the potential growth of the general category fishery aside from elements outside of the scallop management arena, such as price, opportunity in other fisheries, etc. If effort in the general category fishery increases beyond estimates used in scallop projections for management and that level of effort may lead to overfishing, it is possible that future reductions could be made to reduce impacts on the scallop resource. But those reductions could only occur in future years and the only measure that could be taken to reduce mortality from the general category fishery under No Action would be to reduce the possession limit. Therefore, reductions in mortality would most likely come from the limited access component of the fishery since that component of the fishery is managed with tools (e.g. DAS) that can be reduced to directly reduce fishing mortality.

#### **5.1.1.2 Limited Entry**

In order to fish under general category rules a vessel would have to qualify for a limited access general category permit. All other vessels that do not qualify would be permitted to fish for scallops under incidental catch rules. Limited entry in and of itself would have positive impacts on the resource as compared to the No Action alternative by reducing the number of potential participants. The alternatives under consideration would reduce the potential pool of participants from 143 to around 705 (depending on which qualification alternatives are selected). However, if qualifiers are still permitted to fish up to 400 pounds per day 365 days a year, the ability to prevent overfishing from this component of the fishery is reduced.

#### **5.1.1.2.1 Qualification criteria alternatives**

Three alternatives are being considered: landings of 100 or more pounds of scallop meat on one trip (Alternative 3.1.2.1.1); annual landings of 1,000 pounds in any fishing year during the qualification time period selected (Alternative 3.1.2.1.2); and annual landings of 5,000 pounds in any fishing year during the qualification time period selected (Alternative 3.1.2.1.3).

In terms of impacts on the scallop resource there is no significant difference between these three qualification criteria alternatives relative to each other, provided that the total removal of scallops from the vessels that qualify is the same. For example, more vessels will qualify under the 100 pound alternative, but the total amount of scallops removed from this group of vessels should be the same as the other alternatives. The difference is that each qualifying vessel would be allocated a smaller percent of the total general category TAC, or if a hard TAC is adopted, all qualifiers would be prohibited from landing scallops under general category rules once the TAC is caught. Therefore, the direct impacts of the three qualification criteria alternatives on the scallop resource are minimal.

#### **5.1.1.2.2 Qualification time period alternatives**

In addition to the qualification criteria described above, a vessel has to meet the landings criteria during one of three qualification time period alternatives: March 1, 2003 through November 1, 2004 (Alternative 3.1.2.2.1); March 1, 2000 through November 1, 2004 (Alternative 3.1.2.2.2); and March 1, 1994 through November 1, 2004 (Alternative 3.1.2.2.3).

In terms of impacts on the scallop resource there is no significant difference between these three time period alternatives relative to each other, provided that the total removal of scallops from the vessels that qualify is the same. Similar to the section above, these three alternatives will influence how many vessels qualify, not directly affecting the scallop resource if additional limits on effort or a hard TAC is adopted. Therefore, the direct impacts of the three qualification time period alternatives on the scallop resource are minimal.

#### **5.1.1.2.3 Determination of qualification amount (contribution factor)**

Once the universe of vessels is identified there are two alternatives for determining a final qualification amount for each vessel. One alternative uses a vessel's best year during the qualification time period (Alternative 3.1.2.3.1), and one that uses a vessel's best year but applies an index of years active in the scallop general category fishery (Alternative 3.1.2.3.2). There is an additional alternative under this section that would cap an individual's contribution factor at 50,000 pounds (Alternative 3.1.2.3.3).

Since these alternatives only affect the contribution factor used to determine a vessel's access to the resource (allocation), these alternatives will not have direct impacts on the scallop resource.

#### **5.1.1.2.4 Allocation of access for general category limited access qualifiers**

The DSEIS includes several alternatives for allocation combined with limited entry. The first system is an individual allocation; an individual amount in pounds or total number of trips would be awarded to individual vessels that qualify. The second system would also be an individual allocation, but there would be two permit types (part-time and full-time). The part-time permit would have a reduced possession limit of 200 pounds, and the full-time permit category would have a possession limit of 400 pounds. All vessels that qualify would receive an equal allocation in pounds or total number of trips depending on which tier they qualify for. The third alternative is a tiered permit system; all vessels that qualify for each tier would receive an equal allocation in pounds or total number of trips, all with a 400 pound possession limit. A fourth stand alone alternative was developed, which is an individual transferable fishing quota system, but all vessels that had a permit before the control date would be given a permit, not just vessels that had landings during the qualification time period. However, a permit that did not have landings history would not be allocated specific access to the fishery, but would be permitted to lease or buy quota from another vessel. Lastly, the Council recommends that an alternative that allocated a fleetwide hard TAC be analyzed, rather than an individual based system. There is also a seasonal hard TAC alternative.

Most of these alternatives include an individual allocation program. The major differences between these alternatives in terms of impacts are mostly economic and social in nature (See Section 5.4.8). In general, the impacts on the scallop resource from all the individual allocation alternatives are expected to be similar because there is a total amount of scallops that is permitted to be removed under each alternative. However, there are potential differential impacts on the scallop resource from a system that allocates in pounds versus trips. If qualifying vessels are awarded access in trips could increase incentive for vessels to change behavior and land up to the maximum 400 pound limit, since the total number of trips would be limited. If some general category vessels only land a more incidental level of scallops now (40-400 pounds), the allocation in trip alternatives may increase effort if these vessels change behavior to land more scallops per trip, thus negative impacts on the scallop resource. This potential increase in effort is limited however because there is a maximum TAC for the entire fleet under both the individual pound and trip alternatives. If the alternative that would enable a vessel to land up to 2,000 pounds per trip were selected (only if the individual allocation alternative was also selected), impacts on the scallop resource may increase because currently the document would only charge a vessel one trip whether it landed 400 or 2,000 pounds. If this remains the case, it would be problematic for the Scallop PDT to be able to estimate mortality from each general category trip if some could be up to 2,000 pounds. Unless that is accounted for then mortality could increase per trip.

A fleetwide hard TAC without limited entry (Alternative 3.1.3) would control mortality in the general category fishery. However, excess capacity would likely result because more vessels would have permits to catch the general category TAC than needed. Even with limited entry there still could be excess capacity (especially with the 400 pound possession limit), but to a much less degree because the total number of vessels is limited. Hard TACs without limited entry can have negative impacts of derby fisheries,

see Section 5.4.9 for a discussion of these impact on the fishery. If the fleetwide hard TAC with limited entry is divided up by quarter (Alternative 3.1.2.4.7 Option A) or trimester (Option B) that will improve negative impacts of a derby fishery, but depending on when the quarters/trimesters are defined could have an impact on the scallop resource. For example, meat weight varies as much as 20% per year, so mortality could be higher if the quarterly hard TAC is not divided to reflect that change in meat weight. However, since the quarters/trimesters are going to be divided based on historical landings, then the periods of time with higher meat weights (spring and summer) are probably reflected in the breakdown of quarterly/trimester landings, so potential impacts on scallop mortality from allocating more TAC in a season with lower meat weights is reduced.

#### **5.1.1.2.5 Limited entry permit provisions**

This amendment will consider measures to govern activities such as vessel sales, limited access permit transfers, permit splitting, changes to vessel size, and establishment of vessel baselines to evaluate changes to vessel size, etc.. These measures would apply to all general category permits that qualify for limited access if limited access is adopted under Amendment 11.

The alternatives under consideration for limited entry permit provisions are not expected to have any direct impacts on the scallop resource. There are alternatives related to vessel upgrade restrictions, which could allow a vessel to increase its fishing power (Alternative 3.1.2.5.2.1 and Alternative 3.1.2.5.2.2), but if this action also limits the total harvest of limited entry qualifiers, then these alternatives would not ultimately impact the scallop resource. Likewise, there is an alternative that could potentially qualify more than one vessel for a limited entry general category permit from one vessel (Alternative 3.1.2.5.1.2). While this alternative could increase capacity, if the total fishing mortality for the general category fishery is limited (i.e. hard-TAC) then there should be no additional impacts from this alternative on the scallop resource.

#### **5.1.1.2.6 Measures to reduce incentive for limited entry qualifiers to fish for scallops with trawl gear**

These alternatives reduce incentive for qualifying vessels to target scallops with trawl gear. The Scallop PDT analyzed VTR data from 2005 for trips landing scallops with trawl gear. Many trips where scallops were landed using trawl gear were targeting other species; however the majority of general category trips using trawl gear were targeting scallops. In summary, when general category vessels with trawl gear were targeting other species like groundfish, monkfish, skate, squid and scup, about 50% of the trips landed less than 300 pounds per trip. In fact, for many of the other species, average scallop landings were lower. Table 65 summarizes the average scallop landings per trip by target species for general category vessels using trawl gear.

**Table 65 - Percentiles of scallop landings per trip by target species for general category vessels using finfish trawls.**

Target species or group	Trips	Vessels	Percentile						
			5%	10%	25%	50%	75%	90%	95%
Yellowtail flounder	152	68	50	60	114	231	369	400	400
Groundfish	163	69	45	50	65	100	150	380	400
Summer flounder	178	59	50	63	111	300	340	394	400
Skate	37	18	68	80	100	273	396	400	400
Monkfish	91	54	50	50	100	206	347	400	400
Scallops	2778	84	50	220	300	300	398	400	400
Scup	14	6	26	31	79	275	324	400	400
Loligo	9	7	59	73	150	300	300	314	342
Lobster	1	1	*	*	*	*	*	*	*
All	3423	203	50	97	286	300	395	400	400
All but scallops	645	160	50	50	90	180	340	400	400

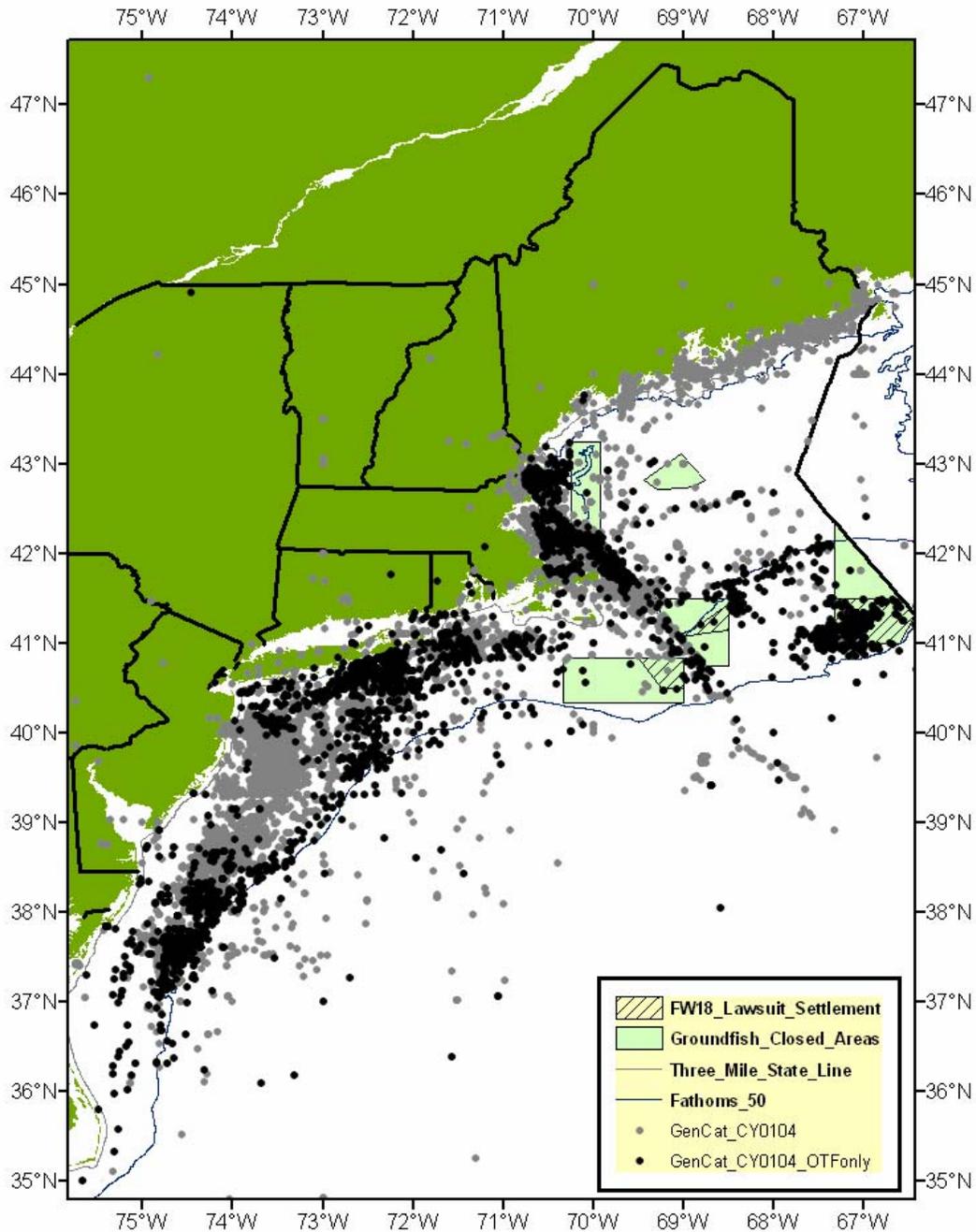
Alternative 3.1.2.6.2 was developed to prevent an expansion in general category scallop effort using trawl gear and Alternative 3.1.2.6.3 was developed to reduce incentive to fish for scallops with trawl gear. Trawl gear is believed to have greater impacts on scallop mortality because it is capable of catching smaller scallops. Based on comparative fishing experiments between scallop trawl and dredge gear in 1997 and 1998 in the Mid-Atlantic, trawl vessels were found to be more efficient at catching sea scallops less than 90mm and dredge gear is more efficient at catching larger scallops (Rudders et al, 2000). The trawl vessels in this study caught and kept smaller scallops; therefore by reducing incentive to fish for scallops with trawl gear could reduce mortality. Since dredge gear is more efficient at catching larger scallops, fewer scallops are harvested to reach the same overall poundage of scallop meat. The differences in relative harvest efficiency may be explained by behavioral characteristics of the sea scallop. Smaller scallops (less than 100mm) have been found to be highly mobile (Caddy, 1968, Dadswell and Weihs, 1990), and as a dredge approaches they elicit a flight response (Caddy, 1968, Worms and Latiange, 1986). However, larger scallops with a shell height greater than 100mm are more sedentary and live in shallow depressions in the substrate (Bourne, 1964). Since dredge gear scrapes just beneath the surface, it is more effective at catching the larger scallops that trawl gear may skim over. Furthermore, the dredge ring size used in this research was 3.5-inches; dredge ring width is now required to be at least 4-inches and net size has not changed for trawl vessels. Therefore, the difference in selectivity patterns between the two gear types is probably even greater with 4-inch rings.

One strategy of the rotational management program adopted in the Scallop FMP is to maximize yield per recruit and increase the spawning potential of the resource; therefore, if smaller scallops can remain in the ocean for a longer period of time there are beneficial impacts on the overall scallop resource.

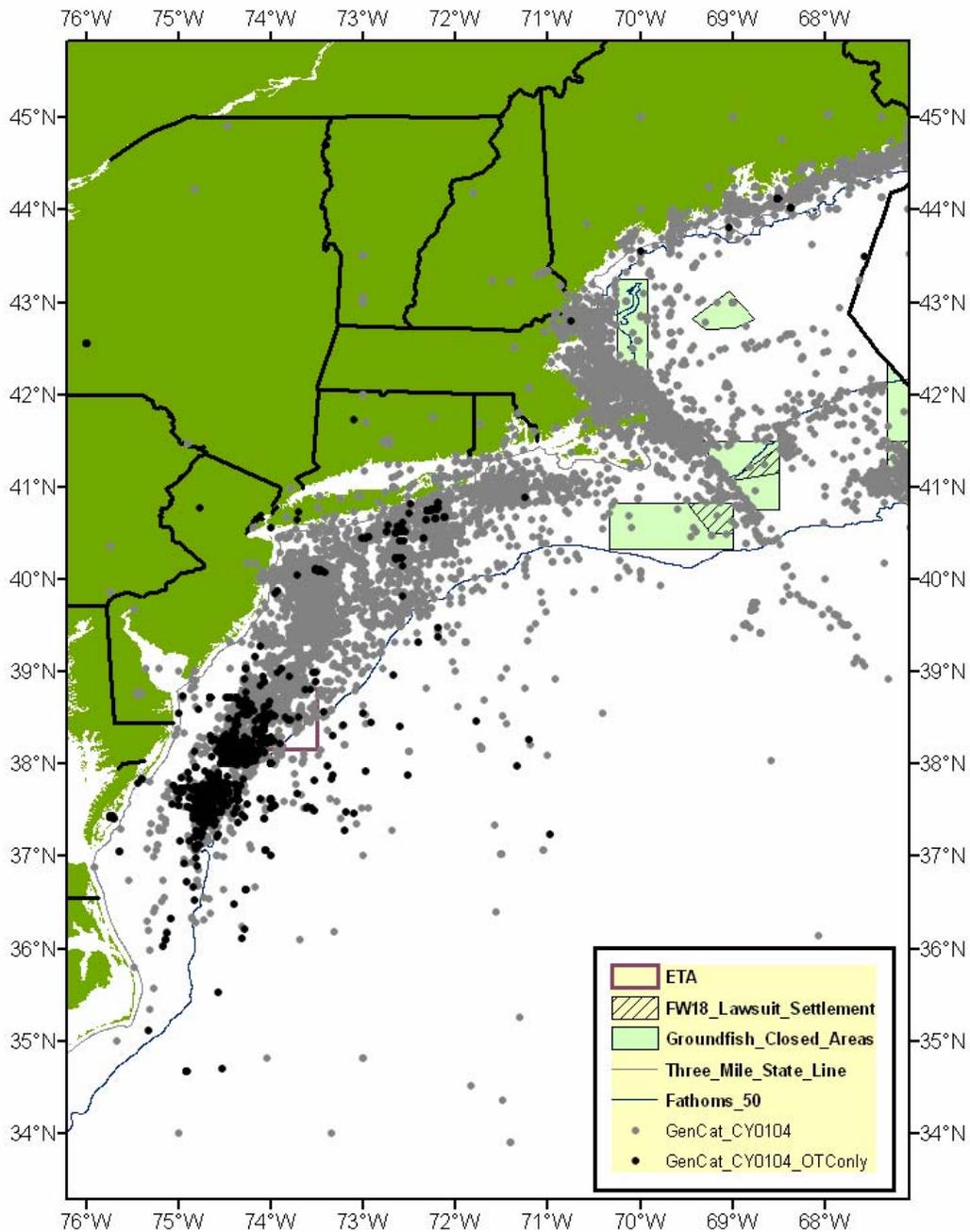
The majority of limited access and general category scallop landings are by dredge vessels. Table 193 shows the breakdown of scallop landings by gear type for the general category permit category for FY2005. If an alternative in this section is adopted it is possible that the level of landings by trawl vessels would decrease. Figure 36 shows the location of general category trips with scallop landings using otter trawl gear from calendar years 2001 through 2004. Figure 37 shows the location of general category trips

with scallop landings using scallop trawl gear from the same fishing years, and Figure 38 is for scallop dredge gear.

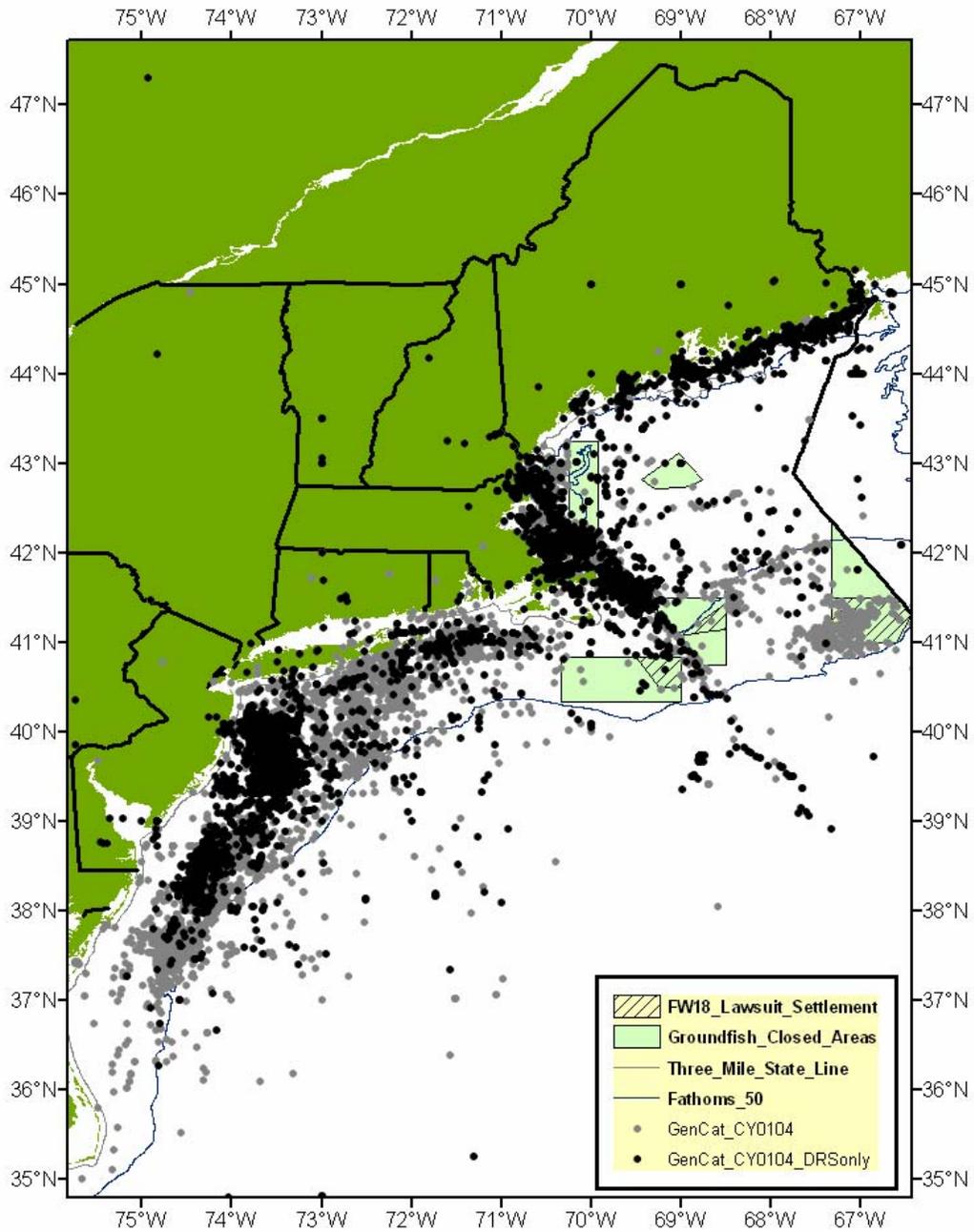
**Figure 36 – Location of general category trips from calendar years 2001-2004 on vessels with fish otter trawl gear (dark circles) over all general category trips (lighter circles) (VTR data)**  
 Note: typo in legend – FW18 lawsuit settlement should read FW16 lawsuit settlement



**Figure 37 – Location of general category trips from calendar years 2001-2004 on vessels with scallop trawl gear (dark circles) over all general category trips (lighter circles) (VTR data)**  
 Note: typo in legend – FW18 lawsuit settlement should read FW16 lawsuit settlement



**Figure 38 - Location of general category trips from calendar years 2001-2004 on vessels with scallop dredge gear (dark circles) over all general category trips (lighter circles) (VTR data)**  
 Note: typo in legend – FW18 lawsuit settlement should read FW16 lawsuit settlement



**Alternatives 3.1.2.6.3.1 and 3.1.2.6.3.2**

The analyses below were used to describe general category effort in terms of gear type and to help identify lower possession limits to consider in this action. In general, these analyses suggest that fishing mortality is higher for trawl gear versus dredge gear based on the number of kept scallops per trip. Therefore, the alternatives that reduce incentives to fish for scallops with trawl gear are expected to have positive impacts on the scallop resource.

The substantial majority of trips targeting scallops with dredges landed nearly 400 lbs. on each trip, with more than 50% of the trips landing at least 395 lbs. (Table 66). Seventy-five percent of trips landed more than 322 lbs. and 90% landed more than 200 lbs. In comparison, there were 2,457 trips in 2005 that targeted scallops with a scallop trawl (Table 67). Not surprisingly, the scallop landings per trip were very similar to the profile by vessels using dredges. Fifty percent of the trips landed more than 380 lbs. of scallops and 75% landed more than 300 lbs. Similarly, 90% of trips targeting scallops with scallop trawls landed more than 250 lbs.

**Table 66.** Percentiles of scallop landings per trip by target species for general category vessels using dredges

Target species or group	Trips	Vessels	Percentile						
			5%	10%	25%	50%	75%	90%	95%
Summer flounder	18	2	*	*	*	*	*	*	*
Skate	6	3	161	163	184	245	268	313	331
Monkfish	4	5	100	140	259	329	343	364	370
Scallops	12461	327	120	200	322	395	400	400	400
Scup	1	1	*	*	*	*	*	*	*
All	12489	328	120	200	322	395	400	400	400

**Table 67.** Percentiles of scallop landings per trip by target species for general category vessels using scallop trawls.

Target species or group	Trips	Vessels	Percentile						
			5%	10%	25%	50%	75%	90%	95%
Summer flounder	8	6	124	179	318	395	400	400	400
Skate	3	1	*	*	*	*	*	*	*
Monkfish	3	3	45	46	47	48	174	250	275
Scallops	2457	72	76	250	300	380	400	400	400
All	2471	72	70	248	300	380	400	400	400

**5.1.1.2.7 Sectors and Harvesting Cooperatives**

This action is considering a process for the creation of fishing “sectors” and the allocation of TAC shares to the sectors within the general category fishery. Groups may be formed around common fishing practices, common homeport or landing port, common fishing area, common marketing arrangements, etc. This DSEIS details the eligibility criteria, operations plan elements, monitoring and enforcement of sectors, allocation rules, and other related issues.

None of the options related to establishing a sector are expected to have impacts on the scallop resource. In fact, if any the indirect impacts may be beneficial since voluntary sectors may be able to identify ways to fish more efficiently, potentially reducing bottom contact time and impacts on scallops and other species. It is presumed that a self-selecting sector will have a plan to manage their allocation in a way that mutually benefits the sector members and avoids wasteful fishing practices. Ideally, sector management would increase the long term sustainability of the scallop resource by creating a sense of stewardship and self-governance. Specific impacts would have to be addressed as part of a sector operations plan at a separate time in the future. Because the details of sector management will be included in the operations plan and submission will be accompanied by appropriate NEPA documents, impacts on the scallop resource would be evaluated by the proponents at that time and accepted by the agency with any accompanying caveats on the sector operations.

#### **5.1.1.2.8 Interim measures for transition to limited entry**

If the Council selects limited entry under this action, it will take some time to identify the final universe of vessels that would qualify for a permit. Therefore, this document in considering two alternatives for the transition period to limited entry (if adopted). Both alternatives would limit the number of participants to those that have been identified as qualifying for a permit under the qualification alternatives, and those that had a permit during the qualification time period but are under appeal for a permit. One alternative would include a hard TAC of 10% of the total projected scallop catch, and the other alternative would not include a hard TAC and qualifying vessels (and those under an appeal) would only be restricted by the current regulations for general category fishing (i.e. possession limit and VMS).

Overall, the impacts on the scallop resource from both these alternatives will be positive in general, because they will limit capacity and mortality on the scallop resource. The alternative with the hard TAC option has a higher likelihood of controlling mortality up to 10% of the total projected catch, but depending on how the hard-TAC is implemented there may be impacts on the scallop resource. See Section 5.1.1.3 for a description of the expected impacts on hard TACs on the scallop resource. The alternative with no hard-TAC option does not have a backstop for total mortality, but the number of vessels that can participate in this fishery is reduced compared to the open access nature of the current fishery, so compared to No Action this alternative is expected to have positive impacts on the scallop resource. Furthermore, both these alternatives would only be in place on a temporary basis, once the poll of final qualifiers is identified, then the rest of the measures adopted by Amendment 11 could be implemented, namely the allocation of a hard-TAC and allocation of that total general category TAC to qualifiers.

#### **5.1.1.3 Hard Total Allowable Catch (Hard TAC)**

One option to control mortality in the general category fishery aside from limited entry is implementing a hard total allowable catch limit. A hard TAC would be developed for the general category fishery, and when the Regional Administrator projects that TAC is going to be reached, the fishery would close.

In terms of impacts on the resource, the total removal of scallops from this alternative and the alternatives with limited entry should be similar. However, a fleetwide hard-TAC may have behavioral effects that could increase impacts on the scallop resource. For example, a hard TAC would increase the incentive to race for fish. If the entire general category hard TAC was available to all vessels with an open access permit it is likely that the TAC would be caught relatively quickly, potentially reducing optimal use of the resource. Furthermore, if the fishing year remains the same and the TAC is set at the start of the fishing year then most effort would be expected following the start of the fishing year. If the TAC is caught before average meat weights are at their maximum (spring and summer), then mortality will be higher.

#### **5.1.1.4 Establish a Northern Gulf of Maine Scallop Management Area (NGOM)**

During development of this action there has been considerable discussion of establishing a separate management system for the general category scallop fishery in the Gulf of Maine. It has been argued that the fishery in this area is distinct, and the resource experiences sporadic abundance.

##### **5.1.1.4.1 Background on the scallop fishery in the Gulf of Maine**

According to Amendment 10, all scallops in the US EEZ belong to a single stock. However, based on survey data and fishing patterns the stock can be divided into several regional components such as Georges Bank, Mid-Atlantic, Southern New England, and Gulf of Maine. According to SARC 39 (2004), biologically the stock is likely composed of smaller regional meta-populations with some movement of larvae from areas in the north to the south. While most scallops are harvested in depths between 30 and 100 meters, there are relatively small known amounts of sea scallop biomass in near-shore relatively shallow waters within the Gulf of Maine.

During discussions of Amendment 11 there has been some confusion about whether scallops in the Gulf of Maine are part of the scallop assessment. The sea scallop assessment determines the status of the stock, including the rate of removal or exploitation rate (based on fishery dependent data) and the current stock size or biomass (measured using fishery independent data). The federal scallop survey is the primary source of fishery independent data used to estimate biomass or stock size. The federal scallop survey has been conducted annually since 1977 in Georges Bank, Mid-Atlantic and occasionally in other areas. However, the most recent assessment only uses data from 1982-2003 for Georges Bank because that is when the northern edge of Georges Bank was first surveyed. In addition, data from 1979-2003 are used for the Mid-Atlantic region. The assessment does not include data from stations in the Gulf of Maine or Southern New England because they are not sampled regularly.<sup>3</sup>

The other component of the assessment incorporates fishery dependent data to calculate the exploitation rate, or rate of removal by the fishery. Fishing mortality is estimated using commercial landings data from port samples and dealer data prior to April 1994, and on dealer and VTR data after April 1994. The landings are prorated based on

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<sup>3</sup> See SARC 39, specifically the *SAW 39 Report* for additional information regarding the data used in the sea scallop assessment.

location information provided by the industry into one of four areas (Georges Bank, Mid-Atlantic, Gulf of Maine, and Southern New England). While landings are recorded in these four areas, only landings from Georges Bank and the Mid-Atlantic are used in the fishing mortality estimate. Therefore, removals from the Gulf of Maine and Southern New England are not included in the assessment either.

Figure 39 depicts the overall landings from the Gulf of Maine from 1964 through 2003 according to data from SARC 39 (2004). Mean landings from this area for this time series are 1.21 million pounds (547 mt.). The vast majority of landings from the Gulf of Maine are within state waters. There are a few abundant areas offshore in federal waters, but many of these areas are currently within habitat closed areas so are not accessible to the scallop fishery (Jefferies Bank, Cashes Ledge, Stellwagen Bank). Schick (pers. comm.) provided the following as federal waters areas off the Maine coast which have historically been productive for scalloping:

- Jeffreys Ledge
- Platts Bank
- Fippennies Ledge
- Great Duck Island (off Mt. Desert Is.)
- Libby Islands (off Machiasport)

The following information on Maine offshore scallop fishing is from Walton (1980):

“Offshore (scalloping) areas are not as completely documented but localized fisheries have occurred in the vicinity of Jeffreys Ledge and Cashes Ledge. Other areas may include Platts Bank and off Machias Seal Island. It is difficult to quantify historical production for these areas since data are not available and production peaks tend to coincide with the appearance of one or more successful year classes in a given area.

The sea scallop has been characterized by irregular abundance in most areas of the coast and this probably results from biological and environmental factors. This variability has tended to generate cyclic fisheries in which the discovery of a large population of harvestable scallops leads to a rapid expansion of the fishery and the subsequent depletion of the stock. This variability occurs in both inshore and offshore areas; the 1975-76 scallop fishery in the Castine area of Penobscot Bay and the 1979-80 fishery off Jeffreys Basin are examples of the rapid expansion of harvesting of newly discovered scallop beds...

Offshore scalloping is not well documented for the Gulf of Maine fisheries. Landings data for 1979 (Richard Barnard, NMFS, personal communication) do indicate some recent harvesting patterns and are presented in Table 68.

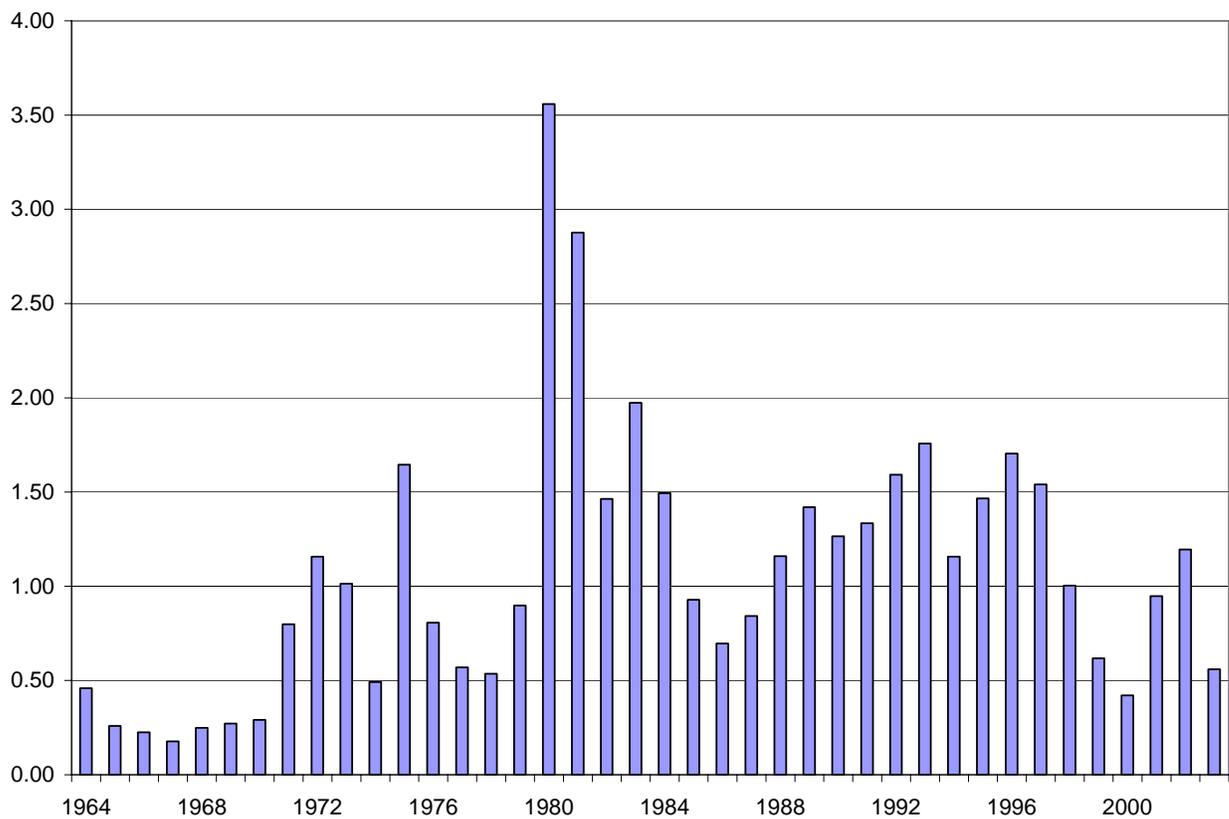
**Table 68 – Maine scallop landings, 1979 (shucked meat in pounds). (Source: Walton, 1980)**

Location	Coastal Area			Totals
	Eastern (511)	Central (512)	Western (513)	
0-3 miles, offshore	128,741	461,678	12,054	602,473

3-12 miles, offshore	0	1,903	492	2,395
Beyond 12 miles	0	32,606	67,424	100,030

Jeffreys Ledge (514)	11,012
Cashes Ledge (515)	69,646
Georges Bank (523)	292,826
Georges Bank (524)	85,263
<b>Total</b>	<b>558,777</b>

**Figure 39 – Annual landings (in million pounds) from the Gulf of Maine (Source: SARC 39-data includes all landings reported through VTR)**

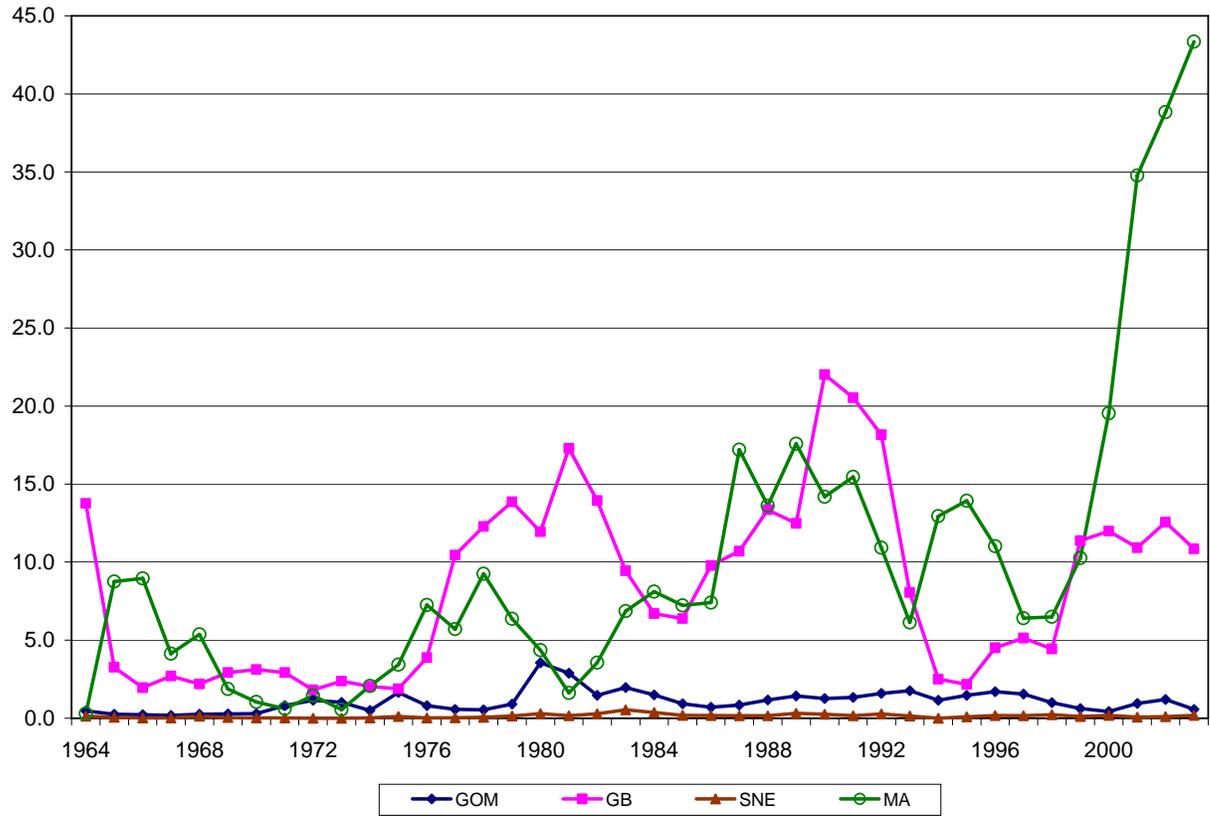


Overall, landings from the Gulf of Maine are very small in comparison to total landings.

Figure 40 displays the portion of total landings from the Gulf of Maine as compared to total annual landings. On average for this 40 year time series, landings from the GOM account for roughly 7.6% of total landings, as high as 26.2% in 1972 and as low as 1.0% in 2003 (Table 69). In 1980, landings from the GOM reached as high as 3.56 million pounds (17.7% of the total) and as low as 0.18 million pounds in 1967, or 2.5% of total landings. While landings were 0.56 million pounds in 2003, the percent of total landing

from this area was only about 1% since landings have been so high from the Mid-Atlantic area.

**Figure 40 – Annual landings by area (Source: SARC 39 Report)**



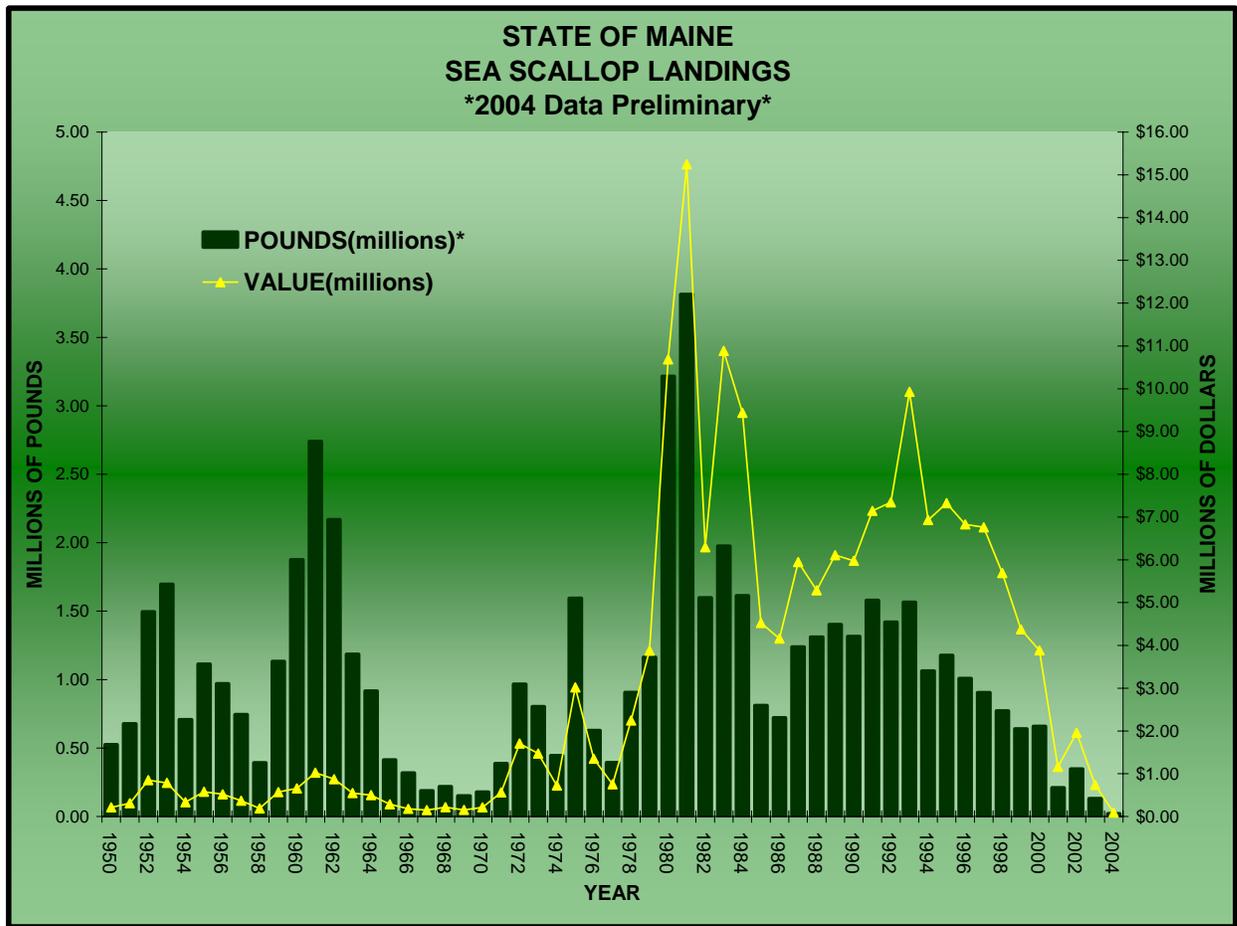
**Table 69 – Summary of annual landings by area from 1964-2003 (Source: SARC 39 Report).**

Year	GOM		GB		SNE		MA		Total
1964	0.46	3.1%	13.76	94.0%	0.12	0.8%	0.30	2.1%	14.64
1965	0.26	2.1%	3.27	26.5%	0.06	0.5%	8.76	71.0%	12.34
1966	0.22	2.0%	1.95	17.5%	0.02	0.2%	8.95	80.3%	11.14
1967	0.18	2.5%	2.69	38.4%	0.02	0.3%	4.13	58.9%	7.02
1968	0.25	3.1%	2.19	27.6%	0.12	1.6%	5.37	67.7%	7.94
1969	0.27	5.3%	2.92	57.1%	0.04	0.8%	1.88	36.7%	5.11
1970	0.29	6.5%	3.12	69.8%	0.01	0.3%	1.04	23.3%	4.47
1971	0.80	18.4%	2.93	67.4%	0.02	0.4%	0.60	13.9%	4.35
1972	1.16	26.2%	1.81	40.9%	0.00	0.1%	1.45	32.8%	4.42
1973	1.01	25.7%	2.38	60.3%	0.01	0.2%	0.55	13.9%	3.95
1974	0.49	10.7%	2.04	44.3%	0.01	0.2%	2.07	44.8%	4.61
1975	1.64	23.2%	1.89	26.7%	0.11	1.6%	3.43	48.5%	7.08
1976	0.81	6.8%	3.88	32.5%	0.02	0.1%	7.25	60.6%	11.95
1977	0.57	3.4%	10.44	62.3%	0.02	0.1%	5.71	34.1%	16.75
1978	0.54	2.4%	12.28	55.5%	0.06	0.3%	9.25	41.8%	22.12
1979	0.90	4.2%	13.86	65.2%	0.15	0.7%	6.37	29.9%	21.27
1980	3.56	17.7%	11.95	59.3%	0.29	1.5%	4.35	21.6%	20.15
1981	2.88	13.1%	17.29	78.8%	0.15	0.7%	1.61	7.3%	21.93
1982	1.46	7.6%	13.94	72.5%	0.28	1.4%	3.55	18.5%	19.23
1983	1.97	10.5%	9.44	50.2%	0.54	2.8%	6.85	36.4%	18.81
1984	1.49	9.0%	6.71	40.3%	0.36	2.2%	8.10	48.6%	16.67
1985	0.93	6.3%	6.38	43.4%	0.18	1.2%	7.22	49.1%	14.71
1986	0.70	3.9%	9.78	54.2%	0.17	1.0%	7.41	41.0%	18.06
1987	0.84	2.9%	10.69	37.0%	0.15	0.5%	17.20	59.5%	28.89
1988	1.16	4.1%	13.35	47.2%	0.15	0.5%	13.62	48.2%	28.28
1989	1.42	4.5%	12.48	39.3%	0.30	1.0%	17.58	55.3%	31.78
1990	1.27	3.4%	22.01	58.4%	0.26	0.7%	14.19	37.6%	37.71
1991	1.33	3.6%	20.53	54.8%	0.16	0.4%	15.46	41.2%	37.47
1992	1.59	5.1%	18.16	58.7%	0.27	0.9%	10.92	35.3%	30.95
1993	1.76	10.9%	8.06	50.1%	0.15	0.9%	6.12	38.1%	16.08
1994	1.16	7.0%	2.51	15.1%	0.00	0.0%	12.95	77.9%	16.61
1995	1.47	8.3%	2.16	12.3%	0.08	0.4%	13.93	79.0%	17.64
1996	1.70	9.8%	4.51	25.9%	0.16	0.9%	11.02	63.4%	17.40
1997	1.54	11.6%	5.13	38.7%	0.15	1.1%	6.42	48.5%	13.24
1998	1.00	8.2%	4.44	36.5%	0.22	1.8%	6.50	53.4%	12.17
1999	0.62	2.8%	11.36	50.8%	0.12	0.5%	10.26	45.9%	22.36
2000	0.42	1.3%	11.99	37.3%	0.19	0.6%	19.53	60.8%	32.13
2001	0.95	2.0%	10.92	23.4%	0.07	0.1%	34.76	74.4%	46.70
2002	1.19	2.3%	12.55	23.8%	0.09	0.2%	38.83	73.7%	52.67
2003	0.56	1.0%	10.85	19.8%	0.19	0.3%	43.34	78.9%	54.94
<b>Mean</b>	1.21	7.6%	10.36	45.3%	0.19	0.7%	14.81	46.4%	19.64

### 5.1.1.4.2 Focus on scallop fishing in the state of Maine

In the late 19<sup>th</sup> and early 20<sup>th</sup> century the sea scallop fishery primarily took place in near shore waters within the Gulf of Maine (Smith, 1891). In 2005, a final report was published on monitoring and enhancement in the Maine scallop fishery (Schick and Feindel, 2005). The report explains that fishermen from Maine have pursued the scallop fishery since the mid 1880s. The value of the inshore scallop fishery in Maine is generally among the top ten valued marine species for the state, and under certain market and resource conditions its overall value has been second only to lobster. The report also explains that the scallop fleet in Maine is very diverse including lobstermen, draggers, and divers. Some vessels are very mobile and fish in areas outside the Gulf of Maine, while many others stay in local waters. Figure 41 summarizes scallop landings and revenues from Maine state dealers from 1950 through 2004 (preliminary). Note that reporting by state dealers is voluntary in the state of Maine, so these values may not capture all landings.

Figure 41 – Summary of scallop landings and revenues reported through Maine state dealers



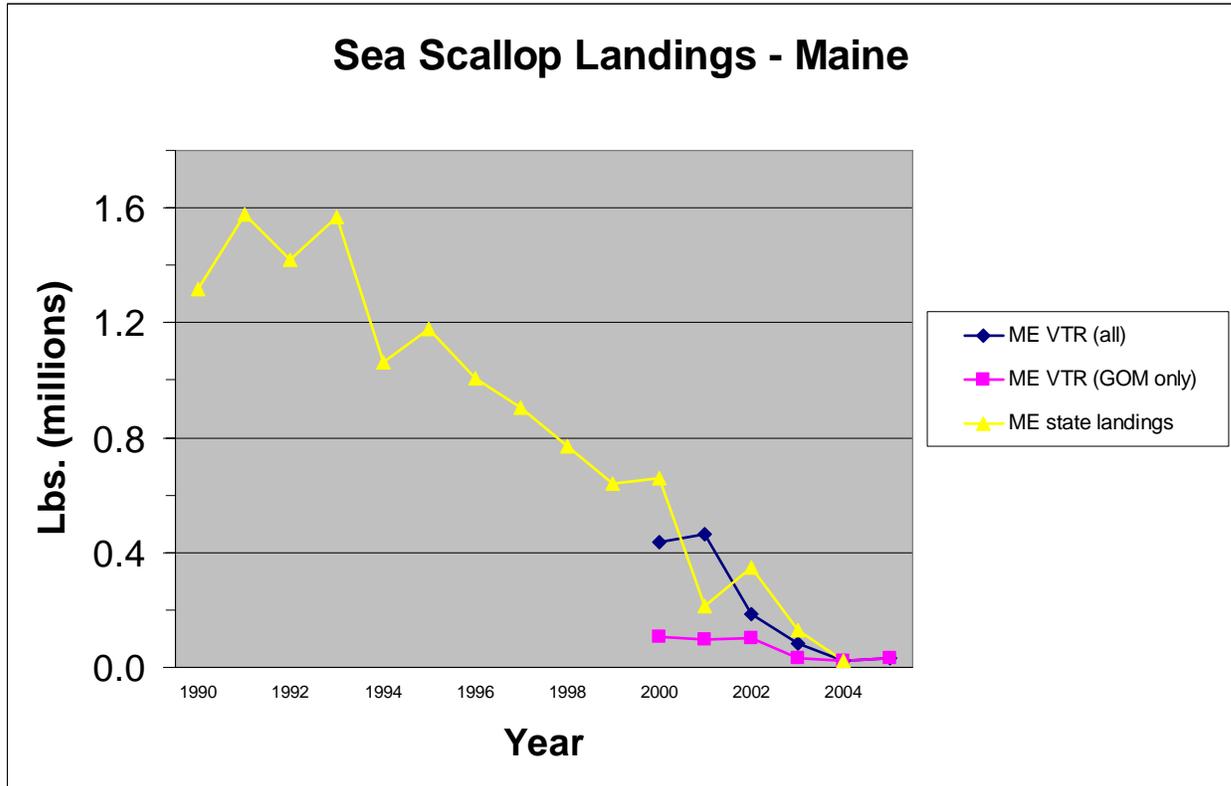
The primary management measures within state waters in Maine are: 1) a fishing season that is 4.5 months in length (December 1 to April 15); 2) a shell height minimum of 4 inches, and 3) several gear restrictions including a 3.5 inch minimum ring size and max dredge width of 10 ft. 6 in. (smaller in some areas). Vessels fishing within state waters are not restricted by the 400 pound possession limit, but average landings per trip within state waters in Maine are lower than 400 pounds. In fact, according to port sample data from the Schick and Feindel report, average landings per trip was 57 pounds of meat for draggers (ranging from 2-180 pounds), and 38 pounds of meat per trip for divers (ranging from 2-140 pounds per trip per diver).

Vessels from Maine with a federal permit are required to report landings through VTR. However, vessels from Maine that do not have a federal permit and only fish in state waters are not required to report landings; state dealers report landings on a voluntary basis. Table 70 summarizes landings that have been reported by vessels from Maine through VTR, as well as total landings voluntarily reported by Maine state dealers (these figures include landings from limited access vessels from Maine).

**Table 70 – Scallop landings from vessels homeported in Maine (ME VTR = federal vessels caught in all areas; ME VTR GOM only = landings from federal vessels caught in statistical areas 464, 465, 467, 511, 512, 513, 514, and 515; ME state landings = landings reported voluntarily by Maine state dealers**

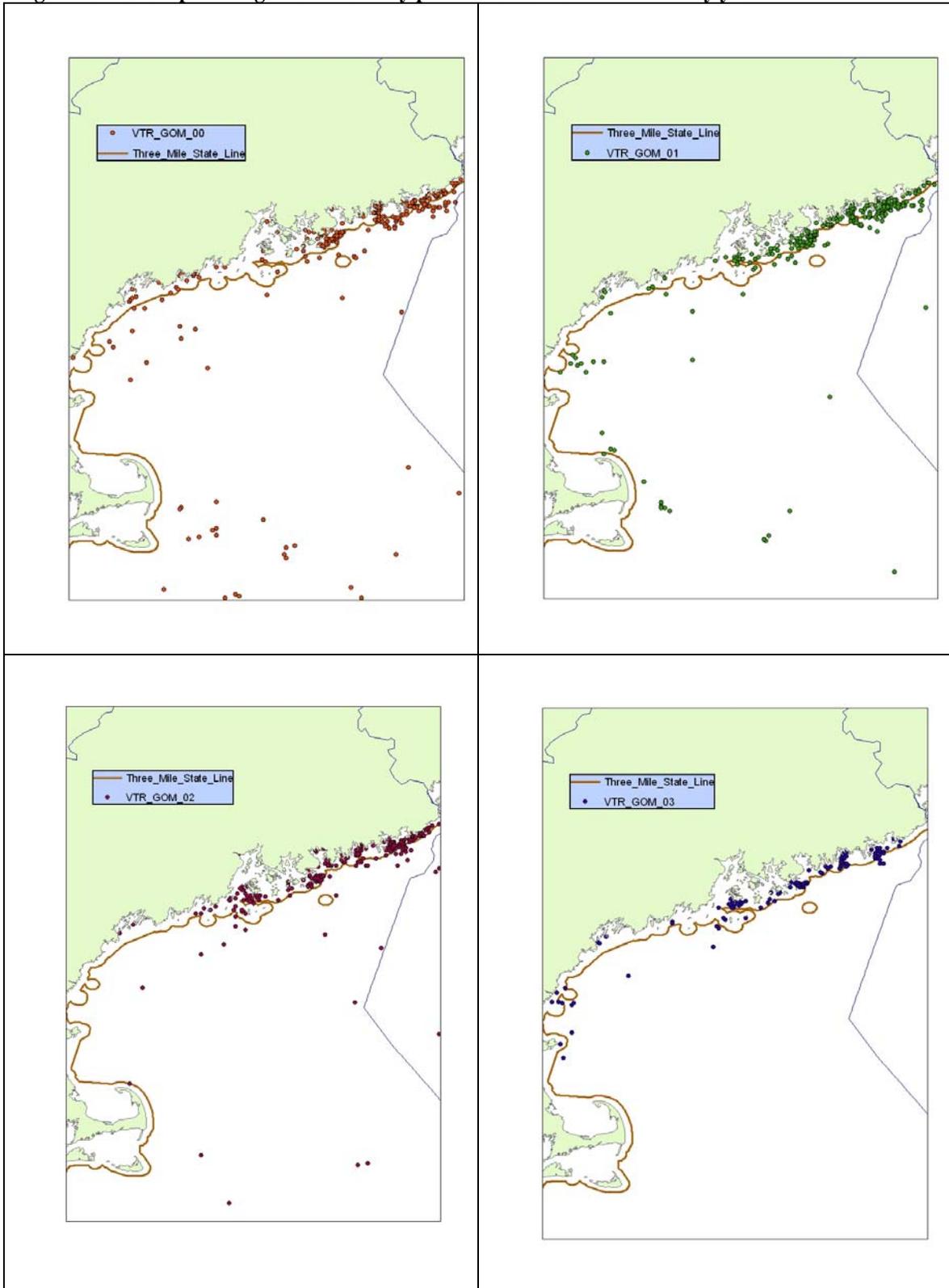
	ME VTR (all)	ME VTR (GOM only)	ME state landings
1990			1315773
1991			1579577
1992			1419839
1993			1566321
1994			1063608
1995			1177506
1996			1008329
1997			905137
1998			771471
1999			641692
2000	436556	105586	658568
2001	465603	97776	211558
2002	187041	101235	348470
2003	81602	31199	131849
2004	24852	23053	21433
2005	33804	31654	

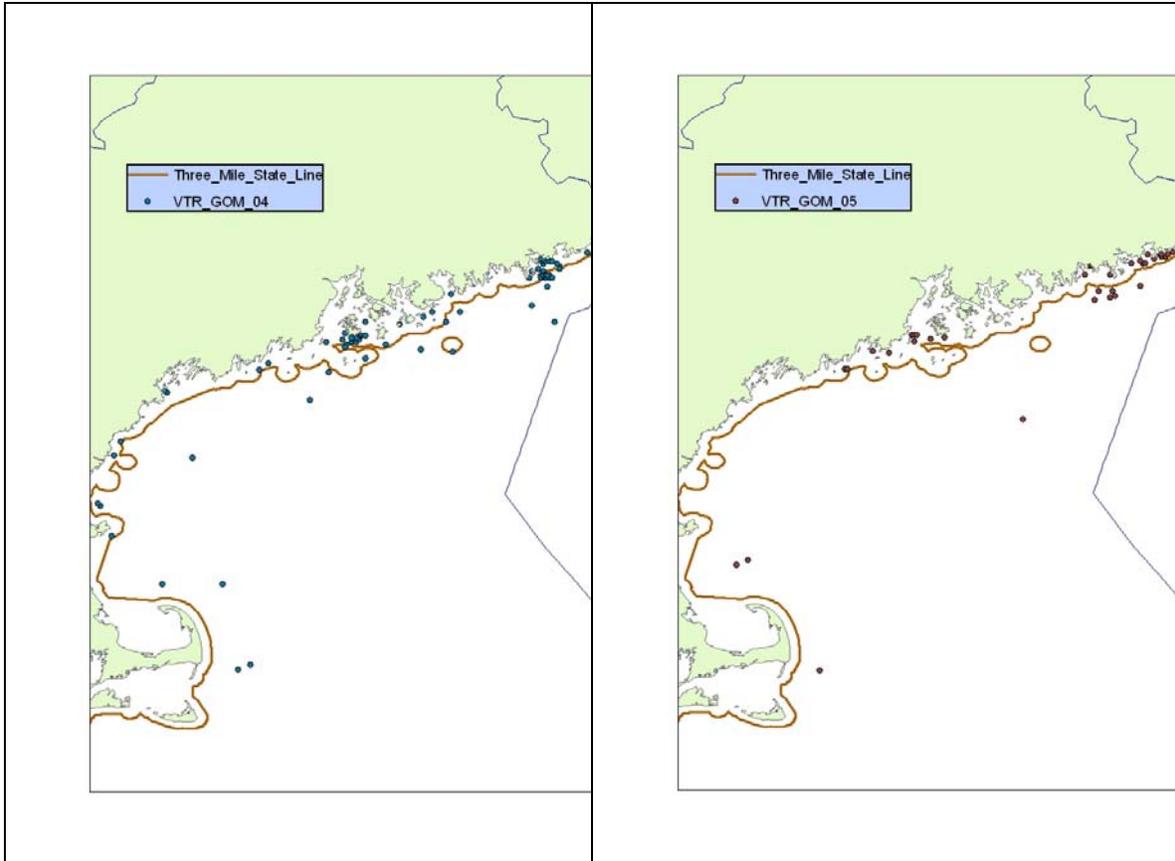
Figure 42 – Scallop Landings from vessels in Maine (federally permitted and state vessels)



VTR data from vessels homeported in Maine are plotted in the figures below from calendar years 2000-2005 (Figure 43). These data include both limited access and general category vessels. When considering these figures it is important to note that about one-third of the records did not have a location that could be plotted (no latitude/longitude recorded); therefore these figures do not represent the location of all landings by federal vessels from Maine, only landings where a vessel reported location. The majority of records with a reported location are within Maine state waters. The statistical areas that had the highest number of trips for all years combined for these years were 511, 512, 513, 467 and 521.

Figure 43 – Scallop landings from federally permitted vessels from Maine by year 2000-2005

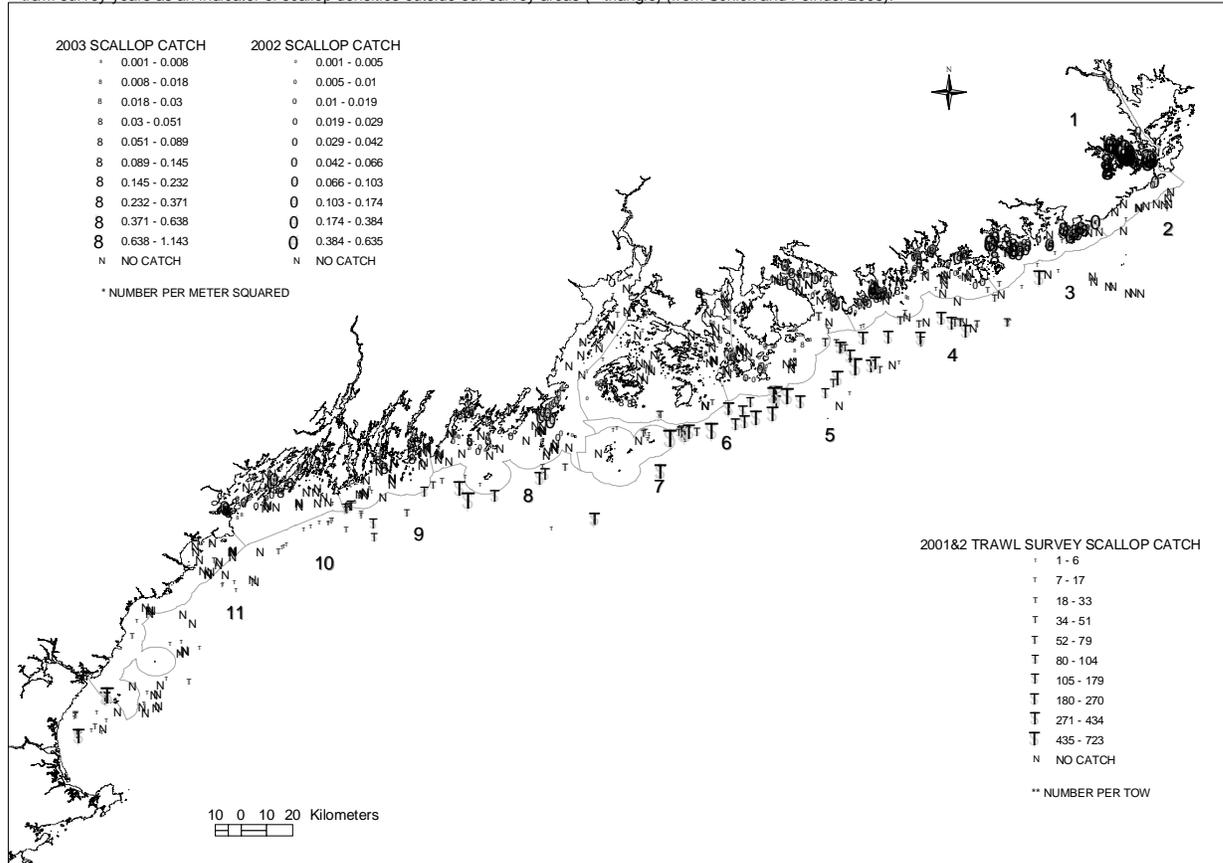




Maine DMR began a fishery-independent survey of the Maine nearshore scallop fishery in 2002. Schick and Feindel (2005) describe survey rationale, objectives, methodology and results in detail. A portion of the survey was designed to conduct a stock assessment of the Maine nearshore area which is currently most productive and also subject to special regulations (Cobscook Bay). Distribution and relative abundance of scallops from this survey are shown in Figure 44. The resource appeared healthiest in zones 1 (Cobscook Bay, which also had high seed density) and 3 (Machias Bay). Zone 4 (Gouldsboro Bay) was marked by intermediate catches relative to what was known anecdotally about past abundance, and Zones 5 and 6 (Mt. Desert Is. and Stonington) had poor abundance relative to past history from fishermen. The resource in Zones 7-10 (Isle au Haut to Casco Bay) was variable and patchy in terms of density and seed occurrence.

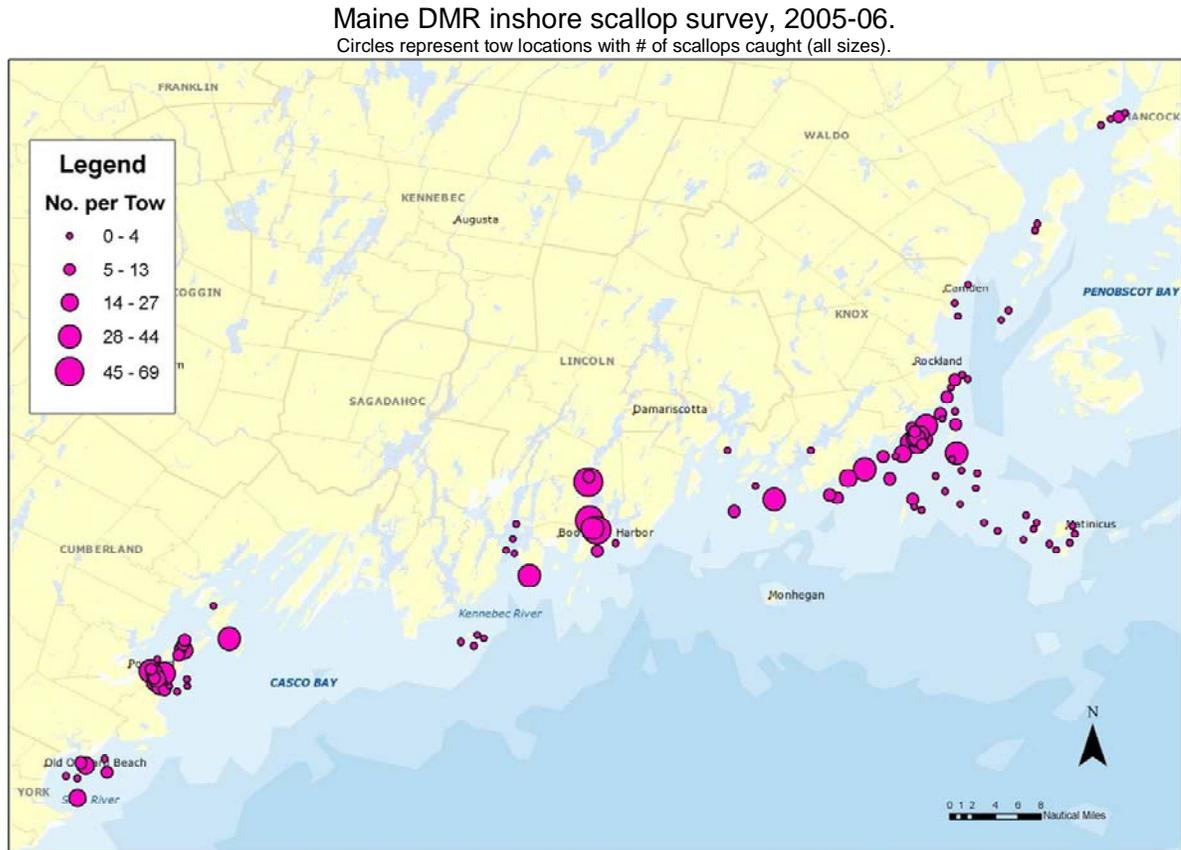
**Figure 44 – Maine DMR Inshore Scallop Survey (2002-03)**

Summary of coastwide abundance data and survey coverage for 2002 and 2003 (Maine DMR Inshore Scallop Survey). Also shows scallop data for 2001 and 2002 trawl survey years as an indicator of scallop densities outside our survey areas (= triangle) (from Schick and Feindel 2005).



The survey was updated in fall 2005-spring 2006 (Figure 45) in the western section of the coast (Zones 8-11) and will be continued in fall 2006 in the eastern section of the coast (Zones 1-7), including Cobscook Bay.

Figure 45- Updated Maine DMR Inshore Scallop Survey (2005-06)



#### 5.1.1.4.3 Summary of impacts on the scallop resource

##### 5.1.1.4.3.1 No Action

No specific measures would be considered for the Northern Gulf of Maine. Whatever is adopted under Amendment 11 would apply to the Northern Gulf of Maine; no separate limited entry program would be considered for that area.

This alternative would not have additional impacts on the scallop resource, since whatever is adopted in Amendment 11 would apply to this area as well. Therefore, whatever measures were selected to reduce capacity and mortality in the general category scallop fishery would apply to this area as well. See Sections 5.1.1.2 and 5.1.1.3 for a description of the biological impacts of the alternatives to reduce capacity and mortality in the general category fishery.

#### **5.1.1.4.3.2 Amendment 11 would not apply to the Northern Gulf of Maine**

If this alternative is selected by the Council then any measures adopted in Amendment 11 pertaining to controlling capacity and mortality in the general category fishery would not apply to waters in either: **Option A** - the GOM exemption area north of 42°20N (See Figure 3– hatched area north of 42°20) or **Option B** – waters in the EEZ north of 43N. An open access permit to fish for scallops under general category would remain for this area, and a vessel could land up to 400 pounds of scallops per trip if they have VMS (IB permit). Any vessel from any area would be permitted to apply for and fish under an open access NGOM general category permit. A hard TAC would be established for this area and if reached vessels would be limited to possession of up to 40 pounds of scallop meats after the TAC was reached. The Scallop Committee recommends that the hard TAC for this area include scallop landings in both federal and state waters.

In terms of impacts on the scallop resource only, the number of vessels that have access to fish is not the issue so long as there is a total limit on removal (i.e. hard TAC). Since this alternative includes a hard TAC the potential negative impacts of open access are reduced. Once the TAC is reached the area is closed to all general category fishing. There has not been a large set of scallops in the GOM for sometime, so the incentive to fish for scallops in this area has been minimal. While this alternative would make a GOM general category permit available to any vessel, many vessels are not expected to fish for scallops in this area since it is far from traditional scallop ports and most of the areas that have had scallop beds are in state waters or are presently in closed areas. However, if a set of scallops do recruit in this area, there is a risk of overfishing the area with open access.

There may be some negative impacts on portions of the scallop resource related to the boundary options (Option A and Option B). The statistical areas used in the scallop assessment for the GOM are 512, 513, 515, 514 and portions of 464, 465, and 511 that are within the US EEZ. Therefore, both boundaries (Option A and B) are contained within the larger area used as the GOM for the scallop assessment. Option A adds additional area to the south of Option B which could have impacts on vessels that live and fish south of Option B that are directed general category vessels that would not want open access vessels having access to this area while they may be under limited access controls. Specifically, any area where limited access and open access vessels can participate simultaneously can be problematic without sufficient controls for both permit types.

#### **5.1.1.4.3.3 ESTABLISH A NORTHERN GULF OF MAINE MANAGEMENT AREA LIMITED ENTRY Program**

This alternative would develop a separate limited entry general category program in the GOM exemption area north of 42°20N (**Option A**) (See Figure 3 – hatched area north of 42°20) or **Option B** – waters in the EEZ north of 43N. See Section 3.1.4.3 for the specifics about this alternative. Since this area would be under a hard TAC and limited entry there are not substantial biological impacts so long as the TAC is set at an appropriate level and can be effectively monitored.

The number of vessels that are expected to qualify under this alternative is 705, these are the same vessels that would qualify under the least restrictive qualification alternative for a general category limited access permit. If the most restrictive alternative is selected for the limited access general category permit (2003-2004 time period and 5,000 annual pounds) then only 134 vessels would qualify for that permit. Provided that the TAC is set at the appropriate level and can be effectively monitored, this alternative should not have additional impacts on the scallop resource within the NGOM. See Table 154 for a description of the vessels that would qualify for this permit.

#### **5.1.1.5 Monitoring Provisions**

##### **5.1.1.5.1 No Action**

Whether limited entry is adopted or not, vessels would still be required to report scallop landings through vessel trip reports (VTR). Vessels are currently required to report all landings within one month after a trip has been taken.

This alternative has indirect benefits on the scallop resource because reporting through VTR improves monitoring of fishing effort in the general category fishery.

##### **5.1.1.5.2 Require landings and declaration of scallop trip through VMS**

This alternative would require all general category vessels to report landings through VMS, and a vessel would also be required to declare each trip through VMS when they are leaving port to declare that they are going on a general category scallop trip. Vessels would be required to call in the hailweight and VTR number for each trip through the VMS system.

This alternative has additional indirect benefits on the scallop resource as compared to the No Action alternative because reporting through VMS improves monitoring of fishing effort in the general category fishery. It would be very difficult, if not impossible to monitor a hard TAC in real time without required reporting of hailweight through VMS.

##### **5.1.1.5.3 Require landings and declaration of scallop trip through IVR system**

Interactive Voice Reporting (IVR) is a system where vessels report landings after each trip through a phone recording system. This alternative would require IVR in addition to current VTR reporting requirements.

This alternative has additional indirect benefits on the scallop resource as compared to the No Action alternative because reporting through IVR improves monitoring of fishing effort in the general category fishery. IVR is used in other fisheries to monitor a TAC, but it is not as real time as VMS reporting and does not include location information.

### **5.1.1.6 Limited access fishing under general category rules**

#### **5.1.1.6.1 Permit or prohibit limited access vessels from fishing under general category**

The amount of limited access effort under general category has fluctuated over time (See Section 4.4.5 for a description of this component of the fishery). When conditions are right (i.e. abundant resource nearshore, good scallop prices, reduced opportunity under limited access privileges, etc.) and it is economic for limited access vessels to fish under general category, this component of effort is expected to increase. This type of effort is somewhat limited by factors such as price, cost of fuel etc. Therefore, the No Action alternative for this section (to permit all limited access vessels to fish under general category rules outside a DAS) it is not expected to have substantial impacts on the scallop resource, provided effort in this category does not increase above historic levels. Table 41 summarizes scallop landings by limited access vessels for trips equal to or less than 400 pounds per trip. The level of landings and number of vessels that have participated in this component of the fishery has varied with time. When catch per day was lower for limited access vessels in the late 1990s for example, the amount of scalloping under general category was relatively high. From 2000-2004 landing were in the ballpark of 200 to 300,000 pounds from this activity, or about 0.5% of total landings. There has been an increase in limited access trips under 400 pounds in recent years (2005 and 2006). The number of limited access vessels with trips less than 400 pounds is described in Table 48.

Alternative 3.1.6.1.2 would only allow limited access vessels that qualify under the same criteria selected for the limited access general category permit to fish under general category rules. A component of the limited access scallop fishery has participated under general category consistently over time. So long as this effort is controlled as under the same limited access general category alternatives, the impacts on the scallop resource are expected to be minimal (similar impacts as Alternative 3.1.6.1.3). Alternative 3.1.6.1.4 would prohibit all limited access permits (full-time, part-time and occasional) from fishing under general category rules while not on a scallop DAS. This alternative would reduce impacts on the scallop resource, but if the expected mortality from this component of the fishery is “reallocated” or assumed to shift to a different component of the fishery then benefits are reduced. For example, if about 0.5% of the annual TAC has come from this component of the fishery, and limited access vessels are no longer permitted to fish under general category and this assumed mortality is then shifted to the limited access fishery overall TAC in future projections, then overall impacts on the scallop resource are not reduced and are similar to the No Action alternative.

#### **5.1.1.6.2 Allocation of quota to limited access vessels under general category**

If the Council determines that limited access vessels that qualify for a general category permit under the same qualification criteria should receive a general category permit, then that effort would have to be attributed to (or removed from) either the general category allocation or the limited access allocation. If the Council decides not to permit limited access vessels to fish under general category rules then this section is irrelevant.

Whether the catch is reduced from the limited access portion of the total TAC (Alternative 3.1.6.2.1) or the general category portion (Alternative 3.1.6.2.2) these alternatives are not expected to have impacts on the scallop resource since they are related to how scallop catch is allocated and monitored.

#### **5.1.1.7 Allocation between limited access and general category fisheries (Objective #1)**

##### **5.1.1.7.1 No Action**

The Council would not allocate a certain percentage of the total available scallop harvest to the general category fleet. Currently annual landings from the general category fleet are estimated, and then limited access specifications are set to harvest the remaining portion of available harvest. The landings from the general category fleet are not an actual allocation, and vessels may under or over-harvest the estimated amount.

There could be short term biological impacts of this alternative. If the general category fishery exceeds the amount they were projected to catch, fishing mortality from that fleet would cause the total estimated fishing mortality to be higher. It may be possible that future management could account for that overage and reduce future fishing mortality by reductions in trips, poundage, or access in either component of the fishery, but there could be short term impacts on the scallop resource if projections are exceeded. This is also true for the projections of limited access fishing mortality, but the controls on that component of the fishery are currently more direct (open area DAS and possession limits for access area trips). So estimates have a greater degree of accountability and overages can be adjusted for more directly.

##### **5.1.1.7.2 Allocation of total scallop TAC for general category vessels**

The range of total TAC that would be allocated to the general category fishery under this alternative is 2.5-11%. It is understood that whatever alternative is selected to control capacity and mortality in the general category fishery, the total amount allocated to the general category permit owners would be roughly equal to the overall percent selected in this alternative.

Currently the mortality effects of the general category fishery create uncertainty in estimating overall fishing mortality of the scallop resource if there are no controls on harvest other than the possession limit (unless other measures are adopted). This alternative is not the mechanism that would specify how effort would be controlled, rather it identifies the maximum for the general category fleet. Likewise, future management measures would have to be developed to ensure that both components of the scallop fishery do not exceed their allocations under this alternative. This alternative could have beneficial short term impacts on the scallop resource by enabling management measures to have more direct control on the amount of scallops removed by the general category fishery. Likewise, if limited entry is adopted under this action, it has been referenced in the analyses that limited entry in combination with an overall TAC percentage of total projected scallop catch for the general category fishery will help prevent overfishing. If total catch (even under a limited entry program) is not constrained

by a TAC for the general category fishery, then a limited access program would be less successful at curbing effort, capacity and mortality.

In general, general category vessels are less efficient because they use smaller gear and fewer crew. However, total bottom contact time is not necessarily higher per pound of scallop meat caught. For example, if a general category vessel uses one ten-foot dredge, and a limited access vessel uses two 15-foot dredges, the limited access vessel has three times as much gear in contact with the bottom. The amount of scallops caught is proportional to the length of dredge being used, not whether it is being pulled by a limited access or general category vessel. However, because the economic incentives for the two fleets are different, there may be impacts on the scallop resource as a result. In general, vessels will fish to reduce time at sea and maximize profits. Limited access vessels in particular are under DAS, so these vessels need to maximize all their time spent at sea. These vessels are also more mobile, so if there are areas offshore that are more abundant, the limited access vessels are more likely to fish in areas with high abundance to reduce time spent at sea. While general category vessels cannot fish everywhere because they are more limited by vessel size etc., they are not managed by DAS so do not have the same incentives to maximize time at sea; therefore, these vessels may spend more time fishing in sub-optimal areas to harvest the daily possession limit so impacts on the scallop resource would be higher if this is the case.

#### **5.1.1.7.3 Allocation of yellowtail flounder bycatch TAC in access areas**

The Council is considering allocating a specific portion of the yellowtail flounder bycatch TAC to each fishery (limited access and general category). Currently 10% of the yellowtail flounder TAC (Georges Bank and SNE) is set aside as bycatch for the scallop fishery in access areas (limited access and general category together).

Under the No Action alternative, once bycatch TAC is reached, the access area would close to all vessels. On its own this alternative is not expected to have direct impacts on the scallop resource. If anything, the YT bycatch TAC may reduce scallop mortality if the TAC is reached before all access area trips are made. For example, in 2006 the YT bycatch TAC was reached in both access areas (Nantucket Lightship and Closed Area II) before all limited access vessels made their allocated trips; therefore, the fishing mortality associated with those trips was never realized and the resource in that area benefited as a result. However, under a rotational area management system if areas close prematurely and scallops are not harvested at the optimal time, overall benefits are reduced.

Rather than both fisheries being under the same 10% cap, Alternative 3.1.7.3.2 would actually divide the bycatch TAC between the limited access and general category fisheries. Whatever overall allocation of the projected scallop catch is allocated to the general category fishery (2.5%-11%), that same percentage of the yellowtail flounder bycatch cap would also be allocate to the general category fleet for access areas. This alternative is not expected to have direct impacts on the scallop resource. The estimated fishing mortality from an access area assumes all trips are taken, so if dividing that TAC enables one component of the fishery to fish longer, the impacts of those trips have already been accounted for.

#### **5.1.1.8 Incidental Catch (Objective #4)**

##### **5.1.1.8.1 No Action**

All vessels with a federal permit would continue to be permitted to possess and land up to 40 pounds of scallop meat per trip (but not sell their catch). A vessel is not required to have a permit for this incidental level of scallop catch for personal use.

The Scallop PDT is not currently concerned about scallop mortality from incidental catch. If scallops are returned to the water relatively quickly, mortality of incidental scallop catch is expected to be relatively low. Other possession limits were considered during development of Amendment 11, but this amount was determined to be an appropriate incidental catch limit.

##### **5.1.1.8.2 New incidental catch permit**

Another limited entry permit would be established for incidental levels of scallop catch. Any vessel that qualifies for the qualification time period portion of this limited entry program, but not the landings criteria would qualify for a limited entry incidental scallop permit. Those vessels could possess, land, and sell up to 40 pounds of scallop meat per trip. A percentage of total projected annual scallop catch would be reserved for mortality from this permit category prior to limited access and limited access general category allocations.

Overall this alternative is not expected to have negative impacts on the resource. This level of scallop catch is not expected to have negative impacts on overall scallop mortality. Currently any vessel is permitted to apply for a general scallop 1A permit, which allows them to land and sell up to 40 pounds of scallop meat, so this alternative would limit the number of vessels that could fish in this category. Furthermore, since mortality from this component of the fishery will be accounted for in projection models, then this alternative should not have overall impacts on scallop mortality.

#### **5.1.2 Measures to allow better and more timely integration of recent data (Goal #2, Objective #5)**

This was identified as the second goal of Amendment 11 because the scallop fishing year is out of sync with the framework adjustment process and the timing of when survey data become available for analysis. Alternative 3.2.2 would improve integration of general category landings information, and Alternatives 3.2.3 and 3.2.4 focus on adjusting the start date of the fishing year to improve timing and integration of scallop survey data.

##### **5.1.2.1 Background on fishing year issue**

The details of the current system are described below, identifying general milestones and issues with the management timeline. The scallop fishing year is out of sync with the framework adjustment process and the timing of when survey data become available for analysis. As a result, actions have not been implemented at the start of the fishing year, TACs have been misestimated due to reliance on older data, and extra actions have been required to compensate. A change in the fishing year is needed to correct for new analytic requirements for framework actions, additional steps in the framework approval

process, and the higher uncertainty in area management results caused by using year-old data when the Council develops and analyzes management alternatives.

If the data used to develop management measures is not updated, the scallop resource could suffer from excessive harvest rates or the fishery could fish at a level that would not achieve optimum yield. To demonstrate the problems that result from the fishing year being out of sync with survey information, a description of the current situation relative to surveys and management actions, and examples of how the start of the fishing year has been problematic in the past is described in the section below.

#### **5.1.2.2 Current scallop survey process and integration with management actions**

The Council is currently convening a Scallop Survey Advisory Group whose analysis and recommendations will be made during the development of Amendment 11. Although minor changes in the surveys are possible, survey vessels and support personnel are unavailable early enough in the year (February to March) to conduct the surveys in time to develop and analyze (often complex) framework alternatives for an initial framework meeting in June and a final framework meeting in September. September approval is required to enable the Council to submit the framework adjustment so that NMFS can conduct the review and implementation can occur by March 1.

The primary source of resource data comes from NMFS RV Albatross survey, conducted in late July and early August. Preliminary (i.e. unaudited) data become available for analysis several weeks later, but the earliest that biological projections can be completed is in early September. Other surveys (SMAST video survey, for example) augment this primary source of information, often improving precision for specific areas to estimate biomass. These surveys are often conducted in May to October, when conditions are favorable and when the projects can be conducted with approved set-aside funding. IN 2006, some data from additional surveys were available in September, but a substantial amount of work was done by the researchers to speed up auditing and analysis so that survey information from cruises conducted in summer/early fall 2006 could be incorporated in the measures for fishing year 2007.

Once the biological projections (i.e. biomass forecasts by area) are available and the management alternatives have been identified, there are a slew of additional analyses which must be completed based on this information. These analyses include allocation estimates and analysis of effects, in order for the Council to make an informed decision. These analyses of the alternatives estimate economic effects, social effects, community effects, as well as effects on bycatch and habitat. Council documents must also analyze cumulative effects, which include the synergistic effects on the environment of past, present, and reasonably foreseeable actions, as well as potential interactive effects caused by management of other fisheries and activities. Some of these analyses are needed for the final framework meeting, but others are completed before the Council submits the document to the Secretary of Commerce. These analyses and the associated document development generally take a minimum of 6 to 8 weeks from the time that biological projections can be done.

Using the most recent survey data, the earliest time that the Council can approve a framework action is in November with a document submission in late November or early December. NMFS review process includes a publication of a proposed rule and response to comments, as well as a formal review by NMFS headquarters, the EPA, the Corp of Engineers, and OMB. This review process usually takes 5 to 6 months, meaning that if the survey data can produce biological projections in early September, the earliest a framework action can be implemented is in early June, well after the start of the fishing year (currently March 1).

There is some thought that the NMFS scallop survey can occur at another time and/or be replaced by cooperative industry surveys. The Council and NMFS is working on these issues using a scallop survey advisory panel (SSAP) to make recommendations. There is some possibility that the new NOAA research vessel can conduct the survey earlier, in late May or early June but it is impossible that the survey can be conducted earlier than this due to conflicts with the spring groundfish survey. On the other hand, cooperative industry surveys would have to also conduct their surveys earlier in the year, with sufficient coverage, sampling intensity, consistency, and permanence to replace the NMFS survey. Industry survey data would have to be freely available to Council and NMFS scientists for analysis in a timely manner.

Even if the survey is conducted a couple of months earlier, it still takes about 9-12 months to process and assimilate the data to set specifications, analyze the effects, choose final measures, submit a final document, conduct a formal government review, and publish final rules. This is consistent with the analysis of the fishing year in Amendment 10, when the Council last rejected a change in the fishing year. Figure 46 identifies the timing of various steps with the No Action alternative (March 1 FY start date) and other alternatives under consideration (May 1 and August 1 start dates). Changing the fishing year enables the Council to use up to date information and allow for timely implementation of new specifications increasing the certainty that framework measures will prevent overfishing, achieve the intended objectives, and maximize net benefits. The No Action alternative increases the business risk to fishermen, vessel owners, and the industry due to mid-year implementation of delayed measures and frequent corrective action.

This type of adjustment has occurred several times in the past after recent survey information becomes available. Most recently, Framework 18 was not implemented on time, primarily because the key survey data and biological projections became available in early September, a week before the final framework meeting where the Council selects final measures. The PDT also found it impossible to complete the needed analyses due to conflicts between planned summer research activities and analytic needs.

Because the supporting analyses were not available at the September Council meeting, the final meeting was postponed to November and the annual specification was not implemented until early June 2006. Fortunately, the main effects of the delay were minor. The open area DAS reverted to the default value and the Hudson Canyon Area will be subject to fishing using open area DAS instead of being closed as intended in

Framework 18. Open area DAS use will count against the eventual Framework 18 DAS allocation and it is unlikely that many vessels will use open area DAS in the Hudson Canyon Area due to its depleted condition relative to other open areas. The delay with Framework 18 also resulted in problems associated with open area DAS in another way. Framework 18, which included a reduction in open area DAS compared to the DAS in the regulations for the 2006 fishing year, also had to account for the possibility that some scallop vessels may use their higher DAS allocations before Framework 18 was implemented. The result would be that a vessel would have used more DAS than it ultimately would have been allocated in the 2006 fishing year under Framework 18. Framework 18 established a provision that reduced the 2007 DAS for any vessel that used more DAS than allowed under Framework 18 (because of this timing problem). While very few, if any, vessels ended up in this situation, it raised the possibility that some fishing effort increase would have resulted in the 2006 fishing year than was anticipated in Framework 18. Although offset in the 2007 fishing year, this could have imposed excess fishing effort in the 2006 fishing year. Timely implementation of Framework 18 based on up-to-date resource information would have solved this problem.

Another example of problems caused by the mismatch with the data and fishing year was the need to re-evaluate and adjust the Elephant Trunk Area (ETA) trip allocations before the area opened in January 2007. Because the PDT had to rely on 2004 survey data to estimate the 2007 TAC and develop management alternatives, there was a considerable level of uncertainty about forecasting biomass out three years (from 2004 to 2007) using the biological projections. A considerable proportion of ETA scallops in 2004 were small and the scallop rotation area at the time of the survey had just been closed to protect them from fishing. Growth, mortality, and scallop movement between when the survey occurs and when the area re-opens for fishing also add uncertainty. The further the forecast is the more sensitive the projection is to assumptions of recruitment, natural mortality and growth; therefore, the less reliable the forecast is.

Because of the added uncertainty, the Council developed a rather complex strategy to adjust and compensate for changes in the eventual TAC, to be measured by 2006 surveys (by Notice Action). The Council also applied a more conservative strategy than might otherwise be required to avoid overexploitation of the ETA if the biomass projections overestimate the 2007 biomass. The Council adopted an ETA TAC that is about half of what might otherwise be indicated by a three-year access program. Essentially, the Council halved the fishing mortality target and adopted what amounts to a five-year harvest strategy for a rotation area closed for three years.

In late summer of 2006, as the resource surveys were being completed in the ETA, it became evident that the exploitable scallop biomass in the ETA was not as high as expected under Framework 18. Although the biomass was not as high as expected, the PDT reviewed the information from three available scallop surveys and determined that the "Notice Action" procedure in Framework 18 was not warranted. However, the PDT expressed very strong concern that with an allocation of five trips to full-time scallop vessels, and about 1,300 trips for general category vessels, that the fishing mortality rate from intense fishing effort on a smaller-than-expected biomass would have negative

effects in the ETA, resulting in potential overfishing of the entire scallop resource. To address this situation, the Council requested that NMFS enact an interim rule in December 2006 that would reduce the number of trips and delayed the opening of the ETA until March. While the potential problems that may have resulted for the scallop resource were avoided, the use of more recent data in Framework 18 would likely have resulted in more accurate projections for the ETA and would not have required the Council or NMFS to take “emergency” action to correct the problems. A change in the fishing year would allow more recent data to be used to potentially avoid the situation that occurred in the ETA. Furthermore, the strategy adopted in Framework 18 for the ETA required a considerable amount of extra work and analysis during 2006 to re-evaluate the Framework 18 allocations. Applying a precautionary approach to ETA management may forego some yield in the short term, but because the ETA scallops are just reaching optimal size, a reduced TAC and postponed harvest is unlikely to have negative consequences – unless a mass mortality event occurs due to predation, disease, or temperature. In other words, there is an elevated level of risk associated with the management strategy the Council adopted in Framework 18 in response to the higher uncertainty of using 2004 instead of 2005 survey data.

### **5.1.2.3 Impacts of the measures to improve integration of recent data**

#### **5.1.2.3.1 No Action**

No additional measures would be implemented to improve the integration of recent data in the management process. Specifically, the scallop fishing year would remain at March 1.

This alternative may have negative indirect impacts on the scallop resource because it does not enable the Council to integrate the most recent scallop survey results into analyses used to make decisions for scallop management. Overall, a March 1 start date increases uncertainty and risk because future management decisions are based on older data, which could have indirect impacts on the scallop resource.

#### **5.1.2.3.2 Change the issuance date of general category permits from May 1 to March 1**

Whether limited access is implemented by this action or not, this alternative would change the issuance date of general category permits from May 1 to March 1. Currently, the limited access portion of the fishery is issued a permit on March 1, the start of the scallop fishing year. Because the general category permit is not issued until two months later there is a lag time in summarizing scallop landings data.

This change would improve integration of fishery data into the management decision process, but would not address the timing issue related to integration of recent survey data.

#### **5.1.2.3.3 Change the start of the fishing year to May 1**

The scallop fishing year would be changed to start May 1.

This alternative is expected to have positive impacts on the scallop resource by enabling the Council to use up to date information and allow for more timely implementation of new specifications. If the current survey is rescheduled to late May or early June, the fishing year should begin on May 1, reducing uncertainty and risk.

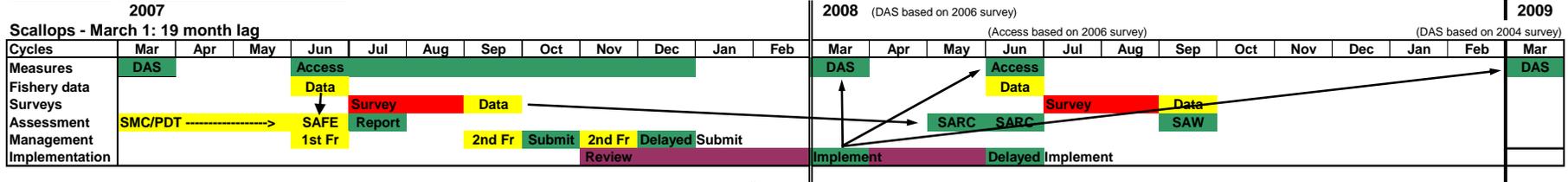
**5.1.2.3.4 Change the start of the fishing year to August 1**

The scallop fishing year would be changed to start August 1.

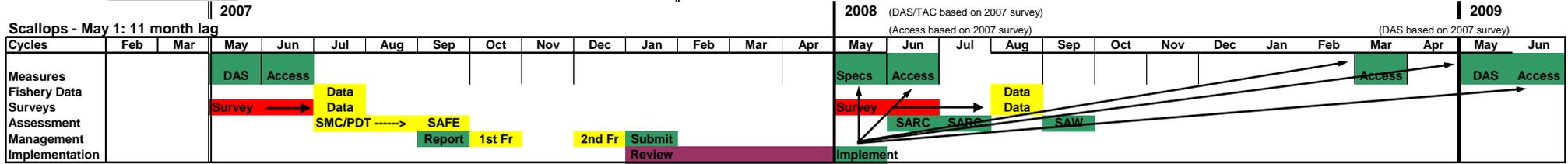
This alternative is expected to have positive impacts on the scallop resource by enabling the Council to use up to date information and allow for more timely implementation of new specifications. If the current survey cannot be pushed earlier and remains in late summer, the fishing year should begin on August 1, reducing uncertainty and risk.

Figure 46 – Comparison of potential timelines for the alternatives to allow better and more timely integration of recent data

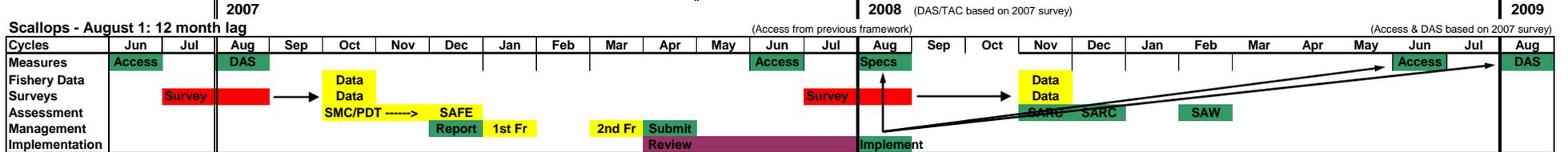
**Status quo: March 1 to February 28/29**



**May 1 to April 30**



**August 1 to July 31**



### **5.1.3 Other measures**

#### **5.1.3.1 Trawl gear restriction**

##### **5.1.3.1.1 No Action**

All trawl vessels would be restricted to a 144 ft. trawl sweep.

This alternative has unintended consequences on vessels that are targeting other species aside from scallops. The restriction on trawl sweep size may have beneficial impacts on scallop mortality by restricting the maximum size of trawl gear, but the Council intended this restriction for vessels targeting scallops, not vessels that catch scallop incidentally.

##### **5.1.3.1.2 Clarification of trawl gear restriction for vessels fishing under a multispecies or monkfish DAS**

The Council intended the 144 ft. net sweep restriction to be exclusive to the scallop plan for all vessels targeting scallops using a net, and not to apply this restriction in other fisheries where scallops are caught more incidentally. This alternative would clarify that the 144 ft. net sweep restriction is intended for all vessels authorized to be in possession in excess of 40 pounds of scallop meats, except for vessels with a general category 1B permit and fishing under a multispecies or monkfish DAS. These vessels would not be restricted by the 144 net sweep restriction.

This alternative is not expected to have impacts on the scallop resource. Vessels that are targeting scallops with a net are still restricted to a 144 ft. net sweep. This alternative is intended to clarify the regulations for vessels that are fishing for other species and catch scallops incidentally.

#### **5.1.3.2 Possession limit of 50 bushels**

##### **5.1.3.2.1 No Action**

Current regulations would apply related to the possession limit of 50 bushels of in-shell scallops for all 1B general category scallop vessels.

Limiting the amount of in-shell scallops a vessel can be in possession of reduces non-harvest mortality, thus is beneficial for the scallop resource. It reduces the incentive to highgrade, and if a vessel wants to shuck its catch and needs more than 50 bushels to reach the 400 pound possession limit, that vessel will have to shuck some of its catch before possessing over 50 bushels. This restriction potentially reduces fishing time if the shucked product from 50 bushels ends up being 400 pounds (i.e. the vessel may not have to make another tow if the in-shell product on deck ends up equaling 400 pounds of shucked scallop meat). However, in practice it is common that over 50 bushels are needed to shuck 400 pounds of scallop meat. Therefore, this alternative causes vessels to often be out of compliance during normal fishing operations.

**5.1.3.2.2 Possession limit of 50 bushels shoreward of the VMS demarcation line and up to 100 bushels east of that line**

The regulations currently permit a vessel to be in possession of either 400 pounds of scallop meat or 50 bushels of in-shell scallops if they have a 1B general category permit. However, 50 bushels of in-shell scallops does not equate to 400 pounds of scallop meat. Therefore, if a vessel wants to land scallop meat, it is technically in violation if it possesses for example 70 bushels to cut out 400 pounds of meat. This alternative would not allow a vessel to possess, or land per trip more than 50 bu. (17.62 hl) of in-shell scallops shoreward of the VMS Demarcation Line, but it could possess up to 100 bushels east of the demarcation line.

Recognizing that 50 bushels is usually less than 400 pounds of scallop meat, this alternative would allow a vessel to be in possession of up to 100 bushels east of the demarcation line. This alternative would allow a vessel to shuck scallops up to 400 pounds of meat and not run the risk of being in possession of more than the trip limit. While this alternative could allow a vessel to catch more than 50 bushels or 400 pounds, the vessel would have to discard any additional catch before crossing the demarcation line, hopefully reducing non-harvest mortality.

## **5.2 IMPACTS ON PHYSICAL ENVIRONMENT AND EFH**

The objective of Amendment 11 is to implement measures to control capacity and mortality in the general category scallop fishery. Some measures under consideration are: a limited access program and/or hard-total allowable catch (hard TAC) for the general category fishery, approval of a mechanism for voluntary sectors in the general category fishery, establishment of a separate limited entry program for general category fishing in the Northern Gulf of Maine, potential adjustments to limited access scallop fishing under general category rules, allocation of total scallop catch and yellowtail flounder bycatch TAC between the limited access and general category fisheries, measures to allow better and more timely integration of recent data in the scallop management process, and other administrative provisions and adjustments.

### **5.2.1 Measures to control capacity and mortality in the general category scallop fishery**

#### **5.2.1.1 No Action**

Under this alternative the general category fishery would remain an open access fishery. Based on recent trends in the general category fishery, this alternative makes it difficult for the Scallop FMP to prevent overfishing. The General Category vessels are only limited by a possession limit and are allowed to fish 365 days a year under the No Action alternative. If scallop prices and market conditions continue to improve as they have been, it is expected that General Category vessels will steadily increase their effort to meet demand. As such, this additional effort from both trawl and dredge gears will negatively impact the physical environment and EFH. However, the impacts of the additional effort are difficult to assess because the incremental effects of this additional effort may be relatively small in open access areas that are also impacted by bottom trawlers in other fisheries and limited access scallop dredge vessels.

#### **5.2.1.2 Limited Entry**

Limited entry, a use-privilege system, in and of itself would have positive impacts on the physical environment and EFH as compared to the No Action alternative by reducing the number of potential participants. However, the details of how this program will be implemented in the Atlantic scallop fishery will dictate what and to what extent these positive impacts are realized in both the short- and long-term.

#### *Qualification criteria, time period and determination of qualification amount (3.1.2.1 – 3.1.2.3)*

In terms of impacts on the physical environment and EFH, there is no significant difference between the three qualification criteria alternatives, the three time period qualification alternatives and the qualification amount provided that the total removal of scallops by the vessels that qualify is the same. Therefore, the alternatives only influence how many vessels qualify, and do not directly affect the scallop resource and EFH if additional limits on effort or a hard TAC is adopted. Alternatives 3.1.2.3.1 and 3.1.2.3.2 only affect the contribution factor used to determine a vessels access to the resource (allocation), therefore, these alternatives will not have any adverse impacts on the physical environment and EFH.

#### *Allocation of access to GC limited entry permit holders (3.1.2.4)*

In general, the impacts on EFH from all the individual allocation alternatives are expected to be similar because there is a total amount of scallops that is permitted to be removed under each alternative. However, the allocation in trip alternatives, as opposed to poundage allocations, may increase effort if these vessels change behavior to land more scallops per trip, thus negative impacts on EFH. This potential increase in effort is limited however because there is a maximum TAC for the entire fleet under both the individual pound and trip alternatives.

#### *Limited entry permit provisions (3.1.2.5)*

While this alternative could increase capacity, if the total fishing mortality for the general category fishery is limited (i.e. hard-TAC) then no additional impacts from this alternative on the physical environment and EFH are expected.

#### *Measures to reduce incentive for limited entry qualifiers to fish for scallops with trawl gear (3.1.2.6)*

In general, fishing mortality is higher for trawl gear versus dredge gear based on the number of kept scallops per trip (See Section 5.1.1.2.6). Therefore, the alternatives that reduce incentives to fish for scallops with trawl gear are expected to have positive impacts on the scallop resource but it is unclear whether this alternative will result in more or less area swept by either trawls or dredges. The relative impact of these two gears is the same (see Amendment 10 Gear Effects Evaluation) so one can speculate that the transfer of effort between trawls and dredges will be conservation neutral on the physical environment and EFH. As such, there would be no adverse impacts of these alternatives on the physical environment and EFH.

#### *Sectors and Harvesting Cooperatives (3.1.2.7)*

None of the options related to establishing a sector are expected to have negative impacts on the physical environment and EFH. In fact, the indirect impacts may be beneficial since voluntary sectors may be able to identify ways to fish more efficiently, potentially reducing bottom contact time and impacts on the physical environment and EFH. It is presumed that a self-selecting sector will have a plan to manage their allocation in a way that mutually benefits the sector members and avoids wasteful fishing practices. Therefore, the impacts of this alternative on the physical environment and EFH would be neutral to positive. However, specific impacts would have to be addressed as part of a sector operations plan at a separate time in the future. Because the details of sector management will be included in the operations plan and submission will be accompanied by appropriate NEPA documents, impacts on EFH would be evaluated by the proponents at that time and accepted by the agency with any accompanying caveats on the sector operations.

#### *Interim measures for transition to limited entry*

Overall, the impacts on EFH from both these alternatives will be positive in general, because they will limit capacity and mortality on the scallop resource. The alternative with the hard TAC option has a higher likelihood of controlling mortality up to 10% of the total projected catch, but depending on how the hard-TAC is implemented there may be impacts on EFH. While the initial fishing pressure may be more intense under a hard TAC system than without, it is uncertain if this will result in more or less impacts to the physical environment and EFH because the non-hard TAC system would merely spread out the effort over a longer portion of the year which may not allow the physical environment and EFH as much time to recover from the

effects of scallop fishing. The alternative with no hard-TAC option does not have a backstop for total mortality, but the number of vessels that can participate in this fishery is reduced compared to the open access nature of the current fishery, so compared to No Action this alternative may have positive impacts on EFH. Furthermore, both these alternatives would only be in place on a temporary basis, once the poll of final qualifiers is identified, then the rest of the measures adopted by Amendment 11 could be implemented, namely the allocation of a hard-TAC and allocation of that total general category TAC to qualifiers.

### **5.2.1.3 Hard Total Allowable Catch Limit (Hard TAC)**

The total number of scallops that would be harvested if this alternative and the limited entry alternatives are adopted should be similar, however, with high scallop prices and a limited amount of total catch, a hard TAC may induce a race to fish and cause the TAC to be met more quickly. However, these effects may be reduced by the possession limit of 400 pounds per trip. Typically a hard TAC fishery without trip or possession limits usually can trigger a derby fishery as the participants are not restricted to how much they can catch or possess until after the TAC is reached. Any hard TAC system has the potential for the TAC to be reached earlier than a non-TAC fishery due to the competition among the participants and this situation can result in unsafe fishing practices and fishing more intensively. While the initial fishing pressure may be more intense under a hard TAC system than without, it is uncertain if this will result in more or less impacts to the physical environment and EFH because the non-hard TAC system would merely spread out the effort over a longer portion of the year which may not allow the physical environment and EFH as much time to recover from the effects of scallop fishing.

### **5.2.1.4 Establish a Northern Gulf of Maine Scallop Management Area (NGOM)**

#### *No Action*

This alternative would not have additional impacts on the physical environment and EFH since whatever is adopted in Amendment 11 would apply to this area as well.

#### *Amendment 11 would not apply to the Northern Gulf of Maine*

If this alternative is selected by the Council then any measures adopted in Amendment 11 pertaining to controlling capacity and mortality in the general category fishery would not apply. A hard TAC in both state- and federal-waters would be established for this area and if reached, vessels would be limited to possession of up to 400 pounds of scallops per trip before the TAC is reached and 40 pounds of scallop meats per trip after the TAC is reached. There has not been a large set of scallops in the GOM for sometime, so the incentive to fish for scallops in this area has been minimal. While this alternative would make a GOM general category permit available to any vessel, many vessels are not expected to fish for scallops in this area since it is far from traditional scallop ports and most of the areas that have had scallop beds are in state waters or are presently in closed areas. With no limited entry program, this alternative could cause fishing to concentrate in the beginning of the year, which could be good or bad for habitat because the intensity of the habitat impacts would increase initially; however, this leaves more time for the habitat to recover during the rest of the fishing year. The vessel remains restricted by the 400 pound per trip possession limit which will reduce the incentive for a derby fishery as is common in a hard-TAC fishery with no possession or trip limits. This could offset the potential for a more concentrated fishery in the beginning of the fishing year. However, it is difficult to predict

the behavior of the fishery at this time. Therefore, the habitat impacts of this alternative relative to the No Action alternative are uncertain.

#### *Establish a Northern Gulf of Maine Management Area Limited Entry*

Since this area would be under a hard TAC, entry into the fishery would be limited and the 400 pound trip possession limit would remain, fishing effort would more likely be spread out over a longer portion of the fishing year as the incentive to fish before the TAC is met is mitigated by the limiting of participants in the fishery under the limited entry program. The vessel remains restricted by the 400 pound per trip possession limit which will reduce the incentive for a derby fishery as is common in a hard-TAC fishery with no possession or trip limits. This could offset the potential for a more concentrated fishery in the beginning of the fishing year. However, it is difficult to predict the behavior of the fishery at this time. Therefore, the habitat impacts of this alternative relative to the No Action alternative are uncertain.

#### **5.2.1.5 Monitoring Provisions**

This alternative is largely administrative and, therefore would not impact the physical environment and EFH. However, an increased understanding of where General Category scallop vessels fish through the data collected in the vessel monitoring system (VMS) and or IVR may lead to a better understanding of which parts of the affected physical and EFH environment are being impacted.

#### **5.2.1.6 Limited access fishing under general category rules**

##### *Permit or prohibit limited access vessels from fishing under General Category*

##### No Action:

The overall cost of operation for a General Category vessel is lower than a Limited Access vessel because general category vessels on average operate smaller vessels, have smaller crews, lower gear costs, etc. Therefore, general category vessel “can afford” to fish on a resource that is less optimal to get 400 pounds because their overhead is lower. However, many limited access vessels would not bother to fish for 400 pounds unless the resource available is concentrated and prices are high because their costs of operation are greater.

It should be noted that it has been quite profitable for both fleets to fish for 400 pounds in recent years because the resource nearshore has been in good shape and the price for scallops has been higher than normal, so the economic incentives to fish for 400 pounds a day have existed.

As a permit privilege under the No Action, the Limited Access permit holders were allowed to fish under the General Category provisions while not on a scallop DAS. Because most LA permit holders were required to forfeit permits in other fisheries, some vessels make General Category trips when their LA DAS are used, but this level of effort is not expected to increase dramatically since there is a possession limit.

##### Limited access permit holders subjected to same rules as General Category vessels:

A component of the limited access scallop fishery has participated under general category regulations consistently over time. If the LA vessels qualified under the selected permit qualification for a General Category permit, this alternative will subject the LA vessel to the GC rules while fishing on a GC permit. However, since only a small portion of the LA fishery has

traditionally fished in the General Category, this alternative will reduce the capacity of the General Category fishery. This may not benefit habitat in the short-term nor the long-term since not all of the LA boats will opt into General Category rules. If the Limited Access participation in the General Category fishery is reduced overall, this alternative could have positive impacts on habitat.

Prohibit all limited access permit holders (full-time, part-time and occasional) from fishing under general category rules while not on a scallop DAS:

This option restricts participation in the General Category fishery more than the other alternatives because it does not allow any Limited Access vessels to fish under the General Category provisions. This alternative reduces the capacity of the Limited Access fleet by eliminating the option to fish under both Limited Access and general category provisions. This alternative is expected to have positive impacts on habitat by reducing potential effort by the Limited Access fishery under General Category rules.

*Allocation of quota to limited access vessels under general category*

These alternatives are not expected to have impacts on the physical environment and EFH since they are related to how scallop catch is allocated and monitored.

**5.2.1.7 Allocation between limited access and general category fisheries (Objective #1)**

*No Action*

Under the No Action, no allocation of a certain percentage of the total available scallop harvest to the general category fleet would occur. Because the General Category vessels are not subjected to a hard allocation, they may over- or under-fish the estimated amount. Continuation of this practice, in light of the increase in effort by the General Category in recent years, could result in negative impacts to the physical environment and EFH. Without a hard TAC or other output control for the general category fishery it makes it very difficult to predict fishing mortality for that fleet, thus projections may underestimate impacts on the scallop resource and EFH.

*Allocation of projected TAC for general category vessels*

This alternative is not necessary for controlling effort, rather it identifies the maximum annual harvest for the general category fleet. The General Category fishery is generally limited to the inshore areas as the vessels are smaller than the Limited Access fishery. In recent years, the General Category catch has been higher than average (11%) as a percentage of the overall TAC in the fishery. If one of the higher percentages is chosen and allocated to the GC vessels and the vessels retain similar characteristics (size, etc.), there may be negative impacts on nearshore habitat as the general category fishery primarily fishes in inshore areas that are more vulnerable to bottom disturbance.

*Allocation of yellowtail flounder bycatch TAC in access areas*

Under the No Action alternative, 10% of the yellowtail flounder TAC (Georges Bank and SNE) is set aside as bycatch for the scallop fishery in access areas. The 10% bycatch cap is monitored through observer coverage and total bycatch estimates are extrapolated from that data. Currently YT bycatch from both the limited access and general category fleets are under the same TAC and once the bycatch TAC is reached, the access area would close to all vessels. Because the

General Category vessels are allocated a fleetwide allocation of access area trips, there may be less incentive to avoid bycatch. Further, the general category fleet is more inclined to use all access trips in areas closer to shore (Closed Area I and NLCA) than offshore access areas like Closed Area II. So general category vessels may contribute more to the YT bycatch in some areas, and less in others. Furthermore, areas may open when it is more advantageous for one fleet to fish in an area than another, and if the bycatch TAC is reached in the early part of the year, the other fleet may not be able to take advantage of the access area because the total YT bycatch TAC has been caught.

An alternative to the No Action is to divide the bycatch TAC between the limited access and general category fisheries. Whatever overall allocation of the scallop yield is given to the general category fishery (2.5%-11%), that same percentage of the yellowtail flounder bycatch cap would be given to the general category fleet for access areas. This catch could not be retained or landed by general category vessels. This alternative would prevent one fleet of the fishery closing the access area for the other fleet. For example, if the 10% bycatch TAC was reached for Closed Area II during the winter months by limited access vessels before the majority of the general category fleet could access area, this alternative would prevent one fleet from closing the access area for another fleet. Because this alternative allows a fleet to continue fishing in the access areas when the area is closed to the other fleet due to the bycatch cap being met, it could better enable all allocated effort in an access area to be fished. If this alternative is approved at the same rate for all access areas, some areas like Closed Area II for the general category may not reach the TAC. The impacts of this alternative overall on EFH are minimal because they are indirect. If by dividing the TAC the TAC is not caught as fast, then it is possible that all effort allocated to that area could be fished. But if dividing the TAC does not affect the speed of either fleet catching their portion of the TAC then there are no impacts of this alternative.

#### **5.2.1.8 Incidental catch**

Overall both these alternative are not expected to have negative impacts on EFH because they do not include additional effort – these vessels are fishing for other species already. This level of scallop catch is not expected to increase incentives for vessels to target scallops so effort should not increase and the number of vessels that can fish under Alternative 3.1.8.2 (new incidental catch permit) is restricted.

#### **5.2.2 Measures to allow better and more timely integration of recent data**

These alternatives are administrative in nature and suggest changing the beginning of the fishing year to better incorporate data into the management process in a timely manner. Therefore, no impacts to the physical environment and EFH are expected. However, if more recent information can be integrated into the projections used for management, estimated of fishing mortality and impacts should be more accurate.

#### **5.2.3 Other measures**

##### *Trawl gear restriction*

Current regulatory language would remain and all trawl vessels would be restricted to a 144 ft. trawl sweep. The Council intended the 144 ft. net sweep restriction to be exclusive to the scallop plan for all vessels targeting scallops using a net, and not to apply this restriction in other

fisheries where scallops are caught more incidentally. The alternative to the No Action is to clarify that this trawl restriction is not intended for all vessels authorized to be in possession in excess of 40 pounds of scallop meats, except for vessels with a general category 1B permit and fishing under a multispecies or monkfish DAS. While this alternative could increase the size of the trawl net sweep that is in contact with the seafloor, this restriction was implemented incorrectly, and this alternative would make that regulatory change, so no habitat impacts are expected.

#### *Possession limit of 50 bushels*

##### No Action:

Current regulations would apply that limit possession to 50 bushels of in-shell scallops for all 1B general category scallop vessels. So if a vessel wants to land scallop meat, it would have to shuck at sea and not possess more than the 50 bushel equivalent of meats and in-shell scallops. This alternative reduces the ability for a vessel high-grade while fishing. But if a vessel wanted to catch 50 bushels and shuck scallops on the way back in, if 50 bushels comes out to be less than 400 pounds, this restriction could reduce fishing time and, therefore, positively impact the physical environment and EFH, unless the vessel decides to stay at sea and shuck 50 bushels and then make additional tows to total 400 pounds of meat.

##### Possession limit of 50 bushels shoreward of the VMS demarcation line and up to 100 bushels east of that line:

This alternative is independent of any other alternatives in the DSEIS and would not allow a vessel to possess, or land per trip more than 50 bu. (17.62 hl) of in-shell scallops shoreward of the VMS Demarcation Line, but it could possess up to 100 bushels east of the demarcation line. This alternative could result in an increase of fishing effort for vessels that want to shuck at sea and land the 400 pound possession limit of scallop meat because they could catch up to 100 bushels of in-shell scallops to cut out 400 pounds of meat. Therefore, this alternative could increase time gear is spent on the bottom as compared to the No Action alternative, which may result in negative impacts to the physical environment and EFH.

#### **5.2.4 Summary of Impacts to Physical Environment and EFH**

Overall, the impacts on the physical environment and EFH of alternatives considered in Amendment 11 are positive over the long-term as compared to the No Action alternative which allows for the continuation of unrestricted growth in the open access general category fishery. The impacts of the alternatives under consideration are included in Table 71.

**Table 71. Summary of Impacts to Physical Environment and EFH of AM11 Alternatives**

<b>Alternatives</b>	<b>Physical Environment and Essential Fish Habitat Impacts</b>	<b>Discussion</b>
<b>Measures to control capacity and mortality in the general category scallop fishery</b>		
<b>No Action</b>	Negative - Potential unrestricted growth of open access fishery will likely have negative impacts on EFH by increasing effort.	Impacts of the additional effort are difficult to assess because the incremental effects of this additional effort may be relatively small in open access areas that are also impacted by bottom trawlers and limited access scallop dredge vessels.
<b>Limited Entry</b>	Positive	By reducing the number of potential participants, over long-term will have positive impacts as effort is controlled as compared to No Action.
<i>Qualification criteria, time period and amount</i>	0	Only affect the contribution factor used to determine a vessel's access to the resource (allocation), these alternatives will not have any adverse impacts.
<i>Allocation of access to GC limited entry permit holders</i>	0/-	May increase effort if vessels allocated by trips vs. poundage change behavior to land more scallops per trip. Potential increase in effort is limited however because there is a maximum TAC for the entire fleet.
<i>Limited entry permit provisions</i>	0	While this alternative could increase capacity, if the total fishing mortality for the general category fishery is limited (i.e. hard-TAC) then there should be no additional impacts.
<i>Measures to reduce incentive for limited entry qualifiers to fish for scallops with trawl gear</i>	0	Transfer of effort between trawls and dredges will be conservation neutral on the physical environment and EFH. As such, there would be no adverse impacts.
<i>Sectors and Harvesting Cooperatives</i>	+/0	Indirect impacts may be beneficial since voluntary sectors may be able to identify ways to fish more efficiently, potentially reducing bottom contact time and impacts.
<i>Interim measures for transition to limited entry</i>	0/Uncertain	Overall, neutral because interim measures only. For the hard-TAC alternative - while the initial fishing pressure may be more intense under a hard TAC system than without, it is unclear if this will result in more or less impacts because the non-hard TAC system would merely spread out the effort over a longer portion of the year which may not allow the physical environment and EFH as much time to recover from the effects of scallop fishing.
<b>Hard Total Allowable Catch (Hard TAC)</b>	Uncertain	While the initial fishing pressure may be more intense under a hard TAC system than without, it is unclear if this will result in more or less impacts because the non-hard TAC system would merely spread out the effort over a longer portion of the year which may not allow the physical environment and EFH as much time to recover from the effects of scallop fishing.
<b>Establish a Northern Gulf of Maine Scallop Management Area (NGOM)</b>		
<i>No Action</i>		
<i>Amendment 11 would not apply to the Northern Gulf of Maine</i>	Unknown	Vessel remains restricted by the 400 pound per trip possession limit which will reduce the incentive for a derby fishery as is common in a hard-TAC fishery with no possession or trip limits. This could offset the potential for a more concentrated fishery in the beginning of the fishing year. However, it is difficult to predict the behavior

<b>Alternatives</b>	<b>Physical Environment and Essential Fish Habitat Impacts</b>	<b>Discussion</b>
		of the fishery at this time. Therefore, the habitat impacts are impossible to predict.
<i>Establish a Northern Gulf of Maine Management Area Limited Entry program</i>	Unknown	Vessel remains restricted by the 400 pound per trip possession limit which will reduce the incentive for a derby fishery as is common in a hard-TAC fishery with no possession or trip limits. This could offset the potential for a more concentrated fishery in the beginning of the fishing year. However, it is difficult to predict the behavior of the fishery at this time. Therefore, the habitat impacts are impossible to predict.
Monitoring Provisions	0	Administrative.
<b>Measures to control capacity and mortality in the general category scallop fishery</b>		
<i>Permit or prohibit limited access vessels from fishing under General Category</i>	+	If the Limited Access participation in the General Category fishery is reduced by option have GC rules apply to LA vessel, as expected, positive impacts are expected on habitat. If LA permit holders are not allowed to fish under the GC rules, positive impacts on habitat are expected by limiting the effort of the Limited Access fishery through non-participation in the General Category fishery while not on a scallop DAS.
<i>Allocation of quota to limited access vessels under general category</i>	0	Administrative.
<b>Allocation between limited access and general category fisheries</b>		
<i>Allocation of projected TAC for general category vessels</i>	0/-	May be negative impacts on habitat as this effort is usually expended in inshore areas that are more vulnerable to bottom disturbance.
<i>Allocation of yellowtail flounder bycatch TAC in access areas</i>	0/-	May result negative impacts if effort in the access areas increases as the area won't be closed to all fishing once bycatch cap is met. If the access area is an offshore area where the General Category do not usually fish (Closed Area II), this negative impact may not result.
<b>Incidental Catch</b>	0	These alternatives are not expected to have negative impacts on EFH because they do not include additional effort.
<b>Measures to allow better and more timely integration of recent data</b>	0	Administrative
<b>Other measures</b>		
<i>Trawl gear restriction</i>	0	Administrative clarification.
<i>Possession limit of 50 bushels</i>	-	May result in negative impacts due to an increase of fishing effort by allowing the vessel to catch more than the current limit of 50 bushels.

## 5.3 IMPACTS ON PROTECTED RESOURCES

### 5.3.1 Background

The Amendment 11 alternatives are evaluated below for their impacts on protected resources with a focus on threatened and endangered sea turtles, as noted in Section 4.0. As with the analyses provided in the last scallop management action, Framework Adjustment 18/39 to the Sea Scallop FMP, the species considered here are loggerhead, leatherback, Kemp's ridley and green sea turtles.

Both scallop dredge and scallop trawl gear will be addressed in this section, generally collectively, given they are the most commonly used gears by general category and limited access vessels in this fishery. Although general category permit holders also fish with a number of other gear types and accordingly may take scallops incidentally when engaged in other fisheries, the effects of those additional fishing activities and gears relative to impacts on sea turtles will not be addressed in this action.

As summarized in Section 1.1, the sea scallop fishery management program employs a limited access permit system and controls DAS use in scallop open areas. Limited numbers of trips with trip limits also are allowed in designated rotational access areas. Major harvest areas include Georges Bank, with less activity in the Gulf of Maine. Both are regions in which turtles are far less likely to be found relative to Mid-Atlantic waters where effort and scallop catch levels have increased in recent years. While there have been increases in scallop fishing effort in both regions, new directed general category scallop fishing effort has been added to the Mid-Atlantic fishery since 1994 (Figures 18-30). Although scallop fishing is a year-round activity, the distribution of turtles throughout most of the Mid-Atlantic is seasonal --- May through November. Therefore, a portion of scallop fishing occurs at times when turtles are not likely to be present.

With respect to sea turtle interactions with the fishery overall, it is tempting to attribute increases in turtle interactions over this period to increased effort, but it is equally noteworthy that there were very low levels of observer coverage throughout the fishery up to 2003. More uncertainty is added to any consideration of these issues given that observed turtle interactions were less in 2004 and 2005 compared to 2003.

Additional actions also may affect the nature of scallop fishery/ sea turtles interactions. Federally permitted scallop dredge gear now must be modified by adding an arrangement of horizontal and vertical chains, referred to as "chain mats", between the sweep and the cutting bar in an area that extends south of 41° 9.0 N from the shoreline to the outer boundary of the EEZ during May 1 through November 30 each year (71 FR 50361). The requirement is expected to reduce the severity of some turtle interactions with scallop dredge gear.

The Elephant Trunk Access Area in the Mid-Atlantic opened on March 1, 2007, allowing full-time limited access vessels to make three trips between the opening date and June 20, 2007, with the possibility of an additional six-month extension of the open period. Part-time vessels may take two trips in the ETAA but can also substitute these with Nantucket Lightship and Closed I

trips in a specifically allowed manner. Continued access to the Georges Bank areas will likely help reduce levels of fishing in the Mid-Atlantic region where sea turtle interactions are more likely to occur. The general category scallop fleet trip allocation is 865 trips in the ETAA.

The ETAA also will be closed seasonally to scallop fishing from September 1 - October 31, 2007, effective through 2012. This 2-month closure is intended to provide protection for threatened and endangered sea turtles that may interact with the scallop fishery in the Mid-Atlantic and to reduce small scallop and finfish discard mortality. Similarly, the Delmarva Area is closed to protect small scallops in that area. The projected opening date is 2010.

### **5.3.2 Measures to Control Capacity and Mortality in the General Category Scallop Fishery**

#### **Limited Entry**

As an effort control tool, limited entry is generally viewed as a potential benefit to protected species in New England fisheries management. Under No Action, an unlimited number of participants could harvest sea scallops with an open access permit without meaningful controls on fishing mortality and any associated bycatch. In the limited entry scenarios under consideration there are three qualification criteria alternatives, three qualification time periods and two ways to calculate an allocation amount.

As indicated by the economic analyses in Section ???, the qualification criteria alternatives will have significant impacts on the number of general category vessels that may qualify for limited access. Of the alternatives that require a vessel to have a specific amount of landings, the number of qualifying vessels increases with the smaller the poundage criteria or a longer qualification time period. The 100 pound criteria combined with the 11 year qualification period will result in the maximum number of participants, 705, qualifying for limited access. The 5,000 pound criteria combined with the two-year qualification period will qualify the least number of vessels, 143. Total scallop landings for qualifiers based on their best year of landings, however, do not increase significantly even if the 11 year qualifying period is used because of relatively low scallop landings by general category vessels prior to the 2000 fishing year. According to the economic impact analyses provided, the poundage criteria has a larger effect on the number of qualifiers compared to the time periods under consideration.

By controlling fishing effort, any of the qualification criteria will likely reduce impacts on protected resources by potentially reducing risks of encounters with scallop gear, in comparison to no action. The alternative with the highest poundage may confer more optimal benefits because it qualifies the least number of vessels. Ultimately, however it is the amount of fishing effort occurring in areas and during seasons when turtles are most abundant that most affects increases or decreases in risks to sea turtles and not exclusively the number of vessels participating in the fishery. The issue is complicated by the issues discussed in Murray (2004). Bycatch is influenced by water temperature, which fluctuates from year to year, while depth was not found to be a significant predictor of bycatch in the analyses conducted for the same report. And although there was discussion of the potential for hot spots to occur at certain depths that may or may not overlay with the fishery, the same publication noted the need for more sampling in shallower depth ranges to further explore this idea.

### **Determination of Qualification Amount**

Taking into consideration the above statements, the impacts of the alternatives to determine the qualification amount relative to NO Action will similarly have potentially positive impacts on protected species by defining and limiting each vessel's allocation of scallops in terms of a percent of the total general category allocation. Determining the differences in the impacts between the specific alternatives as well as the 50,000 cap is not possible given the information currently available on sea turtle bycatch.

### **Allocation of Access for Qualifiers**

In general, the impacts on protected species resulting from the various allocation alternatives are not likely to be significantly different based on similar levels of allowed scallop harvest. Some effort increases, and consequently potentially negative impacts on protected species could occur, however, if access is granted in trips and not in pounds. This might be true if some general category vessels that may have historically landed an incidental level of scallops (less than 400 pounds) rather than trips close to the possession limit (See Section 5.1.1.2.4, Impacts of allocation alternatives on the scallop resource). Hard TAC alternatives could also result in either potentially positive or negative impacts if effort increases/derby effects occur at the start of a fishing year or season. The outcome changes depending on the alternative selected for the start of the fishing year and the overlap of the fishery during the period and area when sea turtles are most abundant --- May through November in the Mid-Atlantic.

### **Limited Entry Permit Provisions**

Measures to govern activities such as vessel sales, limited access permit transfers, permit-splitting, and changes to a vessel's size would apply to all general category permits that qualify for limited access if such a program is adopted. With the exception of vessel upgrade restrictions, in which a vessel might increase fishing power and the possibility in which one vessel could qualify two limited access general category permits, all measures relate to efficiency and consolidation and would not likely result in increases in fishing effort. A possibility also exists that the two exceptions also may not increase effort, but like the other measures, could enhance efficiency by actually decreasing overall fishing time for boats that, for example, take advantage of the upgrade provision. Few measurable impacts to potentially affected turtle species are likely to result should these measures be adopted.

### **Measures to reduce incentive for limited entry qualifiers to fish for scallops with trawl gear**

Because scallop trawl gear is believed to have greater impacts on scallop mortality, several alternatives reduce the incentive for qualifying vessels to target scallops with trawl gear. Because estimates of sea turtle bycatch in the scallop trawl fishery have become available only in 2007, it is difficult to determine if the measures being considered will affect sea turtle interactions if fishing with trawls overall declines. It should be noted, however, that the condition of turtles taken in the scallop trawl fishery (Murray 2007) indicates a greater number of animals taken alive versus those in the scallop dredge fishery which had preponderance of animals recorded as either injured or dead (Murray 2005).

### **Sectors and Harvesting Cooperatives**

A sector or harvesting cooperative system would apportion part or all of fishery resources to various industry sectors. Sectors would be formed voluntarily based on gear used, permit category, vessel size, homeport, area fished, or some other grouping. Vessels not in a sector would remain in a common pool and operate under approved Council management. Allocation of sector TACs also would be determined by the Council. If the Council approves the general framework for allowing the formation of a sector, a detailed sector operations plan would be submitted to and approved by the NMFS Regional Administrator.

Because the details of sector management will be included in the operations plan and submission will be accompanied by appropriate NEPA documents, impacts on protected resources would be evaluated by the proponents at that time and accepted by the agency with any accompanying caveats on the sector operations.

### **Interim measures for transition to limited entry**

Overall, the impacts on protected resources from both these alternatives will be positive in general, because they will limit capacity and mortality on the scallop resource. The alternative with the hard TAC option has a higher likelihood of controlling mortality up to 10% of the total projected catch, but depending on how the hard-TAC is implemented there may be impacts on protected resources. See Section 5.3.3 for a description of the expected impacts on hard TACs on protected resources. The alternative with no hard-TAC option does not have a backstop for total mortality, but the number of vessels that can participate in this fishery is reduced compared to the open access nature of the current fishery, so compared to No Action this alternative is expected to have positive impacts. Furthermore, both these alternatives would only be in place on a temporary basis, once the pool of final qualifiers is identified, then the rest of the measures adopted by Amendment 11 could be implemented, namely the allocation of a hard-TAC and allocation of that total general category TAC to qualifiers.

### **5.3.3 Hard Total Allowable Catch (Hard TAC)**

Hard catch TACs are conservation measures developed to minimize the risk of exceeding fishing mortality objectives in defined circumstances. They should not affect protected species other than, if adopted, they could result in the curtailment of activities in certain areas. Depending on season and location, the removal of effort could result in some unquantifiable benefits to sea turtles.

Other alternatives, however, may affect protected species differently. A fleetwide hard TAC without limited entry is a scenario in which short-term effort might increase and accordingly potential negative impacts to sea turtles if there is overlap an overlap with sea turtle high use areas. Without the controls of limited entry, an undetermined number of vessels could enter the fishery to compete for the TAC. A division of the TAC by quarter or trimester could remedy the potential derby situation and its possible negative impacts, but only if the overlap between turtle high use seasons and areas and scallop effort is also considered.

### **5.3.4 Establish a Northern Gulf of Maine Scallop Management Area (NGOM)**

The alternatives under consideration with respect to a distinct NGOM scallop management area are not likely to affect sea turtles in any way that is discernable from No Action. Given that scallop gear/turtle interactions have never been observed or reported for the Gulf of Maine and

that the operation of a fishery is opportunistic depending on the resource availability, the presence or absence of a management system that is separate from the overall program developed for general category vessels should result in few if any measurable impacts on sea turtles. Further, the northern limit for hard shelled species is considered northern Cape Cod. While leatherback turtles have a broader distribution, they are only seasonally present GOM waters.

### **5.3.5 Monitoring Provisions**

Whether there are additional reporting requirements through VMS or an IVR system, indirect but potentially positive benefits may result if more detailed reporting on catch, and in particular effort distribution and possibly other information, contributes to a better evaluation of the impacts of this fishery on protected and other marine resources. More timely information has clear benefits over the monthly reporting that is currently required for general category vessels.

### **5.3.6 Limited Access Fishing Under General Category Rules; Allocation of Quota to Limited Access Vessels Fishing Under General Category Rules**

An alternative is proposed that would reduce capacity and effort in the general category fishery by prohibiting limited access vessels from fishing under general category rules. Under No Action, limited access vessels may fish under general category rules when not on a scallop DAS, or after their individual DAS have been used.

An additional alternative under consideration would allow limited access fishing under general category rules if a vessel qualifies under the same criteria that will apply to a limited access general category permit. A variation would allow only occasional and part-time limited access vessels to participate in the general category fishery if they qualify under the criteria selected for general category limited access.

With the exception of the prohibition on limited access vessels in the general category fishery possibly resulting in an effort reduction that could, in turn, reduce the risk of sea turtle/scallop gear interactions, the alternatives above are likely to have few discernable impacts on protected resources. In the remaining alternatives, effort will be either removed or attributed to either the general category or limited access allocation or placed in a separate allocation. In each case, effort will be neither removed nor added but reallocated. As evidenced in Murray (2007), and with the caveat that observer coverage has been lower on general category vessels overall, interactions with sea turtles can and do occur on both general category and limited access trawl vessels fishing with the same gear during months when sea turtles are most abundant.

### **5.3.7 Allocation Between Limited Access and General Category Fisheries**

Whatever level is adopted, conservation measures to control harvest, such as a defined allocation of catch to general category scallop vessels versus a target TAC that is not accompanied by “backstop” measures to prevent the fishery from exceeding the TAC (No Action), are likely to have indirect and potentially beneficial impacts on protected species such as sea turtles. Direct limits on harvest effectively control effort and may, in turn, limit potential risks of interactions with sea turtles when overlaps with the affected species and the fishery occur. As was discussed in Section 5.3.2, however, there are few clear linear relationships between the level of effort and

interactions between the scallop fishery in general (both limited access and general category vessels) and sea turtles.

#### *Allocation of yellowtail flounder bycatch TAC in access areas*

Allocation of the yellowtail flounder TAC would divide the yellowtail bycatch between the limited access and general category fisheries at a defined level. This management tool prevents one or the other fishery from taking the entire TAC and forcing the closure of the scallop fishery. Since it does not affect the overall TAC itself, impacts of the measure on sea turtles will likely not be measurable nor very different from No Action. The yellowtail flounder TACs also are applicable only to the Georges Bank fishery, an area in which sea turtles are rarely encountered.

### **5.3.8 Incidental Catch**

The allowance of an incidental catch (not sale) of up to 40 pounds is not expected to affect scallop fishing effort and as such will not likely have any impacts on sea turtles or their potential interactions with the fishery. Furthermore, the alternative to establish a new incidental scallop permit is not expected to have negative impacts because the number of vessels that would be permitted to fish under this permit would be limited.

### **5.3.9 Measures to allow more timely integration of recent data**

Possible changes to the start of the fishing year may affect protected species, depending on when the fishery begins and which allocation access alternative is adopted (IFQ versus a hard-TAC without limited entry). While the change would improve the integration of fishery data into the management process, a fleet-wide hard TAC could increase the likelihood of derby fishing at the start of the fishing year. This outcome may have potentially negative results in the Mid-Atlantic if the fishing year begins on May 1 or August 1 --- a period when turtles are generally most abundant throughout the area. No Action would have a lower likelihood of potentially negative impacts, as would the issuance of general category permits on March 1. While turtles may be present in the Mid-Atlantic and even in areas subject to heavy fishing effort, the majority of animals are generally still south of the Mid-Atlantic in warmer waters in late winter.

### **5.3.10 Other Measures**

#### **Trawl Sweep Restriction**

The trawl sweep measure would retain the 144-foot restriction for scallop vessels but would clarify that vessels fishing on monkfish or multispecies DAS would not be bound by the requirement. This would not trigger any change to the impacts of scallop management measures or the fishery on sea turtles but may have impacts that are unknown at this time if effort in other fisheries is affected.

#### **Fifty Bushel Possession Limit East of the Demarcation Line**

When adopted few if any impacts were attributable to the 50 bushel measure. The proposed change, a modification that addresses operational aspects of the fishery, would promote enforceability but is not likely affect sea turtles in any measurable way, although slight increases in fishing effort are possible.

## **5.4 ECONOMIC IMPACTS**

### **5.4.1 Overview of economic impacts**

This section summarizes the economic analyses of the alternatives proposed by the Council through Amendment 11 to the Sea Scallop FMP. The regulatory guidelines require that the economic impacts of the proposed options be compared relative to the impacts likely to occur if “no action” is taken. No action here refers to continuation the general category fishery as an open access fishery subject to the 400 lb. trip limit. Status quo refers to the management of the scallop fishery through framework action so as to achieve the biological targets set by Scallop FMP.

This necessitates an adjustment in either limited access allocations and/or in possession limit for general category vessels when the fishing mortality exceeds target levels. These scenarios and their consequences are discussed in Section 5.4.2 below.

#### **5.4.1.1 Summary of impacts of limited entry, qualification criteria and period alternatives**

The overall economic impacts of the limited entry are expected to be positive for the sea scallop fishery compared to taking no action. Since with no action there are no limits on the number of trips a vessel could take and no limits on the number of vessels able to participate in the general category fishery, total fishing effort in this fishery could increase in response to higher scallop prices, to an increase in resource productivity, or to changes in fishing opportunities in other fisheries. As a result, scallop mortality could exceed sustainable levels, reducing the stock biomass, the future yield, and revenues from the scallop resource. This would have negative economic impacts on the consumer surplus by reducing landings and increasing prices. It would also have negative impacts on producer surplus by reducing revenues and increasing the costs of fishing per pound of scallops (due to lower LPUE). Consequently, total benefits, as measured as the sum of consumer and producer surpluses would decline under no action. Limited access, by itself, will not entirely eliminate these possible effects, but it will reduce the risks of overfishing of the scallop resource by preventing new entry to the general category fishery. Therefore, limited program will have positive economic impacts on the consumer and producer surpluses and total benefits for the nation compared to no action. It will restrict the number of participants in this fishery to vessels that meet the poundage qualification criteria within a qualification time period. As a result, limited access would prevent the profits of the qualifiers and limited access vessels from dissipating due to increase in capacity.

In addition to having a general category permit before the control date, Amendment 11 includes three qualification criteria alternatives (100 pound trip, 1,000 annual pounds, and 5,000 annual pounds), which are combined with three qualification time period alternatives (11 years, 5 years and 2 years before the control date) to determine the vessels that qualify for limited access. There is also a stand alone alternative that would qualify all vessels that had a permit during the 5-year qualification period for limited access (3562 permits), but which would allocate an individual quota only to those vessels with landings of scallops of one pound or more (677 vessels). Table 72 shows the number of qualifiers for each of these alternatives, with qualification poundage determined according to each vessel’s best year of scallop landings. The number of limited access vessels that may qualify for access to general category fishery is shown in Table 73. The impacts of these alternatives on limited access qualifiers could be summarized as follows:

- The poundage criteria have a larger affect on the number of qualifiers compared to the qualification time period. For example, reducing time period for qualification from 11 years to 5 years the number of qualified vessels from 459 vessels to 369 vessels with the 1000 lb. criteria. On the other hand, holding the qualification time period constant at 11 years, but increasing the poundage criteria to 5000 lb. would reduce the number of qualified vessels even more, to 203 general category permit holders (Table 72).
- A longer time period would result in more vessels that were not active recently to qualify for limited access. For example, only 234 vessels out of 459 qualifiers with 11 year and 1000 lb. qualification criteria participated in the fishery in 2005 fishing year. Reducing qualification period will result in smaller number of vessels that were not active in recent years to qualify for limited access (Table 72).
- The number of limited access vessels that would qualify for general category access would increase significantly to 126 vessels, 96 full-time and 30 part-time and occasional, if 1000 lb. criteria and 11 year period is selected as the period of qualification from 57 (35) vessels for 5 year (2 year) qualification period (Table 73). 11 year period include the years from 1994 to 1998, during when the scallop productivity and average LPUE was low. Some limited access vessels may have taken more general category trips to compensate for the decline in scallop landings when they fished under day-at-sea during those early years, or some of the day-at-sea trips could have been included as general category trips (See Section 5.4.16.1 for further explanation).

**Table 72. Number of qualifying general category vessels and estimated landings based on an individual allocation system and best year of landings during the specified time period.**

Time period (Up to the control date)	Qualification Criteria	Number of vessels that were active and qualify for limited access	Average Best year landings per vessel (lb.)	Total best year scallop landings (lb)	2005 fish year	
					Number of active General category vessels	General category revenue as % of total revenue
11 years 4777 unique general category permits, 924 active vessels	100 lb. Criteria	705	6,084	4,289,220	318	50%
	1000 lb. Criteria	459	9,124	4,187,916	234	60%
	5000 lb. Criteria	203	17,757	3,604,671	131	80%
5 years 3562 unique general category permits, 677 active vessels	Stand-alone ITQ	677	5,872	3,975,344	344	48%
	100 lb. Criteria	548	7,232	3,963,136	301	51%
	1000 lb. Criteria	369	10,524	3,883,356	224	61%
2 years 2876 unique general category permits, 482 active vessels	5000 lb. Criteria	188	18,475	3,473,300	130	80%
	100 lb. Criteria	399	7,443	2,969,757	270	53%
	1000 lb. Criteria	277	10,518	2,913,486	201	62%
	5000 lb. Criteria	143	18,245	2,609,035	114	81%

**Table 73. Number of qualifying limited access vessels and estimated landings based on an individual allocation system and best year of landings during the specified time period (total of full-time, part-time and occasional)**

Time period (Up to the control date)	Qualification Criteria	Number of vessels that were active and qualify for limited access		Average Best year landings per vessel (lb.)	Total best year scallop landings (lb)	General category scallop revenue as a % of total revenue (FT, 2005 fishing year)	General category scallop revenue as a % of total revenue (PT+OC, 2005 FY)
		Full- time	PT and OC				
11 years 367 active vessels with limited access permit	100 lb. Criteria	267	78	2,427	705,519	4%	18%
	1000 lb. Criteria	96	30	5,665	601,745	6%	20%
	5000 lb. Criteria	22	7	17,004	393,458	10%	22%
5 years 231 active vessels with limited access permit	Stand-alone ITQ	174	57	9,303	455,528	3%	11%
	100 lb. Criteria	144	49	2,973	453,204	3%	11%
	1000 lb. Criteria	38	19	7,707	393,286	5%	17%
	5000 lb. Criteria	12	7	17,862	310,442	9%	22%
2 years 131 active vessels with limited access permit	100 lb. Criteria	88	23	4,224	305,561	3%	13%
	1000 lb. Criteria	26	9	10,508	269,725	3%	20%
	5000 lb. Criteria	7	5	19,341	216,214	8%	22%

The combined impacts of the qualification alternatives and time-period on the general category permit holders are examined in Section 5.4.3 and the impacts of alternatives for limited access vessels are analyzed in Section 5.4.15. An analysis of general category qualifiers by primary state of landing is provided in Section 5.4.4.

#### **5.4.1.2 Summary of impacts of general category TAC combined with access and allocation alternatives**

Amendment 11 includes alternatives that would control scallop fishing mortality in the general category fishery by allocating a separate TAC for this sector. In general, the economic impacts of the TAC are expected to be positive for the sea scallop fishery as a whole compared to taking no action and status quo management for the following reasons:

- In the absence of measures that control overall scallop landings by general category vessels, it is still possible for the fishing mortality to increase beyond the target levels if the vessels that qualify for limited access increase the number of trips targeting scallops. This could have negative impacts on both the limited access and the general category vessels as scallop catch per day-at-sea declines and fishing costs per pound of scallops increase. The increase in costs and landings would reduce producer surplus for the scallop fishery. The decline in landings combined with an increase in prices could result in a lower consumer surplus. Therefore, no action could have negative impacts on the total national benefits, which is measured as sum of producer and consumer surpluses. If scallop harvest is allocated between limited access and general category vessels by a separate TAC for general category, the fishing mortality due to general category fishery will be prevented from exceeding the sustainable levels. Therefore, TAC allocation combined with limited access will have positive economic impacts both on the consumer and producer surpluses and total benefits for the nation compared to no action. (See Section 5.4.2, Section 5.4.3, Section 5.4.5, and Section 5.4.17 for further analysis.
- This will reduce the negative distributional impacts of overfishing due to general category fishery, since under status quo, any increase in overfishing of the scallop resource will need to be corrected through framework action. For example, the Council

could reduce the DAS allocations for limited access vessels, negatively impacting the group of vessels that has been subject to strict effort controls since 1994. The Council could also reduce the possession limit for all general category vessels, affecting negatively most of the general category vessels that participate in the fishery and depend on scallops as a significant source of income.

If the general category fishery is managed by hard TAC, however, without limited access and/or without allocation of quota to individual vessels (either an individual quota or allocations to tiers), it could lead to a race to fish and market gluts, which could have negative economic impacts especially on smaller vessels that fish seasonally and cannot access all areas due to the constraints on their capacity. Fleet-wide hard TAC by trimester (3.1.2.4.7, Option B) or by quarter (3.1.2.4.7, Option A) will spread out the fishing season and reduce negative impacts from derby fishing and market gluts to some extent.

TAC management combined with limited entry and allocation for individual vessels (in terms of IQ in pounds or trips) will prevent derby-style fishing and the negative economic impacts associated with it. According to the individual allocation system (3.1.2.4.1), each vessel's share will be determined by determining their historical activity during a qualification time period. A vessel's contribution to historic landings can be calculated based on its best year or the best year indexed for years active in the scallop fishery.

These alternatives will determine the individual share of each vessel in the overall TAC for the general category fleet, which will be used to calculate individual allocations per vessel either in terms of pounds (Option A) or trips (Option B) corresponding to each TAC level. Trip allocation has an advantage over quota allocation in terms of monitoring and enforcement since with VMS it is easier to determine the number of trips per vessel than to monitor landings per trip. On the other hand, if some vessels land less than 400 lb. of scallops from their trips, total general category scallop landings could fall below the general category TAC, resulting in reduced revenue for the general category fleet. Trip allocation could also provide incentive for vessels spend more time at sea to increase their trip landings to the possession limit. This could increase trip costs and could also have some safety impacts if the trip is extended, for example, during difficult weather conditions.

The alternative with two permit categories would qualify any vessel that had landings of 5,000 lb. or more scallops for the full-time permit with a possession limit of 400 pounds, while any vessels landed less than 5000 lb. will receive part-time permit and would be restricted to a 200 pound possession limit (3.1.2.4.2). The three-tiered allocation alternative would allocate equal pounds to each vessel within each tier (3.1.2.4.3). Stand alone ITQ alternative (3.1.2.4.4) would allocate an individual quota only to those vessels with landings of scallops of one pound or more and permit trading or leasing of quo among all qualifiers, that is all vessels that had a permit during the 5-year qualification period for limited access. The economic impacts of these alternatives are analyzed in Section 5.4.8 below.

According to the alternative proposed by this amendment (3.1.7.2), the amount of TAC that will be allocated to the general category fishery will be based on a certain percentage of total available scallop harvest from the fishery, ranging from 2.5% to 11%. If this alternative were not

selected, the TAC could be based on historical landings of the general category fishery or some other amount determined by the Council in future actions.

The economic impacts of the TAC alternatives on general category and limited access vessels are examined in detail in Section 5.4.17 for scallop harvest levels ranging from 40 million lb. to 70 million lb. The biological simulations for the next 11 years indicated that sustainable scallop yield could vary between 56 million lb. (for the 2008 fishing year) to 68 million lb. (for the 2015 fishing year, Table 96), but levels less than these amounts (40 to 50 million lb.) were also included in this analysis to evaluate impacts in less favorable scallop resource conditions. The economic impacts will vary according to the level of general category TAC as follows:

- TAC management will have distributional impacts on general category and limited access vessels. Landings and revenues for each percent of general category TAC are compared in Table 74 to the upper bound of 11%, which is close to the status quo level. (According to Framework 18, the allocations for limited access vessels were determined by assuming that general category landings will constitute 11% of total scallop landings in 2006 and about 10% of total scallop landings in the 2007 fishing year.)
- If the general category is allocated at 2.5% of total scallop harvest, scallop landings and revenues for this fishery as whole and also for an average vessel could decline by 77% , whereas that of the limited access fishery could increase by 10% compared to an 11% TAC allocation for the general category fishery. In other words, a lower TAC for general category will have larger negative proportional impacts on general category vessels due to the lower volume of scallop landings by the general category vessels compared to landings by the limited access fishery. A higher percentage TAC will reduce the negative impacts on general category vessels, but will lower the positive economic impacts on the limited access vessels compared to status quo levels of 10% to 11%.

**Table 74. Impacts of allocation on landings and revenues of the general category and limited access fleets**

Total Scallop TAC (Million lb.)	GC TAC as a % of Total TAC	General category TAC (lb.)	Limited access landings, (lb.)	Estimated DAS-used per limited access vessel (1)	% Change in landings and revenue compared to 11% for GC TAC	
					General category	Limited access
40	2.50%	1.0	39.0	51	-77%	10%
40	5%	2.0	38.0	49	-55%	7%
40	7%	2.8	37.2	48	-36%	4%
40	10%	4.0	36.0	47	-9%	1%
40	11%	4.4	35.6	46	0%	0%
50	2.50%	1.3	48.8	63	-77%	10%
50	5%	2.5	47.5	62	-55%	7%
50	7%	3.5	46.5	61	-36%	4%
50	10%	5.0	45.0	59	-9%	1%
50	11%	5.5	44.5	58	0%	0%
60	2.50%	1.5	58.5	76	-77%	10%
60	5%	3.0	57.0	74	-55%	7%
60	7%	4.2	55.8	73	-36%	4%
60	10%	6.0	54.0	70	-9%	1%
60	11%	6.6	53.4	70	0%	0%
70	2.50%	1.8	68.3	89	-77%	10%
70	5%	3.5	66.5	87	-55%	7%
70	7%	4.9	65.1	85	-36%	4%
70	10%	7.0	63.0	82	-9%	1%
70	11%	7.7	62.3	81	0%	0%

(1) Assuming 334 full-time equivalent vessels and LPUE of 2,300 pounds per day-at-sea (see Section 5.4.17.4).

- TAC management could have significant negative economic impacts on general category vessels (compared to status quo) to the extent that it is different from the historical levels and/or from the level of scallop landings in recent years. At a total scallop harvest of 50 million lb., for example, a general category TAC less than 6.5% will reduce the total general category landings below the levels in 2004 fishing year (3.2 million lb.) and will reduce the general category landings by one-half compared to the level of landings in 2005 fishing year (7.4 million lb.).
- The impacts of a TAC for general category fishery will not be uniform among the qualifying vessels, however, and will vary according to the qualification criteria and qualification period alternatives. Qualification of a smaller number of vessels for general category access will reduce the negative impacts of a low TAC on vessels that have a higher dependence on general category fishery as a source of income. Clearly, the number of qualifiers will decline and average allocation per vessel will increase as qualification poundage criteria increases and length of qualification period shortens (Table 75). On the other hand, higher poundage and shorter qualification period alternatives will increase the negative impacts on vessels that will have no access to the general category fishery in the future (see discussion below in 5.4.1.3 ).
- The allocations for individual vessels qualify for limited access will vary from the averages shown in Table 75. General category vessels are shown in three groups in Table 76 according to their best year scallops landings during the qualification period. These groups also correspond to three tiers proposed by alternative 3.1.2.4.3, with tier-3

including vessels with 20,000 lb. or more landings and tier-1 those with scallop landings of less than 5000 lb. Similarly, tier-3 includes vessels with full-time permits and tiers 1 and 2 include vessels with part-time permits as proposed by alternative 3.1.2.4.2.

Average allocation for each group is estimated for a total scallop harvest of 50 million lb. at varying percentage TAC for general category fishery.

- A general category TAC lower than the present levels of general category landings will reduce the allocations per vessel in the same proportion for each group of qualifiers. The absolute impacts as measured in terms of pounds of scallops will be larger, however, for vessels that land scallops in larger volumes and have a higher dependence on scallop fishing for their income. For example, for 62 vessels with historical landings of 20,000 or more scallops, an 11% TAC will result in an average allocation of 48,688 lb. with 1000 lb. criteria and 5-year qualification period. If the percentage TAC is set at 2.5%, however, this group of vessels would receive about 11,508 lb., a decline of more than 37,000 lb. Because scallop landings per vessel from best year averaged about 35,000 lb. for this group, a percentage TAC of less than 7% will result in an allocation lower than this average, except with 5000 lb. and 5 year criteria or with 2 year qualification period. On the other hand, the 181 vessels that landed less than 5000 lb. during the same period will have their allocations reduced by a smaller amount, by about 3,400 lb. if a 2.5 % TAC is applied (1,096 lb.) instead of an 11% TAC (4,489 lb.).
- The economic impacts of these alternatives on general category vessel landings, revenues, crew incomes and boat shares are examined in Section 5.4.17.3 for harvest levels ranging from 40 million to 70 million pounds of scallops. For example, for a vessel that have a high dependence on scallop revenue and landed about 35,000 lb. pounds, an allocation of 10,000 lb. could reduce net boat shares by 98% to 114%, a 20,000 lb. allocation by 59% to 68 % to depending on the scallop prices (Table 177).
- The impacts of general category TAC on limited access revenues, crew income and vessel shares are analyzed in Section 5.4.17.4. A 2.5% TAC for general category is estimated to increase DAS-used per limited access vessel by 5 days compared to 11% TAC if the total scallop harvest was about 40 to 50 million lb. This increase is estimated generate about 15% to 19% increase in net boat share depending on LPUE and scallop price. A 5% TAC is estimated to increase boat shares by 11% to 13%, and a 7% TAC is estimated to increase boat shares by 7% to 9%, compared to an 11% TAC (Table 180 and Table 181).

**Table 75. Average scallop pounds per vessel by percentage of scallop harvest allocated to general category fishery**

Total scallop harvest (Million lb.)	General category TAC as a % of total harvest	GC TAC (Mil. lb.)	11 Year period			5 year period				2 year period		
			100 lb. Criteria (705 vessels)	1000 lb. Criteria (459 vessels)	5000 lb. Criteria (203 vessels)	Stand alone-ITQ (677 vessels)	100 lb. criteria (548 vessels)	1000 lb. Criteria (369 vessels)	5000 lb. Criteria (188 vessels)	100 lb. Criteria (399 vessels)	1000 lb. Criteria (277 vessels)	5000 lb. Criteria (143 vessels)
40	2.50%	1.0	1,418	2,179	4,926	1,477	1,825	2,710	5,319	2,506	3,610	6,993
40	5%	2.0	2,837	4,357	9,852	2,954	3,650	5,420	10,638	5,013	7,220	13,986
40	7%	2.8	3,972	6,100	13,793	4,136	5,109	7,588	14,894	7,018	10,108	19,580
40	10%	4.0	5,674	8,715	19,704	5,908	7,299	10,840	21,277	10,025	14,440	27,972
40	11%	4.4	6,241	9,586	21,675	6,499	8,029	11,924	23,404	11,028	15,884	30,769
50	2.50%	1.3	1,773	2,723	6,158	1,846	2,281	3,388	6,649	3,133	4,513	8,741
50	5%	2.5	3,546	5,447	12,315	3,693	4,562	6,775	13,298	6,266	9,025	17,483
50	7%	3.5	4,965	7,625	17,241	5,170	6,387	9,485	18,617	8,772	12,635	24,476
50	10%	5.0	7,092	10,893	24,631	7,386	9,124	13,550	26,596	12,531	18,051	34,965
50	11%	5.5	7,801	11,983	27,094	8,124	10,036	14,905	29,255	13,784	19,856	38,462
60	2.50%	1.5	2,128	3,268	7,389	2,216	2,737	4,065	7,979	3,759	5,415	10,490
60	5%	3.0	4,255	6,536	14,778	4,431	5,474	8,130	15,957	7,519	10,830	20,979
60	7%	4.2	5,957	9,150	20,690	6,204	7,664	11,382	22,340	10,526	15,162	29,371
60	10%	6.0	8,511	13,072	29,557	8,863	10,949	16,260	31,915	15,038	21,661	41,958
60	11%	6.6	9,362	14,379	32,512	9,749	12,044	17,886	35,106	16,541	23,827	46,154
70	2.50%	1.8	2,482	3,813	8,621	2,585	3,193	4,743	9,309	4,386	6,318	12,238
70	5%	3.5	4,965	7,625	17,241	5,170	6,387	9,485	18,617	8,772	12,635	24,476
70	7%	4.9	6,950	10,675	24,138	7,238	8,942	13,279	26,064	12,281	17,690	34,266
70	10%	7.0	9,929	15,251	34,483	10,340	12,774	18,970	37,234	17,544	25,271	48,951
70	11%	7.7	10,922	16,776	37,931	11,374	14,051	20,867	40,957	19,298	27,798	53,846

**Table 76. Distributional impacts of qualification criteria and qualification period alternatives combined with % TAC.**

Best year landings per vessel (lb)	11 Year period			5 year period				2 year period			
	100 lb. Criteria	1000 lb. Criteria	5000 lb. Criteria	Stand alone-ITQ	100 lb. criteria	1000 lb. Criteria	5000 lb. Criteria	100 lb. Criteria	1000 lb. Criteria	5000 lb. Criteria	
<b>&gt;=20,000 lb. (average pounds of scallops per vessel were about 35,000 lb.)</b>											
Number of vessels	62	62	62	62	62	62	62	44	44	44	
% share of TAC	49.7%	50.9%	59.1%	53.6%	53.8%	54.9%	61.4%	51.1%	52.0%	58.1%	
% TAC	GC TAC (Mil.lb.)	<b>Average allocation (pounds) per general category vessel at 50 million lb. scallop harvest</b>									
2.50%	1.3	10,419	10,671	12,398	11,241	11,276	11,508	12,867	15,084	15,376	17,170
5%	2.5	20,037	20,522	23,842	21,617	21,685	22,131	24,744	29,008	29,569	33,019
7%	3.5	28,052	28,730	33,379	30,264	30,360	30,983	34,641	40,612	41,396	46,226
10%	5.0	40,074	41,043	47,684	43,235	43,371	44,262	49,488	58,017	59,137	66,038
11%	5.5	44,081	45,147	52,452	47,558	47,708	48,688	54,436	63,818	65,051	72,642
<b>5000 lb. to 19,999 lb. (average pounds of scallops per vessel were over 10,000 lb.)</b>											
Number of vessels	141	141	141	126	126	126	126	99	99	99	
% share of TAC	34.3%	35.2%	40.9%	33.8%	33.9%	34.6%	38.6%	36.8%	37.5%	41.9%	
% TAC	GC TAC (Mil.lb.)	<b>Average allocation (pounds) per general category vessel at 50 million lb. scallop harvest</b>									
2.50%	1.3	3,167	3,243	3,768	3,482	3,493	3,565	3,986	4,832	4,925	5,500
5%	2.5	6,090	6,237	7,246	6,697	6,718	6,856	7,666	9,292	9,471	10,577
7%	3.5	8,526	8,732	10,145	9,376	9,405	9,599	10,732	13,009	13,260	14,807
10%	5.0	12,179	12,474	14,492	13,394	13,436	13,712	15,331	18,584	18,943	21,153
11%	5.5	13,397	13,721	15,942	14,733	14,780	15,084	16,864	20,442	20,837	23,269
<b>&lt;5000 lb. (average pounds of scallops per vessel ranged between 1,300 lb. with 100 lb. criteria to 2,300 lb. with 1000 lb. criteria)</b>											
Number of vessels	502	256	None	489	360	181	None	256	134	None	
% share of TAC	16.0%	13.9%	0.0%	12.6%	12.4%	10.6%	0.0%	12.2%	10.5%	0.0%	
% TAC	GC TAC (Mil.lb.)	<b>Average allocation (pounds) per general category vessel at 50 million lb. scallop harvest</b>									
2.50%	1.3	572	980	No allo.	465	618	1,049	No allo.	855	1,404	No allo.
5%	2.5	1,113	1,905	No allo.	904	1,202	2,041	No allo.	1,662	2,731	No allo.
7%	3.5	1,558	2,667	No allo.	1,266	1,683	2,857	No allo.	2,326	3,823	No allo.
10%	5.0	2,226	3,809	No allo.	1,809	2,404	4,081	No allo.	3,324	5,461	No allo.
11%	5.5	2,449	4,190	No allo.	1,990	2,644	4,489	No allo.	3,656	6,007	No allo.

The impacts of qualification criteria and period alternatives on the vessels that could qualify for limited access combined with the impacts for different levels of general category TAC are analyzed in Section 5.4.5. The economic impacts of the contribution factor alternatives (including capping contributions at 50,000 lb.) combined with qualification criteria, period, and impacts of TAC are provided in Section 5.4.7. The impacts of the allocation access alternatives, including individual quota, tiered permits, and hard TAC alternatives are discussed in Section 5.4.8.

#### **5.4.1.3 Summary of impacts of the qualification criteria and qualification period alternatives on recent participants in the fishery**

The impacts of qualification criteria and period alternatives will not be uniform on the following groups of vessels, grouped here for purposes of demonstration according to their permit dates and their period of activity in the general category fishery (Table 77):

- Vessels that had a permit and were active before the control date and qualify for limited access (Group 1). Limited entry, in itself, will have positive economic impacts on the qualifying vessels since there will be a smaller pool of general category vessels to share any level of TAC allocated to this fishery. Limited access will protect the profits of these vessels from declining due to new entries especially during favorable times when scallop productivity and/or prices are high. Higher poundage criteria will qualify a larger proportion of vessels that have a higher dependence on scallop revenue compared to lower poundage alternatives. On the other hand, 100 lb. criteria combined with longer qualification period will distribute benefits of limited access among a larger number of vessels.

There will also be distributional impacts among the qualified vessels according to whether they participated in the general category fishery in the recent years and derived revenue from scallops. A longer qualification period will provide access to more vessels that were not active in the fishery in recent years. For example, only 318 out of 705 vessels that qualify with a 100 lb. criteria and an 11-year period participated in the general category fishery in 2005, landing 3.8 million lb. of scallops. Allocation of quota to all 705 vessels will reduce the share of qualifiers that were active in the recent years, and will have negative economic impacts on these vessels if level of TAC allocated to the general category is lower than the recent levels. Higher poundage criteria or a shorter time period will reduce the number of qualifiers that were not active in the recent years and reduce the negative impacts on active qualifiers.

- Vessels that had a permit and were active before the control date but do not qualify for limited access due to the poundage criteria (Group 2): The number of these vessels will increase as the poundage criteria increases and the length of the qualification period shortens. The majority of these vessels was not active during recent years and therefore will not face a reduction in current revenue from scallops. For example, 219 vessels do not qualify for limited access because they did not land 100 lb. from any one trip during the 11-year qualification period. Only 46 out of these 219 vessels landed scallops in the 2005 fishing year. Higher poundage criteria will have impacts on more vessels in this

group. For example, with 5-year qualification period and 5000 lb. criteria, 214 out of 489 vessels would not qualify for limited access landed 1.2 million pounds and earned \$9.1 million revenue from scallops. On the average, this the vessels in Group 2 derived a lower percentage of revenue, less than 30%, from scallops in 2005 compared to vessels that qualify for limited entry (50% or above).

- Vessels that had a permit before the control date but were not active until after the control date and thus do not qualify for limited access (Group 3): All of the qualification criteria alternatives will have negative impacts on these vessels since they will have no access to the general category fishery. The number of such vessels that were active in 2005 varies from 152 vessels for an 11-year qualification period to 210 vessels for a 2-year qualification period. The smaller the period of qualification, the more vessels that will be negatively impacted. For example, 210 vessels will disqualify for limited entry with the 2-year qualification period because they did not land any scallops in the 2003 and 2004 fishing years. These same vessels landed 2.1 million lb. of scallops and earned \$16.1 million revenue from scallops in the 2005 fishing year. It seems that these vessels derived over 50% of their revenue from scallops.
- Vessels that did not have a permit before the control date and thus do not qualify for limited access but were active during the recent years (Group 4): Control date criteria will have adverse economic impacts on 81 vessels that did not have a permit before the control date and were active in the fishery in the 2005 fishing year. These 81 vessels landed 1.4 million pounds of scallops in 2005 and earned \$11.2 million from scallop fishing.

**Table 77. Impacts by qualification criteria and time period alternatives compared to the recent participation in the fishery**

Time Period	Qual Pound	Qualify	Vessel Group	The number of vessels active before the control date	2005 Fishing year					
					Number of active vessels	Scallop Revenue as a % of Total Revenue	Average scallop revenue per vessel (\$)	Average Revenue from other species per vessel	Average total revenue per vessel (\$)	Total scallop revenue (\$)
<b>General category vessels that had a permit before the control date</b>										
11 Years	Not active	NO	Group3	0	152	62%	86,069	133,974	220,043	13,082,434
	100	NO	Group2	219	46	22%	38,431	336,142	374,573	1,767,825
		YES	Group1	705	318	50%	91,806	209,199	301,005	29,194,439
	1000	NO	Group2	465	130	24%	41,490	347,717	389,207	5,393,692
		YES	Group1	459	234	60%	109,267	157,199	266,467	25,568,572
	5000	NO	Group2	721	233	28%	42,152	312,814	354,966	9,821,372
		YES	Group1	203	131	80%	161,381	69,482	230,863	21,140,892
	5 years	Not active	NO	Group3	0	172	58%	81,021	148,091	229,112
Stand alone		YES	Group1	677	344	48%	87,526	223,489	311,015	30,109,062
100		NO	Group2	129	43	24%	37,044	288,418	325,462	1,592,874
		YES	Group1	548	301	51%	94,738	214,213	308,952	28,516,188
1000		NO	Group2	308	120	23%	39,283	345,405	384,688	4,713,964
		YES	Group1	369	224	61%	113,371	158,177	271,548	25,395,098
5000		NO	Group2	489	214	29%	42,581	316,778	359,359	9,112,295
		YES	Group1	188	130	80%	161,514	69,921	231,435	20,996,767
2 Years	Not active	NO	Group3	0	210	54%	77,154	177,612	254,766	16,202,289
	100	NO	Group2	83	36	24%	34,371	244,157	278,528	1,237,369
		YES	Group1	399	270	53%	98,537	208,384	306,921	26,605,040
	1000	NO	Group2	205	105	26%	42,961	312,458	355,419	4,510,888
		YES	Group1	277	201	62%	116,077	160,424	276,501	23,331,521
	5000	NO	Group2	339	192	31%	44,868	297,568	342,436	8,614,703
		YES	Group1	143	114	81%	168,664	69,476	238,140	19,227,706
	<b>General category vessels that had a permit only after the control date</b>									
Do not qualify			Group4	0	81	87%	139,066	13,772	152,838	11,264,313

Section 5.4.6 provides an analysis of economic impacts on the vessels that participated in the general category fishery during recent years.

### 5.4.2 The impacts of no action and status quo management

Under no action the general category fishery would remain an open access fishery subject to the 400 lb. trip limit. Since there are no limits on the number of trips a vessel could take or no limits on the number of vessels to participate in the general category fishery, total fishing effort could increase in response to higher prices and/or increase in resource productivity. This has been the case during the last six years, as the number vessels participated in the general category fishery increased steadily from 204 in 2000 to 603 in 2005 fishing year (Table 41) and the general category landings increased from 1.09% in 2000 to 14.09% of the total scallop landings in 2005 fishing year. With the present regulations, there is no guarantee that the general category fishing

effort and scallop fishing mortality from this fishery will not continue to increase in the future as it has been in the past. For example, if an additional 400 new vessels entered the general category fishery in the next five to six years and total number active general category vessels increased to 1000 vessels landing an average of 10,000 lb. per year as it has been during the last couple of years, total landings by this fishery could exceed 10 million lb. of scallops. It is not possible to predict accurately the potential increase or decrease in effort and scallop landings by general category fishery since that would depend on many factors such as scallop prices, costs, relative earning from other fisheries and productivity of the scallop resource. Potentially, it is always possible, however, for the new entry into the general category to accelerate, and general category scallop landings to grow excessively. If there is no action, that is, there are no new regulations to prevent an increase in fishing effort by the general category fishery, there will always be a potential risk for the scallop mortality to increase beyond sustainable levels and for the scallop biomass to decline due to overfishing. If that happens, there is no question that the future yield and revenues from the scallop resource would decline, negatively affecting the vessels both with general category and/or limited access scallop permits. Under the “no action” scenario, impacts on the consumer benefits may also be negative due to reduced scallop landings in the future, coupled with possibly higher scallop prices. Similarly, producer benefits would decline over the long-term due to lower landings and revenues and higher fishing costs caused by the decline in the productivity of the scallop resource, measured by LPUE (landings per unit effort).

However, under the status quo management, any short term increase in overfishing of the scallop resource will need to be corrected by framework action in accordance with the Sea Scallop FMP regulations. If there is an increase in scallop fishing mortality due to an increase in general category effort, the Council could adopt stringent regulations to reduce overfishing and achieve target mortality. For example, the DAS allocations for the limited access vessels could be reduced, negatively impacting the group of vessels that has been subject to strict effort controls since 1994. In fact, in Framework 18, DAS allocations for the limited access vessels were determined by assuming that general category landings will reach 11% of total scallop harvest in 2006 and 10% of the harvest in 2006. According to the dealer data for fishing years 2005 and 2006, however, actual landings by general category fishery were above these levels, with 14.09% of total landings in 2005 and 12.18% of total scallop landings in 2006. Under status quo, the DAS allocations for limited access vessels could be reduced in the future frameworks to adjust for this unexpected increase in general category landings. Such an action would undoubtedly redistribute income from the limited access vessels to the vessels with general category permits. The Council could also reduce the possession limit for all general category trips, affecting negatively all the general category vessels participate in the fishery and depend on scallops as a significant source of income.

#### **5.4.3 The impacts of limited access, the qualification criteria and time period alternatives on general category permit holders and on the number of vessels that qualify for limited access**

The overall economic impacts of the limited entry are expected to be positive for the sea scallop fishery compared to taking no action. . Overall, short-term and long-term economic impacts on consumer and producer surpluses and total economic benefits are analyzed qualitatively. This is because biological projections are done by assuming that fishing mortality will be kept at target

levels and that limited access allocations will be determined by removing estimated general category landings from total scallop harvest. Section 5.4.17.2 examines, however, the distributional impacts of a TAC allocation on scallop revenues, costs and producer surplus for both the general category and limited access fisheries. If it is assumed that there will be no significant decline in total scallop biomass and yield due to status quo policy of adjusting limited access day-at-sea allocations to counteract an increase in general category effort, total scallop landings and prices would not be significantly different status quo compared to the allocation of TAC as proposed with this Amendment. Since with no action there are no limits on the number of trips a vessel could take and no limits on the number of vessels able to participate in the general category fishery, total fishing effort in this fishery could increase in response to higher scallop prices, to an increase in resource productivity, or to changes in fishing opportunities in other fisheries. As a result, scallop mortality could exceed sustainable levels, reducing the stock biomass, the future yield, and revenues from the scallop resource. This would have negative economic impacts on the consumer surplus by reducing landings and increasing prices. It would also have negative impacts on producer surplus by reducing revenues and increasing the costs of fishing per pound of scallops (due to lower LPUE). Consequently, total benefits, as measured as the sum of consumer and producer surpluses would decline under no action both in the short- and the long-term. Limited access, by itself, will not entirely eliminate these possible effects, but it will reduce the risks of overfishing of the scallop resource by preventing new entry to the general category fishery and by restricting the number of participants in this fishery to vessels that meet the poundage qualification criteria within a qualification time period. As a result, consumer and producer surpluses and total economic benefits are expected to be positive with limited access compared to no action levels. Under the status quo management, however, an increase in general category effort could result in a decline in the allocations, revenues and profits for limited access vessels as examined in Section 5.4.17.

The distributional economic impacts of limited access will not be uniform since some vessels will be prevented from access to the general category fishery in the future. This section provides an analysis of the control date, qualification time period and qualification poundage criteria alternatives on the general category permit holders (both the number of permit holders that qualify and do not qualify for limited access). The economic impacts of these alternatives on the active participants of the general category scallop fishery are discussed in Section 5.4.6 relative to the recent activity of these vessels. In Section 5.4.5 these impacts are analyzed in combination with the impacts of TAC management.

Table 78 shows the number of unique general category permits issued before the control date (Nov.1, 2004) corresponding to the three qualification periods as well the permits issued for the first time after the control date. The control date requirement will affect many vessels that had a general category permit before the control date depending on the qualification time period and the qualification criteria alternatives. There were over 4777 unique vessels that had a general category permit in one or more years during the 11 years from 1994 to the 2004 fishing year up to the control date. The number of potential general category permits that may qualify for limited access will vary with the qualification time period, however. For example, the number of general category permit holders that had a permit before the control date would decline to 3562 vessels for the 5 year qualification period (from 2003 fishing year to 2004 up to the control date) was implemented and to 2876 permits for the 2 year qualification period (from 2003 fishing year to 2004 up to the control date).

The control date requirement will also impact those vessels that had a general category permit for the first time after the control date. There were 699 permit holders that obtained a general category permit for the first time on or after the control date (Nov.1, 2004) as of September 2006. This number could increase if more new general category permits are obtained in 2006 and 2007 application years. None of these vessels will qualify for limited access according to the control date criteria. Since the majority of these general category permit holders, i.e., 580 vessels, never participated in the general category fishery, the control date requirement will not have any impact on the current income of these vessels, as will be discussed further below in Section 5.4.6. All of these vessels will incur a loss in future potential income, however, since they will not be able to participate in general category fishery in the future unless they buy access general category permit from a vessel that qualify for limited access. The control date criteria will have negative economic impacts, however, on the 119 vessels that participated in the general category fishery during the recent years as will be discussed in the next section.

**Table 78. Unique number of general category permits and active vessels by various periods of qualification**

Period	Unique number of general category permits	Number of active general category vessels (landed 1lb. or more scallops)	Number of vessels that did not land any scallops
<b>General category permits obtained before the control date</b>			
11 year qualification period: 1999 - 2004 (1)	4777	924	3853
5 year qualification period: 2000 - 2004 (1)	3562	677	2885
2 year qualification period: 2003 - 2004 (1)	2876	482	2394
<b>General category permits issued for the first time on or after the control date</b>			
Total of 2004-06	699	119	580
New permits in 2004 AP year (2)	210	NA	
New permits in 2005 AP year (3)	373 (109 VMS and 264 No-VMS permits)	81	
New permits in 2006 AP year (4)	116 (39 VMS and 77 No-VMS)	88	

**NOTES:**

- (1) Includes 2484 general category permits obtained during 2004 application year before the control date.
- (2) 28 of the 210 vessels did not renew their permits in the subsequent years.
- (3) This number shows the new additional permits issued in 2005, i.e., the number of general category permits that were issued for the first time in 2005. 555 out of the 2873 vessels that obtained a general category permit in 2005 application year did not have a permit before the control date. 182 of these obtained their permits, however, for the first time in 2004 after the control date, and 373 vessels obtained general category permit for the first time in 2005 application year. Only 81 vessels that had obtained a permit after the control date landed scallops in 2005 fishing year.
- (4) This number shows the new additional permits issued in 2006, i.e., the number of general category permits that were issued for the first time in 2006. Although there were 499 of the general category permits issued in 2006 application year were obtained by vessels that did not have a general category permit before the control date, 383 of these permits were obtained in 2004 and 2005 application years after the control date, and 116 new general category permits were issued for the first time in 2006. Only 88 vessels that had obtained a permit after the control date, including those obtained their permit in 2004 and 2005 application years, landed scallops in 2006 fishing year (up to Jan.2007).

The qualification criteria alternatives will have significant impacts on the number of general category vessels that may qualify for limited access. These alternatives require that a vessel have a record of a specific amount of scallop landings either from a trip (100-lb. criteria) or annually (1000 lb. or 5000 lb. criteria) in any fishing year during the qualification time period in order to qualify for limited access. It is evident from Table 78 (the last column) that the number of general category vessels that landed some amount of scallops constituted a small subset of vessels that had a general category permit. For example, even if every vessel that landed one pound of scallops qualified for limited access, the number of qualifiers will decline from 4777 (2876) permit holders to 924 (482) vessels under the 11 years (2 years) qualification period. The actual number of vessels that would qualify for limited access will be smaller than these since even the least restrictive qualification criteria, 100 lb. alternative, requires vessels to have landed at least 100 lb. of scallops from one trip during the qualification time period.

The impacts of the qualification alternatives on the number of vessels that may qualify for limited access are examined in Table 79. This table includes only those vessels which had a permit before the control date and landed some amount of scallops during the qualification time period. As expected, the number of vessels that will qualify for limited access increase if smaller poundage criteria are applied or a longer qualification time period is implemented. The 100 lb. criteria combined with 11 year qualification period will result in the maximum number of participants, 705 vessels, qualifying for limited access. On the other hand, 5000 lb. criteria

combined with a two year qualification period will qualify the least number of vessels, only 143, for limited access. Total scallop landings for the qualifiers, based on their best year of landings, do not increase very significantly, however, for the extended qualification period (11 year) due to the lower level of scallop landings by general category vessels prior to the 2000 fishing year.

Table 79 shows that the poundage criteria have a larger affect on the number of qualifiers compared to the qualification time period. For example, reducing time period for qualification from 11 years to 2 years the number of qualified vessels decreases from 459 vessels to 277 vessels with the 1000 lb. criteria. On the other hand, holding the qualification time period constant at 11 years, but increasing the poundage criteria to 5000 lb. would reduce the number of qualified vessels even more, to 203 general category permit holders. This number declines to only 188 vessels with the 5000 lb. criteria if qualification time period is reduced to 5 years, and to 143 if it is reduced to 2 years.

**Table 79. Number of qualifying vessels and estimated landings based on an individual allocation system and best year of landings during the specified time period.**

Time period/ Number of general category permits	Qualification Criteria	Qualified for limited access	Number of active vessels	Total scallop landings (lb., Best year)	Avg. Scallop landings per vessel (lb., best year)*	Min. Scallop landings per vessel (lb. best year)	Max. Scallop landings per vessel (lb. best year)
<b>1994-04 ( 11 fishing years up to the control date)</b>							
Total unique general category permits= 4777	100 lb. Criteria	NO	219	27,618	126	1	>1800
		YES	705	4,289,112	6,084	100	>50,000
Number of vessels that did not land any scallops=3853	1000 lb Criteria	NO	465	130,428	280	1	>900
		YES	459	4,187,989	9,124	1000	>50,000
Active vessels = 924 Total scallop landings (best year)= 4.3 million lb.	5000 lb. Criteria	NO	721	713,786	990	1	>4,800
		YES	203	3,604,631	17,757	5000	>50,000
<b>2000-04 (5 fishing years up to the control date)</b>							
Total unique general category permits= 3562	100 lb. Criteria	NO	129	12,397	96	1	>1800
		YES	548	3,963,266	7,232	100	>50,000
Number of vessels that did not land any scallops=2885 Active vessels=677	1000 lb. Criteria	NO	308	93,091	302	1	>900
		YES	369	3,883,173	10,524	1000	>50,000
Total scallop landings (best year)= 3.9 million lb.	5000 lb. Criteria	NO	489	502,964	1,029	1	>4,800
		YES	188	3,473,300	18,475	5000	>50,000
<b>2003-04 (2 fishing years up to the control date)</b>							
Total unique general category permits= 2876	100 lb. Criteria	NO	83	7,888	95	1	>1800
		YES	399	2,969,856	7,443	100	>50,000
Number of vessels that did not land any scallops=2394 Active vessels=482	1000 lb. Criteria	NO	205	64,204	313	1	>900
		YES	277	2,913,614	10,518	1000	>50,000
Total scallop landings (best year)= 2.9 million lb.	5000 lb. Criteria	NO	339	368,799	1,088	1	>4,800
		YES	143	2,609,019	18,245	5000	>50,000

Note: Averages and sums are calculated without assuming a 50,000 lb. upper limit. This is just the historical data.

#### 5.4.4 Analysis of qualification criteria and period alternatives by primary state of landing, primary gear and scallop pounds per trip

The impacts of various qualification criteria and time-period for qualification on participants from various states (determined by their primary state of landing) are not expected to be uniform (Table 82). Table 86 through Table 89 show the number of qualifiers by primary state of landing for various alternatives. These numbers are considerably less than the total number of general category permits shown in Table 80 (by each application year) and in Table 81 (by the last general category permit during a specific period of time) because only a subset of vessels landed any scallops during the qualification periods.

It seems that a shorter period of qualification will impact the vessels which primarily land in Maine than vessels which land in other states. For example, if a 1000 lb. criteria and 5 year period is used for qualification criteria, about 70 vessels from Maine, 148 vessels from MA and NH, 11 vessels from RI and CT, 81 vessels from NY and NJ and 59 vessels from other states in Mid Atlantic would qualify for limited access general category permit. Increasing the time period to 11 years (1994-2004 before control date) from 5 years could qualify, however, about an additional 60 vessels from Maine with the 1000 lb. criteria, or a total of 130 vessels. If instead 100 lb. criteria were selected for 11 year qualification period, a total of 186 vessels with a primary state of landing from Maine will qualify. For vessels that land in MA and NH, however, the impacts are smaller in terms of the number of vessels qualify for limited access. If 11 year period and 1000 lb. qualification criteria were selected 168 vessels will qualify from these states. If instead 5 year period was selected, the number of qualifiers will decline slightly to 148 vessels. The impacts of a longer time period on the number of qualifiers from other states are also smaller, especially for the Mid-Atlantic states given that many participants from these states entered the fishery during the recent years. Because some vessels' primary state of landing has changed throughout the years (resulting in multiple states associated with one vessel), adding the number of qualifiers from each state (as shown in Table 86 to Table 89 ) would slightly overestimate actual number of qualifying vessels. For these reasons, the information given in these tables should be used in assessing the relative impacts of various qualification criteria and time period for vessels from each state. The differential impacts of these alternatives on ports and communities are discussed in detail in Section 5.5, Social Impact Assessment.

The number of qualifying vessels and scallop landings by primary gear are shown in Table 90 to Table 92 for vessels that have a logbook record of gear. The majority of qualifier use scallop dredges as expected. The majority of the qualifying vessels landed more than 200 lb. of scallops from their trips (Table 93) and incidental catch comprised an insignificant part of landings of general category vessels (Table 94).

**Table 80. General Category Permits by the Primary State of Landing and by application year (May 1<sup>st</sup> to the end of April)**

AP_YEAR	CT and RI	MA and NH	ME	NY and NJ	Other Mid Atlantic	Unknown	Grand Total
1994	173	900	510	303	105		1991
1995	189	928	561	309	87	1	2075
1996	177	898	558	283	87		2003
1997	175	936	494	296	100		2001
1998	180	904	461	291	102		1938
1999	194	927	502	346	121	5	2095
2000	207	982	542	387	141	2	2261
2001	217	1039	546	406	166	2	2376
2002	225	1124	540	431	191	1	2512
2003	223	1109	551	471	218	1	2573
2004	208	1039	524	488	224	1	2484

**Table 81. Number of unique general category permits according to the last-application date for the permit for the specified period**

Primary State	1994-2004 (up to the control date)*	2000-2004 (up to the control date)*	2003-2004 (up to the control date)*
CT and RI	336	271	238
MA and NH	2011	1483	1210
ME	1272	860	630
NY and NJ	773	629	535
Oth.Mid.At.	381	318	262
Unknown	4	1	1
Grand Total	4777	3562	2876

\*The primary state of landing corresponds to the primary state associated with the last permit application by the vessel-owner during the specified time period.

**Table 82. Impacts of qualification criteria alternatives for 11 year qualification period by state of landing**

Time period	Qualification Criteria	State of landing	Number of vessels	Avg. scallop landings (lb., Best year)	Total Scallop landings per vessel (lb., best year)
100 lb. Criteria	NO	Maine	37	318	11,782
		MA+NH	100	87	8,740
		CT+RI	31	45	1,397
		NJ+NY	45	81	3,653
		Oth.MidAt	6	341	2,047
	YES	Maine	186	3,822	710,968
		MA+NH	261	4,933	1,287,561
		CT+RI	52	1,736	90,278
		NJ+NY	122	11,564	1,410,829
		Oth.MidAt	84	9,399	789,475
1000 lb. Criteria	NO	Maine	93	349	32,453
		MA+NH	193	277	53,524
		CT+RI	71	229	16,260
		NJ+NY	79	200	15,798
		Oth.MidAt	29	427	12,394
	YES	Maine	130	5,318	691,298
		MA+NH	168	7,401	1,243,444
		CT+RI	12	6,286	75,429
		NJ+NY	88	15,894	1,398,690
		Oth.MidAt	61	12,773	779,128
5000 lb. Criteria	NO	Maine	180	1,335	240,328
		MA+NH	296	934	276,361
		CT+RI	78	412	32,167
		NJ+NY	116	854	99,065
		Oth.MidAt	51	1,291	65,865
	YES	Maine	43	11,242	483,422
		MA+NH	65	15,702	1,020,606
		CT+RI	5	11,904	59,522
		NJ+NY	51	25,793	1,315,423
		Oth.MidAt	39	18,607	725,657

**Table 83. Impacts of qualification criteria alternatives for 5 year qualification period by state of landing**

Time period	Qualification Criteria	State of landing	Number of vessels	Avg. scallop landings (lb., Best year)	Total Scallop landings per vessel (lb., best year)
100 lb. Criteria	NO	Maine	18	146	2,632
		MA+NH	58	85	4,944
		CT+RI	24	49	1,179
		NJ+NY	25	65	1,637
		Oth.MidAt	4	501	2,005
	YES	Maine	95	5,435	516,367
		MA+NH	213	5,603	1,193,406
		CT+RI	45	1,891	85,105
		NJ+NY	116	11,970	1,388,464
		Oth.MidAt	79	9,872	779,924
1000 lb. Criteria	NO	Maine	43	311	13,394
		MA+NH	123	325	39,967
		CT+RI	58	253	14,686
		NJ+NY	60	235	14,076
		Oth.MidAt	24	457	10,969
	YES	Maine	70	7,231	506,200
		MA+NH	148	7,827	1,158,389
		CT+RI	11	6,509	71,599
		NJ+NY	81	16,988	1,376,025
		Oth.MidAt	59	13,067	770,960
5000 lb. Criteria	NO	Maine	79	1,388	109,659
		MA+NH	210	1,054	221,443
		CT+RI	64	418	26,763
		NJ+NY	91	915	83,255
		Oth.MidAt	45	1,374	61,845
	YES	Maine	34	12,057	409,935
		MA+NH	61	16,015	976,913
		CT+RI	5	11,904	59,522
		NJ+NY	50	26,137	1,306,846
		Oth.MidAt	38	18,950	720,084

**Table 84. Impacts of qualification criteria alternatives for 2 year qualification period by state of landing**

Time period	Qualification Criteria	State of landing	Number of vessels	Avg. scallop landings (lb., Best year)	Total Scallop landings per vessel (lb., best year)
100 lb. Criteria	NO	Maine	8	89	709
		MA+NH	35	83	2,902
		CT+RI	18	61	1,102
		NJ+NY	18	65	1,171
		Oth.MidAt	4	501	2,005
	YES	Maine	52	6,542	340,178
		MA+NH	168	4,393	738,036
		CT+RI	28	2,299	64,371
		NJ+NY	83	13,071	1,084,869
		Oth.MidAt	68	10,918	742,402
1000 lb. Criteria	NO	Maine	19	290	5,511
		MA+NH	86	342	29,380
		CT+RI	39	272	10,596
		NJ+NY	41	230	9,441
		Oth.MidAt	20	464	9,276
	YES	Maine	41	8,180	335,376
		MA+NH	117	6,082	711,632
		CT+RI	7	7,840	54,877
		NJ+NY	60	17,943	1,076,599
		Oth.MidAt	52	14,137	735,131
5000 lb. Criteria	NO	Maine	37	1,560	57,712
		MA+NH	162	1,215	196,766
		CT+RI	42	389	16,319
		NJ+NY	61	845	51,523
		Oth.MidAt	37	1,256	46,479
	YES	Maine	23	12,312	283,176
		MA+NH	41	13,274	544,245
		CT+RI	4	12,288	49,153
		NJ+NY	40	25,863	1,034,517
		Oth.MidAt	38	18,950	720,084

**Table 85. Vessels with a primary port from Maine: Number of qualifying vessels and estimated landings based on an individual allocation system and best year of landings during the specified time period**

Time period	Qualification Criteria	Qualified	Number of vessels	Total scallop landings (lb., Best year)	Avg. Scallop landings per vessel (lb., best year)	Avg.GRT per vessel
1994-04 (Up to the control date) Total: 223 active vessels	100 lb. Criteria	NO	37	11,782	318	28
		YES	186	710,968	3,822	29
	1000 lb. Criteria	NO	93	32,453	349	42
		YES	130	691,298	5,318	23
	5000 lb. Criteria	NO	180	240,328	1,335	32
		YES	43	483,422	11,242	20
2000-04 (Up to the control date) Total: 113 active vessels	100 lb. Criteria	NO	18	2,632	146	41
		YES	95	516,367	5,435	26
	1000 lb. Criteria	NO	43	13,394	311	44
		YES	70	506,200	7,231	19
	5000 lb. Criteria	NO	79	109,659	1,388	33
		YES	34	409,935	12,057	18
2003-04 (Up to the control date) Total: 60 active vessels	100 lb. Criteria	NO	8	709	89	27
		YES	52	340,178	6,542	24
	1000 lb. Criteria	NO	19	5,511	290	36
		YES	41	335,376	8,180	20
	5000 lb. Criteria	NO	37	57,712	1,560	29
		YES	23	283,176	12,312	19

**Table 86. Vessels with a primary port from MA and NH: Number of qualifying vessels and estimated landings based on an individual allocation system and best year of landings during the specified time period**

Time period	Qualification Criteria	Qualified	Number of vessels	Total scallop landings (lb., Best year)	Avg. Scallop landings per vessel (lb., best year)	Avg.GRT per vessel
1994-04 (Up to the control date) Total: 361 active vessels	100 lb. Criteria	NO	100	8,740	87	50
		YES	261	1,287,561	4,933	69
	1000 lb. Criteria	NO	193	53,524	277	64
		YES	168	1,243,444	7,401	65
	5000 lb. Criteria	NO	296	276,361	934	72
		YES	65	1,020,606	15,702	36
2000-04 (Up to the control date) Total: 271 active vessels	100 lb. Criteria	NO	58	4,944	85	53
		YES	213	1,193,406	5,603	72
	1000 lb. Criteria	NO	123	39,967	325	67
		YES	148	1,158,389	7,827	68
	5000 lb. Criteria	NO	210	221,443	1,054	77
		YES	61	976,913	16,015	37
2003-04 (Up to the control date) Total: 203 active vessels	100 lb. Criteria	NO	35	2,902	83	43
		YES	168	738,036	4,393	81
	1000 lb. Criteria	NO	86	29,380	342	67
		YES	117	711,632	6,082	79
	5000 lb. Criteria	NO	162	196,766	1,215	82
		YES	41	544,245	13,274	44

**Table 87. Vessels with a primary port from RI and CT: Number of qualifying vessels and estimated landings based on an individual allocation system and best year of landings during the specified time period**

Time period	Qualification Criteria	Qualified	Number of vessels	Total scallop landings (lb., Best year)	Avg. Scallop landings per vessel (lb., best year)	Avg.GRT per vessel
1994-04 (Up to the control date) Total: 83 active vessels	100 lb. Criteria	NO	31	1,397	45	83
		YES	52	90,278	1,736	112
	1000 lb. Criteria	NO	71	16,260	229	106
		YES	12	75,429	6,286	68
	5000 lb. Criteria	NO	78	32,167	412	104
		YES	5	59,522	11,904	68
2000-04 (Up to the control date) Total: 69 active vessels	100 lb. Criteria	NO	24	1,179	49	86
		YES	45	85,105	1,891	114
	1000 lb. Criteria	NO	58	14,686	253	110
		YES	11	71,599	6,509	68
	5000 lb. Criteria	NO	64	26,763	418	107
		YES	5	59,522	11,904	68
2003-04 (Up to the control date) Total: 46 active vessels	100 lb. Criteria	NO	18	1,102	61	99
		YES	28	64,371	2,299	102
	1000 lb. Criteria	NO	39	10,596	272	105
		YES	7	54,877	7,840	66
	5000 lb. Criteria	NO	42	16,319	389	101
		YES	4	49,153	12,288	85

**Table 88. Vessels with a primary port from NY and NJ: Number of qualifying vessels and estimated landings based on an individual allocation system and best year of landings during the specified time period**

Time period	Qualification Criteria	Qualified	Number of vessels	Total scallop landings (lb., Best year)	Avg. Scallop landings per vessel (lb., best year)	Avg.GRT per vessel
1994-04 (Up to the control date) Total: 99 active vessels	100 lb. Criteria	NO	45	3,653	81	81
		YES	122	1,410,829	11,564	75
	1000 lb. Criteria	NO	79	15,798	200	89
		YES	88	1,398,690	15,894	65
	5000 lb. Criteria	NO	116	99,065	854	85
		YES	51	1,315,423	25,793	57
2000-04 (Up to the control date) Total: 81 active vessels	100 lb. Criteria	NO	25	1,637	65	64
		YES	116	1,388,464	11,970	74
	1000 lb. Criteria	NO	60	14,076	235	82
		YES	81	1,376,025	16,988	65
	5000 lb. Criteria	NO	91	83,255	915	80
		YES	50	1,306,846	26,137	57
2003-04 (Up to the control date) Total: 66 active vessels	100 lb. Criteria	NO	18	1,171	65	65
		YES	83	1,084,869	13,071	73
	1000 lb. Criteria	NO	41	9,441	230	79
		YES	60	1,076,599	17,943	66
	5000 lb. Criteria	NO	61	51,523	845	82
		YES	40	1,034,517	25,863	55

**Table 89. Vessels with a primary port from Mid-Atlantic states other than NY and NJ: Number of qualifying vessels and estimated landings based on an individual allocation system and best year of landings during the specified time period**

Time period	Qualification Criteria	Qualified	Number of vessels	Total scallop landings (lb., Best year)	Avg. Scallop landings per vessel (lb., best year)	Avg.GRT per vessel
1994-04 (Up to the control date) Total: 90 active vessels	100 lb. Criteria	NO	6	2,047	341	62
		YES	84	789,475	9,399	85
	1000 lb. Criteria	NO	29	12,394	427	88
		YES	61	779,128	12,773	82
	5000 lb. Criteria	NO	51	65,865	1,291	86
		YES	39	725,657	18,607	82
2000-04 (Up to the control date) Total: 83 active vessels	100 lb. Criteria	NO	4	2,005	501	70
		YES	79	779,924	9,872	85
	1000 lb. Criteria	NO	24	10,969	457	91
		YES	59	770,960	13,067	82
	5000 lb. Criteria	NO	45	61,845	1,374	87
		YES	38	720,084	18,950	82
2003-04 (Up to the control date) Total: 72 active vessels	100 lb. Criteria	NO	4	2,005	501	70
		YES	68	742,402	10,918	89
	1000 lb. Criteria	NO	20	9,276	464	97
		YES	52	735,131	14,137	84
	5000 lb. Criteria	NO	37	46,479	1,256	92
		YES	35	697,928	19,941	84

**Table 90. Number of qualifiers by primary gear**

Period	Qualification Criteria	Scallop dredge	Scallop trawl	Other trawl	Misc. gear	Not known	Grand Total
11 Years	100 lb. Criteria	294	36	189	8	178	705
	1000 lb. Criteria	242	33	99	5	80	459
	5000 lb. Criteria	131	25	22	3	22	203
5 Year	100 lb. Criteria	228	34	174	5	107	548
	1000 lb. Criteria	190	31	96	4	48	369
	5000 lb. Criteria	120	23	22	3	20	188
2 Year	100 lb. Criteria	165	28	136	4	66	399
	1000 lb. Criteria	135	25	83	3	31	277
	5000 lb. Criteria	89	22	15	3	14	143

**Table 91. Scallop pounds per vessel by primary gear**

Period	Qualification Criteria	Scallop dredge	Scallop trawl	Other trawl	Misc. gear	Unknown	Grand Total
11 Years	100 lb. Criteria	9,012	14,510	3,719	6,140	2,052	6,084
	1000 lb. Criteria	10,851	15,792	6,687	9,392	4,148	9,124
	5000 lb. Criteria	17,874	19,970	23,567	14,233	9,214	17,757
5 Year	100 lb. Criteria	10,721	14,947	3,975	8,971	2,563	7,232
	1000 lb. Criteria	12,761	16,355	6,824	10,999	5,261	10,524
	5000 lb. Criteria	18,668	21,092	23,567	14,233	9,341	18,475
2 Year	100 lb. Criteria	11,089	16,989	3,227	10,889	2,760	7,443
	1000 lb. Criteria	13,444	18,979	4,956	14,233	5,486	10,518
	5000 lb. Criteria	18,866	21,291	19,300	14,233	9,239	18,245

**Table 92. Scallop landings as a % of total by primary gear**

Period	Qualification Criteria	Scallop dredge	Scallop trawl	Other trawl	Misc. gear	Unknown	Grand Total
11 Years	100 lb. Criteria	61.77%	12.18%	16.39%	1.15%	8.52%	100.00%
	1000 lb. Criteria	62.70%	12.44%	15.81%	1.12%	7.92%	100.00%
	5000 lb. Criteria	64.96%	13.85%	14.38%	1.18%	5.62%	100.00%
5 Year	100 lb. Criteria	61.68%	12.82%	17.45%	1.13%	6.92%	100.00%
	1000 lb. Criteria	62.44%	13.06%	16.87%	1.13%	6.50%	100.00%
	5000 lb. Criteria	64.50%	13.97%	14.93%	1.23%	5.38%	100.00%
2 Year	100 lb. Criteria	61.61%	16.02%	14.78%	1.47%	6.13%	100.00%
	1000 lb. Criteria	62.29%	16.29%	14.12%	1.47%	5.84%	100.00%
	5000 lb. Criteria	64.36%	17.95%	11.10%	1.64%	4.96%	100.00%

**Table 93. Number vessels by maximum scallop landings from a trip**

Period	Qualification Criteria	Qualify	Maximum scallop landings from any one trip			Grand Total
			<=40 lb.	41- 200 lb.	>200 lb.	
11 Years	100 lb. Criteria	NO	130	89		219
		YES		144	561	705
	1000 lb. Criteria	NO	130	202	133	465
		YES	NA	31	428	459
	5000 lb. Criteria	NO	130	231	360	721
		YES	NA	NA	201	203
5 Year	100 lb. Criteria	NO	73	56	NA	129
		YES	NA	93	455	548
	1000 lb. Criteria	NO	73	135	100	308
		YES	NA	14	355	369
	5000 lb. Criteria	NO	73	148	268	489
		YES	NA	NA	187	188
2 Year	100 lb. Criteria	NO	50	33	NA	83
		YES	NA	48	351	399
	1000 lb. Criteria	NO	50	75	80	205
		YES	NA	NA	271	277
	5000 lb. Criteria	NO	50	81	208	339
		YES	NA	NA	143	143

**Table 94. Sum of best year scallop landings (lb.) by maximum scallop landings from a trip**

Period	Qualification Criteria	Qualify	Maximum scallop landings from any one trip			Grand Total
			<=40 lb.	41- 200 lb.	>200 lb.	
11 Years	100 lb. Criteria	NO	4,911	22,707		27,618
		YES		94,464	4,194,648	4,289,112
	1000 lb. Criteria	NO	4,911	53,331	72,187	130,428
		YES		65,528	4,122,461	4,187,989
	5000 lb. Criteria	NO	4,911	104,611	604,265	713,786
		YES		14,247	3,590,383	3,604,631
5 Year	100 lb. Criteria	NO	2,560	9,837		12,397
		YES		57,063	3,906,204	3,963,266
	1000 lb. Criteria	NO	2,560	35,891	54,641	93,091
		YES		31,610	3,851,563	3,883,173
	5000 lb. Criteria	NO	2,560	59,260	441,144	502,964
		YES		8,240	3,465,059	3,473,300
2 Year	100 lb. Criteria	NO	1,120	6,768		7,888
		YES		23,578	2,946,278	2,969,856
	1000 lb. Criteria	NO	1,120	18,558	44,526	64,204
		YES		11,862	2,901,752	2,913,614
	5000 lb. Criteria	NO	1,120	30,420	337,259	368,799
		YES			2,609,019	2,609,019

**Table 95. Average scallop landings per vessel (lb.) by maximum scallop landings from a trip**

Period	Qualification Criteria	Qualify	Maximum scallop landings from any one trip			Grand Total
			<=40 lb.	41- 200 lb.	>200 lb.	
11 Years	100 lb. Criteria	NO	38	255	NA	126
		YES		656	7,477	6,084
	1000 lb. Criteria	NO	38	264	543	280
		YES		2,114	9,632	9,124
	5000 lb. Criteria	NO	38	453	1,679	990
		YES		NA	17,863	17,757
5 Year	100 lb. Criteria	NO	35	176	NA	96
		YES		614	8,585	7,232
	1000 lb. Criteria	NO	35	266	546	302
		YES		2,258	10,849	10,524
	5000 lb. Criteria	NO	35	400	1,646	1,029
		YES		NA	18,530	18,475
2 Year	100 lb. Criteria	NO	22	205	NA	95
		YES		491	8,394	7,443
	1000 lb. Criteria	NO	22	247	557	313
		YES		1,977	10,708	10,518
	5000 lb. Criteria	NO	22	376	1,621	1,088
		YES		NA	18,245	18,245

## **5.4.5 Combined Economic impacts the qualification criteria, period alternatives and general category TAC on vessels that qualify for limited access**

### **5.4.5.1 Introduction**

In addition to the limited access, Amendment 11 includes alternatives that would control scallop fishing mortality in the general category fishery by allocating a separate TAC for this sector. In general, the combined economic impacts of the limited access and TAC are expected to be positive for the sea scallop fishery as a whole compared to taking no action and status quo management for the following reasons:

- The economic impacts of the limited entry are expected to be positive for the sea scallop fishery compared to taking no action. Since with no action there are no limits on the number of trips a vessel could take and no limits on the number of vessels able to participate in the general category fishery, total fishing effort in this fishery could increase in response to higher scallop prices, to an increase in resource productivity, or to changes in fishing opportunities in other fisheries. As a result, scallop mortality could exceed sustainable levels, reducing the stock biomass, the future yield, and revenues from the scallop resource. Limited access, by itself, will not entirely eliminate these possible effects, but it will reduce the risks of overfishing of the scallop resource by preventing new entry to the general category fishery. It will restrict the number of participants in this fishery to vessels that meet the poundage qualification criteria within a qualification time period. As a result, limited access would prevent the profits of the qualifiers and limited access vessels from dissipating due to increase in capacity.
- In the absence of measures that control overall scallop landings by general category vessels, it is still possible for the fishing mortality to increase beyond the target levels if the vessels that qualify for limited access increase the number of trips targeting scallops. This could have negative impacts on both the limited access and the general category vessels as scallop catch per day-at-sea declines and fishing costs per pound of scallops increase. Overall, short-term and long-term economic impacts on consumer and producer surpluses and total economic benefits are analyzed qualitatively. This is because biological projections are done by assuming that fishing mortality will be kept at target levels and that limited access allocations will be determined by removing estimated general category landings from total scallop harvest. If scallop harvest is allocated between limited access and general category vessels by a separate TAC for general category, the fishing mortality due to general category fishery will be prevented to exceed the sustainable levels. This will have positive impacts on the consumer and producer surpluses and total economic benefits compared to no action (see Section 5.4.17 for further discussion). Section 5.4.17.2 examines the distributional impacts of a TAC allocation on scallop revenues, costs and producer surplus for both the general category and limited access fisheries.
- These measures will reduce the negative distributional impacts of overfishing due to general category fishery, since under the status quo, any increase in overfishing of the scallop resource will need to be corrected through framework action. For example, the Council could reduce the DAS allocations for limited access vessels, negatively impacting the group of vessels that has been subject to strict effort controls since 1994. The Council could also reduce the possession limit for all general category vessels,

affecting negatively most of the general category vessels that participate in the fishery and depend on scallops as a significant source of income.

The economic impacts of the qualification criteria and period alternatives on the general category vessels will vary according to the level of TAC that will be allocated to the general category fishery. According to the individual allocation system (3.1.2.4.1), each vessel's share will be determined from their historical activity during a qualification time period. Then the qualified vessels will be allocated a percent of the total general category TAC based on their contribution to historical landings. The level of TAC could have significant economic impacts on general category vessels to the extent that it is different from the historical levels and/or from the level of scallop landings in recent years.

According to alternative proposed by this amendment (3.1.7.2), the amount of TAC that will be allocated to general category fishery will be based on a certain percentage of total available scallop harvest from the fishery ranging from 2.5 to 11%. If this alternative was not selected, the TAC could be based on historical landings of general category fishery or some other amount determined by the Council in the future actions.

In order to estimate a range of potential TAC for the general category fishery, the total expected yield from the scallop resource for the next 11 years is calculated in Table 96 using the recent biological simulations corresponding to the status quo scenario (including the impacts of the recent Emergency Action that reduced the number of the trips in ETA). For example, total landings is estimated to be around 56 million pounds in 2008, roughly equal to landings in 2005 fishing year, and range between 61 lb. to 68 million lb. afterwards. With this scenario, the potential allocation to general category fishery could range from 1.4 million lb. if lower bound of 2.5% is applied and to 7.4 million lb. if the upper bound of 11% is used to determine general category TAC during the next 11 years. If the overall total available scallop harvest is overestimated, general category allocation could fall below these amounts. For example, if the maximum sustainable yield over the long-term is 40 million lb. instead of 67 million lb., than even with an 11% share, general category allocation could not exceed 4.4 million lbs.

**Table 96. Estimated Scallop Landings, Prices and Revenues (in 2006 prices, based on projections used in EA for ETA)**

Fishing year	MC	Total landings	LPUE	DAS	Price	Total Revenue
2007	16	61	1,810	33,653	6.76	429
2008	15	56	2,279	24,496	7.66	428
2009	14	61	2,366	25,736	6.90	419
2010	13	64	2,449	26,361	6.41	411
2011	13	66	2,437	27,392	6.09	405
2012	14	67	2,394	28,143	5.94	400
2013	14	66	2,353	27,922	6.16	405
2014	14	67	2,341	28,685	5.92	399
2015	14	68	2,327	28,911	5.90	398
2016	14	64	2,301	27,835	6.38	410
2017	14	67	2,315	28,672	6.04	402

**Table 97. Estimated scallop landings and revenue for general category vessels with TAC (in 2006 prices, based on projections used in EA for ETA)**

Fishing year	General category TAC=2.5%		General category TAC=11%	
	Scallop Landings (Million lb.)	Scallop Revenue (Million \$)	Scallop Landings (Million lb.)	Scallop Revenue (Million \$)
2007	1.5	10.7	6.70	47.1
2008	1.4	10.7	6.14	47.0
2009	1.5	10.5	6.67	46.1
2010	1.6	10.3	7.06	45.3
2011	1.7	10.1	7.31	44.5
2012	1.7	10.0	7.41	44.0
2013	1.6	10.1	7.24	44.6
2014	1.7	10.0	7.41	43.9
2015	1.7	10.0	7.43	43.8
2016	1.6	10.2	7.07	45.1
2017	1.7	10.1	7.32	44.2

This section analyzes economic impacts at three different levels of TAC which fall between the range of biological estimates in Table 96 and Table 97:

- 2 million lb. which is close to the levels of general category scallop landings before 2004, previous to the surge in general category landings.
- 4 million lb. which is close to scallop landings in the best year before the control date, that is in 2004 fishing year.
- 7 million lb., which is the highest level of general category landings achieved so far (2005) and corresponding to the most optimistic scenarios shown in Table 97.

The impacts of the various TAC levels combined with qualification criteria and period alternatives are analyzed using the “best year landings” in order to determine total impacts on qualifiers and on average impacts per vessel. This is because the alternative method, i.e., best-indexed, do not change the total and average impacts, but will have distributional impacts between the qualifiers according to the years they were active in the fishery. The Tables also include the impacts of stand-alone ITQ alternative (3.1.2.4.4) on the number of qualifiers, on average revenues per vessels, on costs and net revenues. This alternative, as apart from the non-transferable individual quota alternative, however, allows leasing or buying quota from other vessels with positive impacts on profits in the fishery as discussed in Section 5.4.8.4.

The general category TAC will be distributed among the vessels qualified for access according to each qualification criteria and period. Although, the impacts are analyzed here for a general category TAC of 2 million lb., 4 million lb. and 7 million lb., the range of impacts with other TAC levels could easily be derived from the Tables included in this section.

#### **5.4.5.2 The impacts on average allocation (scallop pounds or trips) per qualified vessel**

The number of qualifiers and average scallop pounds during the best year and average allocation per vessel corresponding to different TAC levels are shown in Table 98. It must be emphasized that allocation for each vessel will be different than these amount if an individual allocation method is used. Average pounds per vessel are shown here to analyze the comparative impacts of qualification criteria and period and TAC alternatives. For example, using an 11 year period and

100 lb. qualification criteria and a general category TAC of 4 million lb., the 705 qualifying vessels would, on the average, receive 5,674 lb. of scallop allocations, which is slightly less than the average best year landings, 6,084 lb., for this group. If a 5000 lb. criterion is used, however, for the same period, only 203 vessels will qualify receiving on the average 19,704 lb. of scallop allocation if general category TAC was set at 4 million lb. This amount of allocation exceeds the average best year scallop pounds (17,757 lb.) for these 203 vessels during the 11 year qualification period. If the general category TAC was 2 million lb. instead of 4 million lb., the average allocation per qualified vessel would be less than average best year landings even with 5000 lb. criterion. The table also shows average pounds per vessel for 5 year and 2 year qualification periods at these three TAC levels. For the stand alone ITQ alternative (3.1.2.4.4), there would be 3562 vessels that would qualify for limited access, and 677 of these with landings history would receive an average allocation of 5,908 lb. per vessel with 4 million TAC, slightly exceeding the average of best year landings. Under this alternative, the remaining 2885 vessels would be allowed to buy and lease quota from others.

The allocation for each vessel will be different than the averages shown in Table 98 depending on the allocation method used. With individual quota allocation alternative (3.1.2.4.1), each vessel's allocation will vary according to their contribution factor determined either using best year or best-indexed year alternatives. As a result, some vessels will receive less than the average pounds if their best year landings were below the fleet average (column 4) and some vessels will receive a larger allocation if they landed a higher percentage of scallops during the qualification period compared to the other vessels. Table 99 and Table 100 provide a range for allocated pounds (Option A, fishing quota in pounds) showing the maximum and minimum pounds respectively for the vessels that qualify for limited access. For maximum allocations, a vessels contribution factor is assumed not to exceed 50,000 lb. in accordance with the Alternative 3.1.2.3.3.

**Table 98. Number of qualifying vessels and estimated landings based on an individual allocation system and best year of landings during the specified time period.**

Time period	Qualification Criteria	Number of qualified vessels	Average Best year landings per vessel (lb.)	Average Allocation per vessel (lb.)	Average Allocation per vessel (lb.)	Average Allocation per vessel (lb.)
				TAC=2 million lb.	TAC=4 million lb.	TAC=7 million lb.
1994-04 (Up to the control date)	100 lb. Criteria	705	6,084	2,837	5,674	9,929
	1000 lb. Criteria	459	9,124	4,357	8,715	15,251
	5000 lb. Criteria	203	17,757	9,852	19,704	34,483
2000-04 (Up to the control date)	Stand-alone ITQ	677	5,872	2,954	5,908	10,340
	100 lb. Criteria	548	7,232	3,650	7,299	12,774
	1000 lb. Criteria	369	10,524	5,420	10,840	18,970
	5000 lb. Criteria	188	18,475	10,638	21,276	37,234
2003-04 (Up to the control date)	100 lb. Criteria	399	7,443	5,012	10,025	17,544
	1000 lb. Criteria	277	10,518	7,220	14,440	25,271
	5000 lb. Criteria	143	18,245	13,986	27,972	48,951

**Table 99. Number of qualifying vessels and estimated maximum landings per vessel based on an individual allocation system and best year of landings during the specified time period.**

Time period	Qualification Criteria	Number of vessels	MAX. Best year landings per vessel (lb.) (1)	MAX. Allocation per vessel (lb.) TAC=2 million lb.	MAX. Allocation per vessel (lb.) TAC=4 million lb.	MAX. Allocation per vessel (lb.) TAC=7 million lb.
1994-04 (Up to the control date)	100 lb. Criteria	705	50,000	23,522	47,044	82,327
	1000 lb. Criteria	459	50,000	24,096	48,192	84,336
	5000 lb. Criteria	203	50,000	28,036	56,072	98,126
2000-04 (Up to the control date)	Stand alone ITQ	677	50,000	25,220	50,441	88,271
	100 lb. Criteria	548	50,000	25,476	50,952	89,166
	1000 lb. Criteria	369	50,000	26,006	52,012	91,021
	5000 lb. Criteria	188	50,000	29,108	58,216	101,878
2003-04 (Up to the control date)	100 lb. Criteria	399	50,000	33,684	67,368	117,894
	1000 lb. Criteria	277	50,000	34,334	68,668	120,169
	5000 lb. Criteria	143	50,000	38,344	76,688	134,204

(1) MAX landings are capped at 50,000 lb. to protect confidentiality, which also corresponds to the maximum contribution pounds proposed by 3.1.2.3.3.

**Table 100. Number of qualifying vessels and estimated minimum pounds per vessel based on an individual allocation system and best year of landings during the specified time period.**

Time period	Qualification Criteria	Number of vessels	Min. Best year landings per vessel (lb.)	Min. Allocation per vessel (lb.) TAC=2 million lb.	Min. Allocation per vessel (lb.) TAC=4 million lb.	Min. Allocation per vessel (lb.) TAC=7 million lb.
1994-04 (Up to the control date)	100 lb. Criteria	705	100	48	96	168
	1000 lb. Criteria	459	1,000	482	964	1,687
	5000 lb. Criteria	203	5,009	2,808	5,616	9,828
2000-04 (Up to the control date)	Stand alone ITQ	677	1	1.0	0.5	1.0
	100 lb. Criteria	548	100	50	100	175
	1000 lb. Criteria	369	1,000	520	1,040	1,820
	5000 lb. Criteria	188	5,000	2,916	5,832	10,206
2003-04 (Up to the control date)	100 lb. Criteria	399	100	68	136	238
	1000 lb. Criteria	277	1,000	686	1,372	2,401
	5000 lb. Criteria	143	5,000	3,842	7,684	13,447

Option B of the individual allocation option proposes to allocate each qualifying vessels a certain number of trips rather than pounds of scallops. Assuming that vessels will land the 400 lb. from each trip, the average number of trips per vessel was calculated in Table 101. There are some important differences between option A and option B, however. If some vessels that receive trip allocations land less than 400 lb. of scallops from their trips, total general category scallop landings could be less than the general category TAC, resulting in reduced revenue for the general category fleet. On the other hand, these vessels could spend more time at sea to increase their trip landings to the possession limit in order to maximize annual landings from their trip allocations. Such change in fishing behavior would increase trip costs and could also have some safety impacts if the trip is extended, for example, during difficult weather conditions. On the other hand, trip allocation has an advantage over quota allocation in terms of monitoring and enforcement since with VMS it is easier to determine the number of trips per vessel than to

monitor landings per trip.

**Table 101. Number of qualifying vessels and estimated trips per vessel based on an individual allocation system and best year of landings during the specified time period.**

Time period	Qualification Criteria	Number of vessels	Best year trips per vessel (1)	Best year trips per vessel (2)	Trips per vessel TAC=2 million lb. (2)	Trips per vessel TAC=4 million lb (2)	Trips per vessel TAC=7 million lb (2)
1994-04 (Up to the control date)	100 lb. Criteria	705	21	15	7	14	25
	1000 lb. Criteria	459	31	23	11	22	38
	5000 lb. Criteria	203	54	44	25	49	86
2000-04 (Up to the control date)	Stand alone ITQ	677	20	15	7	15	26
	100 lb. Criteria	548	24	18	9	18	32
	1000 lb. Criteria	369	34	26	14	27	47
	5000 lb. Criteria	188	55	46	27	53	93
2003-04 (Up to the control date)	100 lb. Criteria	399	24	19	13	25	44
	1000 lb. Criteria	277	34	26	18	36	63
	5000 lb. Criteria	143	55	46	35	70	122

- (1) These are historical averages and include the trips that landed a pound or more scallops. For some vessels, this could underestimate actual number of trips because in the past several trips were landed at the same date. Trip allocations would be determined by assuming that each scallop landings from each trip will equal to 400 lb.
- (2) Assuming a 400 lb. trip limit.

### 5.4.5.3 The impacts on average scallop revenue per qualified vessel

The impacts of the qualification alternatives at different TAC levels for general category on the potential revenues of qualifiers vessels are analyzed based on the following assumptions about prices and costs.

- Scallop revenues are estimated using two price estimates, a price of \$6.00 per pound at the lower end and \$7.60 per pound of scallops at the higher end. These values are within the range of estimated prices for 2007-2017 corresponding to the biological simulations shown in Table 96. For example, the estimates based on the biological simulations (Emergency Action for ETA) and the price model show that scallop prices could reach \$6.70 per pound in 2007 and \$7.66 per pound in 2008, the first year Amendment 11 could be implemented. Scallop prices are estimated to decline to approximately \$6.00 per pound in the later years as estimated scallop prices increase over 65 million lb.
- They are also within the range of prices that was observed in 2005 (an average of \$7.60 per lb.) and 2006 fishing years (about \$6.25 per pound so far). Although, the scallop prices declined in 2006 relative to the 2005 levels, they were on the rise recently and could increase further in 2007 fishing year. For example, the prices of U-12 scallops averaged above \$10 and those of 20-30 count above \$7.50 during the first couple of days of February 2007.
- The accuracy of these price estimates depend on, however, whether the biological estimates for annual landings and size distribution of scallops will be realized in the future years. If the scallop landings turn out to be lower than these estimates, the prices could exceed the levels shown in Table 96. Actual prices in the future could also differ

from these estimated values depending on changes in consumers' income and preferences, import prices and exports.

- The revenues will be higher (lower) than estimated if scallop prices increase (decrease) above (below) the levels estimated in this section. The relative impacts of qualification criteria and period alternatives on revenues compared to another but will not change, however, if actual prices differ than the estimates.
- Average best year revenue was estimated applying the same price that is used in calculation of revenue corresponding to the allocation pounds (i.e., \$7.60 and \$6.0 per pound). For a vessel to obtain the same level revenue corresponding to its best year activity, general category TAC should be set above 4 million lb. if 11 year is selected for qualification period with either 100 lb. or 1000 lb. criteria. With other qualification period alternatives, the qualifiers will receive larger revenue with a TAC of 4 million lb. compared to their best year revenue. With 2 year period the revenue with the same TAC level will exceed best year landings by a significant amount.

**Table 102. Number of qualifying vessels and estimated revenue based on an individual allocation system and best year of landings during the specified time period and using a scallop price of \$7.60 per pound**

Time period	Qualification Criteria	Number of qualified vessels	Average Best year revenue per vessel (lb.)	Average Revenue per vessel (lb.) TAC=2 million lb.	Average Revenue per vessel (lb.) TAC=4 million lb	Average Revenue per vessel (lb.) TAC=7 million lb
1994-04 (Up to the control date)	100 lb. Criteria	705	46,238	21,561	43,122	75,460
	1000 lb. Criteria	459	69,342	33,113	66,234	115,908
	5000 lb. Criteria	203	134,953	74,875	149,750	262,071
2000-04 (Up to the control date)	Stand alone ITQ	677	44,631	22,452	44,904	78,582
	100 lb. Criteria	548	54,963	27,740	55,472	97,082
	1000 lb. Criteria	369	79,982	41,192	82,384	144,172
	5000 lb. Criteria	188	140,410	80,849	161,698	282,978
2003-04 (Up to the control date)	100 lb. Criteria	399	56,567	38,091	76,190	133,334
	1000 lb. Criteria	277	79,937	54,872	109,744	192,060
	5000 lb. Criteria	143	138,662	106,294	212,587	372,028

**Table 103. Number of qualifying vessels and estimated revenue based on an individual allocation system and best year of landings during the specified time period and using a scallop price of \$6.00 per pound**

Time period	Qualification Criteria	Number of qualified vessels	Average Best year revenue per vessel (lb.)	Average Revenue per vessel (lb.) TAC=2 million lb.	Average Revenue per vessel (lb.) TAC=4 million lb.	Average Revenue per vessel (lb.) TAC=7 million lb.
1994-04 (Up to the control date)	100 lb. Criteria	705	36,504	17,022	34,044	59,574
	1000 lb. Criteria	459	54,744	26,142	52,290	91,506
	5000 lb. Criteria	203	106,542	59,112	118,224	206,898
2000-04 (Up to the control date)	Stand alone ITQ	677	35,235	17,725	35,451	62,038
	100 lb. Criteria	548	43,392	21,900	43,794	76,644
	1000 lb. Criteria	369	63,144	32,520	65,040	113,820
	5000 lb. Criteria	188	110,850	63,828	127,656	223,404
2003-04 (Up to the control date)	100 lb. Criteria	399	44,658	30,072	60,150	105,264
	1000 lb. Criteria	277	63,108	43,320	86,640	151,626
	5000 lb. Criteria	143	109,470	83,916	167,832	293,706

#### 5.4.5.4 The impacts on fishing costs

The economic impacts of the qualification criteria and period alternatives will also vary with the costs of fishing. For example, a lower allocation of scallop pounds will not only reduce revenues but also lower the trip costs, thus will lessen the impacts on net revenues. The annual trip costs per vessel are estimated in Table 105 as follows:

- The trip costs per day-at-sea were estimated in Section 4.4.6 . Table 104 shows average trip costs per day-at-sea and the factors that affect costs, such as vessel gross tonnage, horse power and crew size for the group of qualified vessels corresponding to each alternative.
- Annual average allocation in scallop pounds for each alternative and TAC level is converted into number of trips by assuming that 400 lb. of scallops will be landed from each trip. The trip costs per day-at-sea were multiplied by the average number of trips for each alternative and TAC level.
- It is assumed that all the trip costs from trips are attributed to scallop fishing, even though a vessel may land other species. In other words, these costs show the values corresponding to the trips solely targeting the scallops, thus they will overestimate the costs for vessels that land scallops as a bycatch while primarily fishing for other species.
- For vessels that land less than 400 lb., the number of trips will be higher than estimated in Table 101. But these vessels generally land other species besides scallops, thus, not all trip costs are attributable to scallop fishing. For this reason, the actual trip costs due to the scallop fishing for these vessels are probably lower than estimated in Table 105.

**Table 104. Vessel characteristics and costs**

Time period	Qualification Criteria	Number of qualified vessels	Average trip costs per DAS (2006 prices, \$)	Average GRT	Average HP	Average crew
1994-04 (Up to the control date)	100 lb. Criteria	705	342	68	428	3.5
	1000 lb. Criteria	459	328	58	398	3.3
	5000 lb. Criteria	203	324	49	399	3.2
2000-04 (Up to the control date)	Stand alone ITQ	677	345	70	433	3.6
	100 lb. Criteria	548	349	72	442	3.6
	1000 lb. Criteria	369	335	62	409	3.4
	5000 lb. Criteria	188	326	50	403	3.2
2003-04 (Up to the control date)	100 lb. Criteria	399	356	76	454	3.6
	1000 lb. Criteria	277	346	69	430	3.6
	5000 lb. Criteria	143	330	55	415	3.2

**Table 105. Number of qualifying vessels and estimated trip costs per vessel based on best year of landings during the specified time period (using a fuel price of \$2.23 per gal.)**

Time period	Qualification Criteria	Number of qualified vessels	Average Best year trip costs per vessel (lb.)	Average trip costs per vessel (lb.) TAC=2 million lb.	Average trip costs per vessel (lb.) TAC=4 million lb.	Average trip costs per vessel (lb.) TAC=7 million lb.
1994-04 (Up to the control date)	100 lb. Criteria	705	5,201	2,425	4,850	8,488
	1000 lb. Criteria	459	7,480	3,572	7,145	12,503
	5000 lb. Criteria	203	14,383	7,980	15,960	27,930
2000-04 (Up to the control date)	Stand alone ITQ	677	5,065	2,548	5,096	8,918
	100 lb. Criteria	548	6,318	3,189	6,377	11,160
	1000 lb. Criteria	369	8,820	4,542	9,085	15,898
	5000 lb. Criteria	188	15,047	8,664	17,329	30,326
2003-04 (Up to the control date)	100 lb. Criteria	399	6,626	4,462	8,925	15,619
	1000 lb. Criteria	277	9,103	6,249	12,498	21,872
	5000 lb. Criteria	143	15,055	11,540	23,081	40,391

**5.4.5.5 The impacts on average net revenues for the vessels that qualify for limited access**

The impacts on the net revenues of the qualified vessels are estimated for each qualification criteria and period at three different levels of TAC, using two values for prices, \$7.60 and \$6.00 per pound (Table 106 and Table 107). These impacts could be summarized as follows:

- Average revenue per qualified vessel will be higher as the number of qualifiers is lower. For example, 2 year period combined with 5000 lb. criteria results in largest net revenue per vessel at any level of TAC. 11 year period with 100 lb. criteria and the Stand alone ITQ alternatives would result in smallest revenues per vessel by respectively including 705 and 677 vessels in the limited access program.
- The actual net revenues of each vessel will differ according to their share in total general category allocation under the individual allocation methods (either in trips or pounds). The vessels that had a historical participation in the general category fishery at rates higher than an average vessel will receive higher allocation, thus larger net revenue from scallop fishery.

- These Tables also show estimated net revenue a vessel could have obtained if it continued to fish for scallops at the best year levels. As mentioned above, best year revenue was estimated applying the same price that is used in calculation of revenue corresponding to the allocation pounds (i.e., \$7.60 in Table 106 and \$6.0 in Table 107). Comparison of net revenue with at each TAC level with the best year revenue shows that if TAC is set below 4 million lb., each qualifier will be earn less net revenue than their best year amount if 11 year period is implemented with either 100 lb. and 1000 lb. criteria. For 5 year and 2 year qualification period alternatives, however, a TAC of 4 million and higher will provide a net revenue for the qualifiers larger than corresponding to their best year landings for all qualification criteria alternatives (i.e., 100 lb., 1000 lb., and 5000 lb. criteria).

**Table 106. Number of qualifying vessels and estimated net revenue per vessel based on best year of landings during the specified time period (using a fuel price of \$2.23 per gal. and scallop price of \$7.60)**

Time period	Qualification Criteria	Number of qualified vessels	Average Best year net revenue per vessel (lb.)	Average net revenue per vessel (lb.) TAC=2 million lb.	Average net revenue per vessel (lb.) TAC=4 million lb	Average net revenue per vessel (lb.) TAC=7 million lb
1994-04 (Up to the control date)	100 lb. Criteria	705	41,038	19,136	38,272	66,973
	1000 lb. Criteria	459	61,862	29,541	59,089	103,404
	5000 lb. Criteria	203	120,571	66,895	133,791	234,141
2000-04 (Up to the control date)	Stand alone ITQ	677	39,566	19,904	39,808	69,664
	100 lb. Criteria	548	48,645	24,551	49,096	85,923
	1000 lb. Criteria	369	71,162	36,650	73,299	128,274
	5000 lb. Criteria	188	125,363	72,185	144,369	252,653
2003-04 (Up to the control date)	100 lb. Criteria	399	49,941	33,629	67,265	117,716
	1000 lb. Criteria	277	70,834	48,623	97,246	170,188
	5000 lb. Criteria	143	123,607	94,753	189,506	331,636

**Table 107. Number of qualifying vessels and estimated net revenue per vessel based on best year of landings during the specified time period (using a fuel price of \$2.23 per gal. and scallop price of \$6)**

Time period	Qualification Criteria	Number of qualified vessels	Average Best year net revenue per vessel (lb.)	Average net revenue per vessel (lb.) TAC=2 million lb.	Average net revenue per vessel (lb.) TAC=4 million lb	Average net revenue per vessel (lb.) TAC=7 million lb
1994-04 (Up to the control date)	100 lb. Criteria	705	31,303	14,597	29,194	51,086
	1000 lb. Criteria	459	47,264	22,570	45,145	79,003
	5000 lb. Criteria	203	92,159	51,132	102,264	178,968
2000-04 (Up to the control date)	Stand alone ITQ	677	30,170	15,177	30,355	53,120
	100 lb. Criteria	548	37,074	18,711	37,417	65,484
	1000 lb. Criteria	369	54,324	27,978	55,955	97,922
	5000 lb. Criteria	188	95,803	55,164	110,327	193,078
2003-04 (Up to the control date)	100 lb. Criteria	399	38,032	25,610	51,225	89,645
	1000 lb. Criteria	277	54,005	37,071	74,142	129,754
	5000 lb. Criteria	143	94,415	72,376	144,751	253,315

#### **5.4.5.6 The impacts of the allocation amounts on crew and vessel shares on groups of general category vessels**

The analyses provided in Section 5.4.5.2 to Section 5.4.5.5 above discussed the impacts of the qualification criteria and qualification period alternatives on average allocation pounds, gross and net revenue for the vessels that would qualify for limited access under each of these alternatives. With the individual quota option, however, each vessel will receive an allocation either in pounds or in trips based on its share in the fishery during the qualification time period and level of general category TAC. This allocation amount could be quite different from the historical amount of scallops a vessel depended on for income in the past and/or the pounds of scallops. As a result, the limited access program could have significant economic impacts (either positive or negative) on the qualifiers. When the allocation amounts are less than the recent and/or historical landings of vessels, the scallop revenue will decline for all vessels. Since most vessels in the general category fishery have income from other fisheries, the relative impacts will vary according to the proportion of income derived from scallop fishing (Table 109 and Table 110). The vessels that depend heavily on scallop fishing for their revenue will be affected more if the pounds allocated fall below the levels necessary for an economically viable operation. This level, is not uniform or constant, however, and will depend on many factors including the price of scallops, the fishing costs (which change with vessel size) and the revenue from other fisheries.

Since the general category fleet exhibit considerable variability in terms of the vessel size, fishing costs and activity in other fisheries, the amount of scallops that is necessary to cover costs, pay for crew and generate income for the vessel owner will vary from one vessel to another. For these reasons, the impacts on the revenues, costs, on crew income and vessels shares are analyzed in this section for a range of allocation pounds for vessels with different gross tonnage and costs and for a range of scallop prices. Table 112 to Table 116 show estimated revenues, costs, on crew and boat shares associated with each level of allocation pounds. Thus, in order to examine the possible impacts of a qualification criteria and period alternative on

qualifiers, one could match the allocation pounds for each alternative and for different vessels and read the corresponding level of revenues, cost, on crew and boat shares from these tables.

The trip costs and fixed expenses are estimated from observer data for 2002-2005, which indicated that that costs vary with the vessel size (Table 108). The trip costs are defined as those expenses that increase or decrease with the level of fishing activity excluding the cost of crew. These costs include food, ice, water, oil and fuel, and are usually paid by crew in the scallop fishery out of their shares from the gross stock. The fixed costs include those expenses that are not usually related to the level of fishing activity or output. These are expenses on insurance, maintenance, repairs and replacement of engine, electrical and processing equipment, gear and other equipment and are obtained from the observer data for the same period. There are other fixed costs a vessel owner pays, such as for office expenses, interest, accounting, utilities and dock fees. They are not included in fixed costs estimates because the data on these items are not collected by the observer program. Therefore, fixed costs per vessel shown in Table 108 and others underestimate actual fixed costs and should be used only for the comparative analyses of the alternatives.

Since it is not possible to show revenues and costs for each general category vessel, estimates were made for four vessel groups according to their gross tonnage for the sample of vessels that were active during the 2005 fishing year and would qualify for limited access with some alternatives. These estimates show group averages only since costs and revenues could vary from vessel to vessel even within the each group (Table 108 to Table 110). The revenues and costs were estimated for four vessel groups in terms of their gross tonnage and based on the following assumptions:

- Although, there is uncertainty regarding future scallop prices, it is estimated that prices could range from \$6.00 to \$7.60 for the period 2007 - 2017 based on biological projections and the price model Appendix 5.4.22. Most of the scenario analyses used a price of \$7.60 per pound of scallops although examples with \$6.00 per pound are also provided.
- Allocation pounds were converted into number of trips by assuming that 400 lb. (possession limit) will be landed from each trip. This assumption is valid for vessels that target scallops, rather than for vessels that land scallops as a bycatch while fishing for other species. In order to land the same amount of pounds, these vessels would have to take more trips. For example, for a vessel that lands only 200 lb. of scallops from each trip, the number of trips shown in these tables will double. In that situation, since not all the trip costs could be attributed to scallop fishing, the part of trip costs due to scallops will be lower than shown in these tables. Table 111 shows that most of the general category vessels have maximum trip landings of more than 200 lb. These vessels tend to have a greater dependence on scallop fishing as a source of income compared to vessels with maximum trip landings of less than 200 lb.
- Total trip costs are estimated by multiplying trip cost per day-at-sea for each gross tonnage group with the number of trips (Table 108). Net revenue shows the difference between gross revenue and total trip costs. All cost estimates were updated using 2006 price indexes.

- The crew incomes are determined from a lay system according to which crew gets 55% of the gross stock and pays for trip costs including food, fuel, oil, water, and ice (Georgianna et al, 2005)<sup>4</sup>.
- Boat share is what the boat owner receives after crew incomes and trip costs (crew pays) are deducted.
- The part of fixed costs attributable to scallop fishing is estimated by multiplying total fixed costs for each vessel group with the percentage of revenue from scallop fishing. The percentages shown in Table 112 to Table 116, although based on the average values given in Table 110, are used only for the purposes of scenario analyses. They show a range of relative impacts. The dependence on scallop revenue and fixed costs vary from one vessel to another even within the each gross tonnage group and impacts on individual vessels could be different than the range of impacts shown in Table 112 to Table 116.
- The last column in these tables is estimated by deducting the fixed expenses attributable to scallop fishing from the boat share. Boat share net of fixed costs is considered as an (imperfect) proxy for profit levels associated with various allocation pounds, although actual profits will be lower than these numbers depending on other expenses not included in the fixed costs estimates in Table 108 above. As discussed above, not all fixed cost items associated with fishing operations are collected by the observer program, thus could not be taken into account in these analyses.
- It must be emphasized that boat share net of fixed costs include revenues only from scallop fishing, thus it is an imperfect proxy for profits from scallop fishing only. The majority of the vessels in the scallop fishery derive some amount of income from species other than scallops as well. As a result, for most vessels, the boat share net of fixed costs will underestimate actual amount of total profits. Both crew and vessels shares will be higher than shown in those tables if revenues from other species are added to the gross revenue. Estimating a vessel's total revenue is beyond the scope of this analysis, however, since Amendment 11 will mainly affect scallop landings and revenues.

**Table 108. Estimated costs for sample of general category vessels that were active during the 2005 fishing year.**

Gross Tonnage	Number of vessels	Trip costs per day-at-sea (\$)	Average GRT	Fixed costs per vessel (\$)
Less than 50 GRT	143	291	25	37,974
51 GRT -100 GRT	62	343	75	68,225
101 GRT-150 GRT	81	416	125	100,919
Greater than 150 GRT	29	489	182	134,561
Grand Total	318	351	75	68,905

<sup>4</sup> According to the recent study by Georgianna et al., "Employment, Income and Working Conditions in New Bedford's Offshore Fisheries", Crew shares dropped from 59% in 1993 to 55% in 2002. The report indicates that the lay system could also vary by vessel.

**Table 109. Revenue from scallop and other fisheries by vessel size (2005 fishing year)**

Gross Tonnage	Number of vessels	Average Scallop landings best year	Scallop landings in 2005 fishing year	% of Scallop revenue in total revenue	Average scallop revenue per vessel (\$)	Average revenue from other species(\$)	Average total revenue from per vessel (\$)
Less than 50 GRT	157	10,179	12,825	68%	97,263	45,452	142,715
51 GRT -100 GRT	80	8,593	12,493	30%	95,177	226,818	321,995
101 GRT-150 GRT	91	5,694	9,148	15%	69,533	379,324	448,857
> 150 GRT	33	3,815	6,516	7%	49,708	671,880	721,588
Grand Total	361	8,115	11,248	27%	85,463	227,069	312,532

**Table 110. Composition of revenue by annual landings and GRT (2005 fishing year)**

GRT	Data	Scallop landings (lb.) per vessel (2005 fishing year)					Grand Total
		<1000lb.	1000 lb.-4999 lb.	5,000 lb.-9,999 lb.	10,000 lb.-19,999 lb.	>=20,000 lb.	
< 50	% of scallop revenue in total	2%	33%	60%	78%	93%	68%
	Number of vessels	36	17	28	41	35	157
	Scallop landings (avg. per vessel)	228	2,466	7,593	14,277	33,299	12,825
	Revenue from other species (avg. per vessel)	98,049	37,572	39,293	30,372	17,770	45,452
	Scallop revenue (avg. per vessel)	1,830	18,770	59,338	108,213	251,060	97,263
	Total revenue (avg. per vessel)	99,879	56,342	98,630	138,585	268,831	142,715
50-100 GRT	% of scallop revenue in total	1%	5%	35%	47%	79%	30%
	Number of vessels	23	17	9	12	19	80
	Scallop landings (avg. per vessel)	291	2,777	7,424	15,518	36,448	12,493
	Revenue from other species (avg. per vessel)	316,650	402,368	109,595	136,438	73,614	226,818
	Scallop revenue (avg. per vessel)	2,393	19,985	59,306	120,263	275,918	95,177
	Total revenue (avg. per vessel)	319,043	422,353	168,900	256,700	349,532	321,995
101-150 GRT	% of scallop revenue in total	1%	4%	17%	51%	78%	15%
	Number of vessels	29	35	6	6	15	91
	Scallop landings (avg. per vessel)	415	2,094	7,909	17,252	39,741	9,148
	Revenue from other species (avg. per vessel)	495,799	463,745	312,449	128,974	84,048	379,324
	Scallop revenue (avg. per vessel)	3,343	17,038	63,834	132,153	297,220	69,533
	Total revenue (avg. per vessel)	499,143	480,783	376,283	261,127	381,267	448,857
>150 GRT	% of scallop revenue in total	1%	3%	6%	12%	72%	7%
	Number of vessels	12	8	5	5	3	33
	Scallop landings (avg. per vessel)	416	2,360	7,274	13,075	29,805	6,516
	Revenue from other species (avg. per vessel)	676,712	691,731	906,118	745,558	86,424	671,880
	Scallop revenue (avg. per vessel)	3,609	19,752	56,708	99,454	219,410	49,708
	Total revenue (avg. per vessel)	680,321	711,483	962,827	845,012	305,834	721,588
All	% of scallop revenue in total	1%	5%	25%	49%	84%	27%
	Number of vessels	100	77	48	64	72	361
	Scallop landings (avg. per vessel)	319	2,355	7,568	14,695	35,327	11,248
	Revenue from other species (avg. per vessel)	333,114	379,791	176,913	115,377	49,175	227,069
	Scallop revenue (avg. per vessel)	2,612	18,353	59,620	112,033	265,918	85,463
	Total revenue (avg. per vessel)	335,726	398,144	236,533	227,410	315,093	312,532

**Table 111. Landings and revenue by average trip landings**

Fish year	Average Scallop landing per trip >200 lb.			Average Scallop landing per trip <200 lb.		
	Number of vessels	Scallop revenue as a % of total revenue	GRT	Number of vessels	Scallop revenue as a % of total revenue	GRT
1994	27	39%	42	116	10%	88
1995	39	29%	59	125	15%	82
1996	29	49%	43	181	23%	65
1997	28	38%	53	203	25%	59
1998	18	37%	71	185	22%	63
1999	23	32%	72	168	17%	69
2000	16	68%	53	185	14%	75
2001	49	81%	33	225	21%	79
2002	49	83%	36	248	21%	84
2003	66	94%	40	259	21%	73
2004	109	87%	52	264	21%	81

**The results of the analyses:**

The estimates for revenues, costs, and crew income and boat shares are shown in Table 112 to Table 117. The results of these analyses could be summarized as follows:

- The estimates show at a scallop price of \$7.60 per pound, an allocation amount of 7500lb. (or about 12.5 trips) for a vessel with less than 50 GRT and with 60% income from scallops could generate a small net boat share of \$3,000 from scallop fishing only. Net income from scallop fishing will increase considerably for allocation amounts 15,000 lb. more (Table 112). If the prices were to decline to \$6.00 per pound, the allocation amount should be close to 20,000 lb. for the same vessel to make profits at the comparable levels if the price was \$7.60 (Table 113).
- For larger vessels with higher trip and fixed costs and a high dependence on scallops as a source of revenue, the allocations (either in pounds or trips) should be higher in order for these vessels to derive a net income from scallops fishing (relative to allocations for smaller vessels). For vessels with fishing income from other species, that is, for the majority of the general category fleet, profitability could be maintained at smaller amounts of allocation. The reason is that part of variable and fixed costs will be paid by the revenue obtained from other fisheries. In addition, larger vessels have a higher percentage of their income from other fisheries relative to smaller boats, thus, could maintain profitability from scallop fishing at lower allocation amounts.
- The general category vessels that land smaller amounts of scallops per year generally have less dependence on scallop revenue than vessels that target scallops and land large volumes (Table 110). For these vessels, an allocation amount for scallops smaller than what they were landing in the past would result in a decrease in revenue, but probably would not have significant negative impacts on their economic viability. Therefore, Table 112 to Table 117 would underestimate the actual level of profits for these vessels since the revenue they earn from other fisheries would pay for most of the fixed costs. For example, average revenue per vessel from other fisheries exceeded \$330,000 for vessels that landed less than 1000 lb. of scallops, and \$379,000 for vessels that landed 1000 lb. to 4,999 lb. of scallops in 2005 fishing year (Table 110). Obviously, this amount of revenue would cover both the trip costs and fixed costs and generate profits for these vessels. Therefore, for this group of vessels it is best to consider the net revenue, crew share and

boat shares as representing income and profits from scallop fishing only and disregard the last column -- given that total profits for these vessels would be higher than shown in these Tables.

- The crew and boat shares from scallop fishing are estimated separately for vessels which have a trip landing of 200 lb. of scallops since they will have to take more trips to land a specific allocation amount (Table 117). These vessels also have a smaller dependence on scallops as a source of income (Table 111) and landed only small amounts of scallops in the past (Table 95). Although, crew and boat shares from scallop fishing are estimated at various levels of qualification amounts, any amount greater than 5000 lb. is not relevant for most of these vessels.

**Table 112. Estimated revenues and costs for an average vessel with less than 50 gross tonnage. Price=\$7.60 per pound, Average trip costs per DA=\$291, average fixed costs per vessel=\$37,974, average revenue from other fisheries=\$ 45,452 (2005)**

Allocation pounds	Number of trips	Annual Scallop Revenue	Total trip costs	Net Revenue (net of trip costs)	Crew income (net of trip costs)	Boat Share (Annual)	% of scallop revenue (1)	Fixed costs from scallop fishing	Boat share net of fixed costs (2)
2500	6.3	19,000	1,819	17,181	8,631	8,550	33%	12,532	(3,900)
7500	19	57,000	5,456	51,544	25,894	25,650	60%	22,785	3,109
10000	25	76,000	7,275	68,725	34,525	34,200	78%	29,620	4,905
15000	38	114,000	10,913	103,087	51,787	51,300	78%	29,620	22,167
20000	50	152,000	14,550	137,450	69,050	68,400	93%	35,316	33,734
25000	63	190,000	18,188	171,812	86,312	85,500	93%	35,316	50,996
30000	75	228,000	21,825	206,175	103,575	102,600	93%	35,316	68,258
40000	100	304,000	29,100	274,900	138,100	136,800	93%	35,316	102,783
50000	125	380,000	36,376	343,624	172,624	171,000	93%	35,316	137,308
60000	150	456,000	43,651	412,349	207,149	205,200	93%	35,316	171,833
70000	175	532,000	50,926	481,074	241,674	239,400	93%	35,316	206,358

(1) Percentage share of scallop revenue are estimated from Table 110 and used here merely for the purposes of scenario analyses.

(2) Revenue from other species is not included.

Note: The number in parentheses shows that there is loss to the vessel.

**Table 113. Estimated revenues and costs for an average vessel with less than 50 gross tonnage. Price=\$6.0 per pound, Average trip costs per DA=\$291, average fixed costs per vessel=\$37,974, average revenue from other fisheries=\$ 45,452 (2005)**

Allocation pounds	Number of trips	Annual Scallop Revenue	Total trip costs	Net Revenue (net of trip costs)	Crew income (net of trip costs)	Boat Share (Annual)	% of scallop revenue	Fixed costs from scallop fishing	Boat share net of fixed costs
2500	6.3	15,000	1,819	13,181	6,431	6,750	33%	12,532	(6,100)
7500	19	45,000	5,456	39,544	19,294	20,250	60%	22,785	(3,491)
10000	25	60,000	7,275	52,725	25,725	27,000	78%	29,620	(3,895)
15000	38	90,000	10,913	79,087	38,587	40,500	78%	29,620	8,967
20000	50	120,000	14,550	105,450	51,450	54,000	93%	35,316	16,134
25000	63	150,000	18,188	131,812	64,312	67,500	93%	35,316	28,996
30000	75	180,000	21,825	158,175	77,175	81,000	93%	35,316	41,858
40000	100	240,000	29,100	210,900	102,900	108,000	93%	35,316	67,583
50000	125	300,000	36,376	263,624	128,624	135,000	93%	35,316	93,308
60000	150	360,000	43,651	316,349	154,349	162,000	93%	35,316	119,033
70000	175	420,000	50,926	369,074	180,074	189,000	93%	35,316	144,758

(1) Percentage share of scallop revenue are estimated from Table 110 and used here merely for the purposes of scenario analyses.

(2) Revenue from other species is not included.

Note: The number in parentheses shows that there is loss to the vessel.

**Table 114. Estimated revenues and costs for an average vessel with 51 to 100 gross tonnage. Price=\$7.60 per pound, Average trip costs per DA=\$343, average fixed costs per vessel=\$68,225, average revenue from other fisheries=\$226,818 (2005)**

Allocation pounds	Number of trips	Annual Scallop Revenue	Total trip costs	Net Revenue (net of trip costs)	Crew income (net of trip costs)	Boat Share (Annual)	% of scallop revenue (1)	Fixed costs from scallop fishing	Boat share net of fixed costs (2)
2500	6	19,000	2,144	16,856	8,306	8,550	5%	3,411	5,139
7500	19	57,000	6,431	50,569	24,919	25,650	35%	23,879	1,771
10000	25	76,000	8,575	67,425	33,225	34,200	47%	32,066	2,134
15000	38	114,000	12,863	101,138	49,838	51,300	47%	32,066	19,234
20000	50	152,000	17,150	134,850	66,450	68,400	79%	53,897	14,503
25000	63	190,000	21,438	168,563	83,063	85,500	79%	53,897	31,603
30000	75	228,000	25,725	202,275	99,675	102,600	79%	53,897	48,703
40000	100	304,000	34,300	269,700	132,900	136,800	79%	53,897	82,903
50000	125	380,000	42,875	337,125	166,125	171,000	79%	53,897	117,103
60000	150	456,000	51,450	404,550	199,350	205,200	79%	53,897	151,303
70000	175	532,000	60,025	471,975	232,575	239,400	79%	53,897	185,503

(1) Percentage share of scallop revenue are estimated from Table 110 and used here merely for the purposes of scenario analyses.

(2) Revenue from other species is not included.

Note: The number in parentheses shows that there is loss to the vessel.

**Table 115. Estimated revenues and costs for an average vessel with 101 to 150 gross tonnage. Price=\$7.60 per pound, Average trip costs per DA=\$416, average fixed costs per vessel=\$100,919, average revenue from other fisheries=\$379,324 (2005)**

Allocation pounds	Number of trips	Annual Scallop Revenue	Total trip costs	Net Revenue (net of trip costs)	Crew income (net of trip costs)	Boat Share (Annual)	% of scallop revenue (1)	Fixed costs from scallop fishing	Boat share net of fixed costs (2)
2500	6	19,000	2,600	16,400	7,850	8,550	4%	4,037	4,513
7500	19	57,000	7,800	49,200	23,550	25,650	17%	17,156	8,494
10000	25	76,000	10,400	65,600	31,400	34,200	51%	51,469	(17,269)
15000	38	114,000	15,600	98,400	47,100	51,300	78%	78,717	(27,417)
20000	50	152,000	20,800	131,200	62,800	68,400	78%	78,717	(10,317)
25000	63	190,000	26,000	164,000	78,500	85,500	78%	78,717	6,783
30000	75	228,000	31,200	196,800	94,200	102,600	78%	78,717	23,883
40000	100	304,000	41,600	262,400	125,600	136,800	78%	78,717	58,083
50000	125	380,000	52,000	328,000	157,000	171,000	78%	78,717	92,283
60000	150	456,000	62,400	393,600	188,400	205,200	78%	78,717	126,483
70000	175	532,000	72,800	459,200	219,800	239,400	78%	78,717	160,683

(1) Percentage share of scallop revenue are estimated from Table 110 and used here merely for the purposes of scenario analyses.

(2) Revenue from other species is not included.

Note: The number in parentheses shows that there is loss to the vessel.

**Table 116. Estimated revenues and costs for an average vessel with gross tonnage of greater than 150 GRT Price=\$7.60 per pound, Average trip costs per DA=\$489, average fixed costs per vessel=\$134,561, average revenue from other fisheries=\$671,880 (2005)**

Allocation pounds	Number of trips	Annual Scallop Revenue	Total trip costs	Net Revenue (net of trip costs)	Crew income (net of trip costs)	Boat Share (Annual)	% of scallop revenue (1)	Fixed costs from scallop fishing	Boat share net of fixed costs (2)
2500	6	19,000	2,600	16,400	7,850	8,550	4%	4,037	4,513
7500	19	57,000	7,800	49,200	23,550	25,650	17%	17,156	8,494
10000	25	76,000	10,400	65,600	31,400	34,200	51%	51,469	(17,269)
15000	38	114,000	15,600	98,400	47,100	51,300	78%	78,717	(27,417)
20000	50	152,000	20,800	131,200	62,800	68,400	78%	78,717	(10,317)
25000	63	190,000	26,000	164,000	78,500	85,500	78%	78,717	6,783
30000	75	228,000	31,200	196,800	94,200	102,600	78%	78,717	23,883
40000	100	304,000	41,600	262,400	125,600	136,800	78%	78,717	58,083
50000	125	380,000	52,000	328,000	157,000	171,000	78%	78,717	92,283
60000	150	456,000	62,400	393,600	188,400	205,200	78%	78,717	126,483
70000	175	532,000	72,800	459,200	219,800	239,400	78%	78,717	160,683

(1) Percentage share of scallop revenue are estimated from Table 110 and used here merely for the purposes of scenario analyses.

(2) Revenue from other species is not included.

Note: The number in parentheses shows that there is loss to the vessel.

**Table 117. Estimated revenues and costs for an average vessel with 51 to 100 gross tonnage and average trip landings of 200 lb. Price=\$7.60 per pound. Average trip costs per DA=\$343**

Allocation pounds	Number of trips	Annual Scallop Revenue	Total trip costs	Net Revenue (net of trip costs)	Crew income (net of trip costs)	Boat Share (Annual)
1000	5	7,600	437	7,163	3,743	3,420
5000	25	38,000	2,184	35,816	18,716	17,100
10000	50	76,000	4,368	71,632	37,432	34,200
20000	100	152,000	8,736	143,264	74,864	68,400
30000	150	228,000	13,104	214,896	112,296	102,600
40000	200	304,000	17,472	286,528	149,728	136,800
50000	250	380,000	21,840	358,160	187,160	171,000

#### **5.4.6 The impacts of qualification criteria and time period alternatives on recent participants**

This section provides an analysis of the potential economic impacts of qualification alternatives on the general category vessels combined with the impacts of qualification time period.

Although, the economic impacts of poundage criteria and time period are interrelated, the impacts of the three qualification criteria alternatives, i.e., 100 lb., 1000 lb. and 5000 lb., will also be examined separately by comparing the impacts within the same qualification time period; for example, for 5 year period. Similarly, the impacts of the qualification time period alternatives will be analyzed independently from the impacts of poundage criteria, by comparing the impacts for the same poundage alternative (for example, 1000 lb. criteria) across the three time periods, for 2 year, 5 year and 11 year.

The economic impacts of a limited access program on the recent participants of the general category fishery will vary according to whether a vessel had a general category permit before the control date and had landed a specific amount of scallops as required by qualification alternatives during a specific qualification time period. The magnitude of the economic impacts will be determined, however, not only by the historical activity but also by the recent participation in scallop fishery. This section provides an analysis of the economic impacts by comparing the potential impacts of a limited access program relative to the scallop fishing activity of the general category vessels during 2005 and 2006 fishing years.

Table 118 summarizes scallop landings and revenue for the general category vessels according to whether they had a permit before the control date. The majority of the recent participants, 516 vessels in 2005 fishing year, and 455 vessels in 2006 fishing year had general category permits before the control date. Not all of these vessels will qualify for limited access, however, either because they did not land any scallops before the control date during a qualification period, or that their scallop landings do not meet the poundage criteria specified by the qualification criteria alternatives. In addition to those vessels, the vessels that obtained their general category permit for the first time after the control date will not qualify for limited access. These include 81 vessels that were active in 2005 and 88 vessels that were active in 2006 (up to Jan.2006) fishing years. Table 119 shows the number and revenues of the vessels by their primary region of landing and permit date. Majority of vessels that received their permits after the control date are

from Mid-Atlantic area, with 16 from North Carolina, 14 from New Jersey, 12 from Delaware, and the rest from the other states. Most of these vessels have a high dependence on scallops for their fishing income.

**Table 118. Scallop Landing and revenues by general category vessels according to the permit date**

Permit Before the control date	Data	2005 Fish year	2006 Fish year up to Jan.06*
NO	Number of active vessels	81	88
	Scallop Landings(lb)	1,442,777	1,064,389
	Scallop Revenue (\$)	11,264,313	6,740,284
	Scallop lb. per vessel	17,812	12,095
	Scallop revenue per vessel	139,066	76,594
YES	Number of active vessels	516	455
	Scallop Landings(lb)	5,808,695	4,452,781
	Scallop Revenue (\$)	43,996,020	27,734,725
	Scallop lb. per vessel	11,257	9,786
	Scallop revenue per vessel	85,264	58,443
Total number of active vessels		597	543
Total Scallop Landings(lb)		7,251,472	5,517,170
Total Scallop Revenue (\$)		55,260,333	34,475,009
Average scallop lb. per vessel		12,147	10,161
Average scallop revenue per vessel		92,563	61,390

\* Preliminary data

**Table 119. Landings and Revenues by general category vessels by permit date and primary region of landing**

Permit Before the control date	REGION	Data	2005 Fish year	2006 Fish year <sup>(1)</sup>
NO	New England	Number of active vessels	20	21
		Scallop lb. per vessel (\$)	5,080	6,322
		Scallop revenue per vessel (\$)	40,103	43,716
		Total revenue per vessel (\$)	49,330	58,268
		Total scallop landings	101,598	132,772
		% of revenue from scallops	84.80%	77.88%
		Total scallop revenue (\$)	802,061	918,041
		Total revenue (\$)	986,604	1,223,635
	Mid Atlantic	Number of active vessels	61	67
		Scallop lb. per vessel (\$)	21,987	13,905
		Scallop revenue per vessel (\$)	171,512	86,899
		Total revenue per vessel (\$)	186,774	93,324
		Total scallop landings	1,341,179	931,617
		% of revenue from scallops	88.06%	95.10%
Total scallop revenue (\$)		10,462,252	5,822,243	
Total revenue (\$)		11,393,234	6,252,721	
YES	New England	Number of active vessels	266	249
		Scallop lb. per vessel (\$)	6,094	7,825
		Scallop revenue per vessel (\$)	48,739	51,702
		Total revenue per vessel (\$)	257,071	180,653
		Total scallop landings	1,620,977	1,948,380
		% of revenue from scallops	41.82%	47.90%
		Total scallop revenue (\$)	12,964,619	12,873,773
		Total revenue (\$)	68,380,810	44,982,641
	Mid Atlantic	Number of active vessels	250	195
		Scallop lb. per vessel (\$)	16,751	11,907
		Scallop revenue per vessel (\$)	124,320	70,359
		Total revenue per vessel (\$)	312,063	133,002
		Total scallop landings	4,187,718	2,321,836
		% of revenue from scallops	61.69%	70.06%
Total scallop revenue (\$)		31,080,079	13,719,921	
Total revenue (\$)		78,015,805	25,935,420	
Total Number of vessels			597	532 <sup>(2)</sup>

(1) The data for 2006 fish year is preliminary and includes data up to Jan.18, 2007. This data may not yet include all the revenues from other species, thus could underestimate total revenue and/or overestimate percentage of scallop revenue in total revenue.

(2) There 543 vessels that landed scallops in 2006, but some of these vessels did not have complete revenue information, thus not included in the Table.

The economic impacts of the qualification criteria alternatives for both qualifying and the non-qualifying vessels will vary with the assumptions made about the potential landings and revenues by the general category vessels. This section discusses the economic impacts relative to the recent levels of scallop landings by general category vessels. Such a scenario could realistically assess impacts only if the future yield from the scallop resource stayed at the recent levels, with no further entry to the general category fishery, allowing the same general category vessels to participate in the scallop fishery at the same rate as observed in 2005-2006 fishing years. Under no action, however, new vessels could enter the general category fishery increasing the fishing

mortality, and reducing the stock biomass of the scallop resource. There is no question that, under no action, that is, without continuous management action to keep the target mortality level in track, scallop yield, revenues and profits for all vessels, including those of the recent participants of the general category fishery will decline.

Under the status quo management (as distinct from no action), however, increase in scallop mortality due to new entry into the general category fishery or due to an increase in landings of the present participants would be corrected by framework action in accordance with the Sea Scallop FMP regulations. Assuming that this correction would be made by reducing day-at-sea allocations for the limited access vessels as had been done in the past rather than by reducing possession limit for the general category vessels, there will be no significant changes in the scallop stock biomass over the long-term. Under these circumstances, it is assumed that the present participants could fish at the same or higher (lower) levels compared to their recent fishing depending on the market conditions, scallop prices and fishing costs. The recent biological simulations (Table 96) show that scallop landings could range somewhere between 56 million lb. to 68 million lb. in the future years, which are close to the levels observed for 2005 (53 million lb.) and 2006 fishing years (46 million lb. as of Jan.2006). If indeed these projections materialize and scallop prices do not differ significantly from these levels, the analyses shown in this section could approximate the economic impacts of qualification criteria and time period alternatives with limited access, separately from the impacts of a general category TAC. If on the other hand, if scallop biomass turns out be much lower than estimated because of the overfishing observed in the recent years, future scallop landings of both general category and limited access vessels could be lower than the 2005-2006 levels. In that case, the analyses in this section would overestimate the absolute impacts of the alternatives compared to the status quo management of unlimited access by general category vessels (in terms of gross and net revenues). The relative impacts of the qualification criteria and qualification period alternatives will not change, however, if the future scallop landings and/or prices were significantly lower (higher) from their levels in 2005 and 2006, since the estimated landings and revenues for status quo will be lower (higher) under all alternatives.

The economic impacts of the qualification criteria and period alternatives will also depend on the level of general category TAC. The magnitude of economic impacts with the TAC management could be similar to the results presented in this section only if general category TAC is set at either the 2005 or 2006 level. The relative impacts of qualification criteria and period alternatives vis-à-vis each other will not change, however, with the level of TAC. On the other hand, the absolute impacts, that is, whether certain alternatives will have negative or positive impacts on the qualifiers, will vary with the level of general category TAC for each qualification alternative. These impacts including the distributional impacts of the alternative criteria and time period combined with a TAC management were analyzed separately in Section 5.4.5.

Table 118 summarizes best year scallop landings for each qualification time period and scallop landings in 2005 and 2006 fishing years (up to Jan. 2006 for 2006) for the general category vessels for each qualification criteria alternative. The first part of the Table shows the impacts on general category vessels that had a permit before the control date, and the second part (last row) of the Table shows the impacts on the vessels that had a general category permit for the first time after the control date.

**Table 120. Historical and recent activity by general category vessels that qualify and do not qualify for limited access according to the qualification criteria and time period alternatives.**

Time Period	Qualification lb. Criteria	Qualify	Qualification Period Activity		2005 fish year: March 2005 to February 2006			2006 fish year: March 2006 to January 2006		
			Number of active vessels	Total best year scallop landings (lb)	Number of active vessels	Scallop Landings (lb.)	Scallop Revenue (\$)	Number of active vessels	Scallop Landings (lb.)	Scallop Revenue (\$)
<b>General category vessels that had a permit before the control date</b>										
11 Years	Not active	NO	0	0	152	1,731,381	13,082,434	128	1,236,330	7,677,402
	100	NO	219	27,618	46	242,077	1,767,825	38	197,173	1,232,973
		YES	705	4,289,112	318	3,835,237	29,194,439	289	3,019,278	18,824,350
	1000	NO	465	130,428	130	700,305	5,393,692	124	871,820	5,549,105
		YES	459	4,187,989	234	3,377,009	25,568,572	203	2,344,631	14,508,218
	5000	NO	721	713,786	233	1,268,207	9,821,372	208	1,612,748	10,190,219
		YES	203	3,604,631	131	2,809,107	21,140,892	119	1,603,703	9,867,104
	5 years	Not active	NO	0	0	172	1,843,638	13,935,636	144	1,312,725
100		NO	129	12,397	43	210,624	1,592,874	37	240,229	1,510,414
		YES	548	3,963,266	301	3,754,433	28,516,188	274	2,899,827	18,026,056
1000		NO	308	93,091	120	613,086	4,713,964	112	817,239	5,157,371
		YES	369	3,883,173	224	3,351,971	25,395,098	199	2,322,817	14,379,099
5000		NO	489	502,964	214	1,174,636	9,112,295	193	1,551,273	9,757,442
		YES	188	3,473,300	130	2,790,421	20,996,767	118	1,588,783	9,779,028
2 Years		Not active	NO	0	0	210	2,132,697	16,202,289	180	1,626,242
	100	NO	83	7,888	36	161,584	1,237,369	31	116,649	741,199
		YES	399	2,969,856	270	3,514,414	26,605,040	244	2,709,890	16,776,816
	1000	NO	205	64,204	105	597,846	4,510,888	100	668,155	4,234,159
		YES	277	2,913,614	201	3,078,152	23,331,521	175	2,158,384	13,283,856
	5000	NO	339	368,799	192	1,133,011	8,614,703	173	1,369,552	8,601,101
		YES	143	2,609,019	114	2,542,987	19,227,706	102	1,456,987	8,916,914
	<b>General category vessels that had a permit only <u>after</u> the control date</b>									
From March 2005 to Jan.2006		NO	0	0	81	1,442,777	11,264,313	88	1,064,389	6,740,284

**Table 121. Composition of total revenue by qualification criteria and time period alternatives in 2005 fishing year.**

Time Period	Qualification lb. Criteria	Qualify	Number of active vessels	Scallop Revenue as a % of Total Revenue	Average scallop revenue per vessel (\$)	Average Revenue from other species per vessel	Average scallop revenue per vessel (\$)	Total scallop revenue (\$)	Total revenue (\$)
<b>General category vessels that had a permit before the control date</b>									
11 Years	Not active	NO	152	62%	86,069	133,974	220,043	13,082,434	33,446,503
	100	NO	46	22%	38,431	336,142	374,573	1,767,825	17,230,372
		YES	318	50%	91,806	209,199	301,005	29,194,439	95,719,740
	1000	NO	130	24%	41,490	347,717	389,207	5,393,692	50,596,884
		YES	234	60%	109,267	157,199	266,467	25,568,572	62,353,228
	5000	NO	233	28%	42,152	312,814	354,966	9,821,372	82,707,035
YES		131	80%	161,381	69,482	230,863	21,140,892	30,243,077	
5 years	Not active	NO	172	58%	81,021	148,091	229,112	13,935,636	39,407,306
	100	NO	43	24%	37,044	288,418	325,462	1,592,874	13,994,860
		YES	301	51%	94,738	214,213	308,952	28,516,188	92,994,449
	1000	NO	120	23%	39,283	345,405	384,688	4,713,964	46,162,614
		YES	224	61%	113,371	158,177	271,548	25,395,098	60,826,695
	5000	NO	214	29%	42,581	316,778	359,359	9,112,295	76,902,805
YES		130	80%	161,514	69,921	231,435	20,996,767	30,086,504	
2 Years	Not active	NO	210	54%	77,154	177,612	254,766	16,202,289	53,500,875
	100	NO	36	24%	34,371	244,157	278,528	1,237,369	10,027,021
		YES	270	53%	98,537	208,384	306,921	26,605,040	82,868,719
	1000	NO	105	26%	42,961	312,458	355,419	4,510,888	37,318,958
		YES	201	62%	116,077	160,424	276,501	23,331,521	55,576,782
	5000	NO	192	31%	44,868	297,568	342,436	8,614,703	65,747,782
YES		114	81%	168,664	69,476	238,140	19,227,706	27,147,958	
<b>General category vessels that had a permit only <u>after</u> the control date</b>									
From March 2005 to Jan.2006		NO	81	87%	139,066	13,772	152,838	11,264,313	12,379,838

**Summary of impacts**

- 11 year qualification criteria will have the smallest impacts on recent participants of the fishery for each poundage alternative compared to the 5 years and 2 years qualification periods (Table 120).
- Increase in the poundage criteria will significantly increase, however, the loss in revenue of the recent participants that do not qualify for limited access. For example, with 1000 lb. criteria and five year period, 112 vessels that earned over \$5 million in 2006 will not qualify. With 5000 lb. criteria, however, 193 vessels that earned over \$9.7 scallop revenue in 2006 will not qualify for limited access. Future landings and revenues of these vessels could be less; however, than the levels observed in 2005-06 fishing years even with the status quo management. Nevertheless, by disqualifying a larger number of vessels, the higher poundage alternatives will have larger negative economic impacts on the recent participants regardless of the future amount of landings or TAC. The same conclusions are valid if the qualification period was reduced to 5 or 2 years. For each of

these periods, 5000 lb. criteria will result in a larger negative impact on the recent participants of the general category fishery compared to 100 lb. and 1000 lb. criteria.

- The reverse will be true for the vessels that will qualify for these alternatives. Since general category TAC would be divided between fewer participants, 5000 lb. qualification alternative will result in largest gains for the qualified vessels depending on the level of TAC.
- Although, the absolute economic impacts will vary, the relative economic impacts of one alternative versus another on the general category vessels will not change, with the level of TAC or the level of future landings.

#### **5.4.6.1 Relative Impacts on groups of general category vessels**

The impacts of the Amendment 11 alternatives are analyzed in detail the following sections for four groups of general category vessels according to whether they qualify for limited access and according to whether they participated in the scallop fishery before and after the control date:

**Group 1.** Vessels that had a permit and were active before the control date and qualify for limited access.

**Group 2** Vessels that had a permit and were active before the control date but do not qualify for limited access due to the poundage criteria.

**Group 3** Vessels that had a permit before the control date but were not active until after the control date, thus do not qualify for limited access.

**Group 4.** Vessels that did not have a permit before the control date, thus do not qualify for limited access, but were active during the recent years.

##### **5.4.6.1.1 The impacts on vessels that had a permit and were active before the control date and qualify for limited access (Group 1).**

The impacts of the qualification criteria alternatives on the number of vessels that will qualify were discussed in Section 5.4.3 (Table 79). This section examines the economic impacts on the qualifiers relative to their recent activity in the general category scallop fishery, since the economic impacts of the qualification criteria alternatives on these vessels will depend on whether they will be able to land similar amounts with the limited access program and TAC management.

The impacts on the qualified vessels will vary according to whether they participated in the general category fishery in the recent years and derived revenue from scallops. Not all the vessels that qualify for limited access according to their historical participation landed any scallops during the last two fishing years. Table 118 shows the scallop landings of the vessels before the control date for each qualification period and compares these with scallop landings and revenue after the control date. Using 5 year period as an example, it could be seen out of 548 vessels would qualify for limited access with 100 lb. criteria, only 301 participated in the scallop fishery in 2005 and 274 in 2006 fishing years. These same vessels landed 3.7 million lb. of scallops and earned \$28.5 million revenue in 2005. For 2006, 274 qualifiers landed 2.8 million lb. and earned \$18.0 million revenue from scallops. The economic impacts of the qualification criteria alternatives on these vessels will depend on the level of general category TAC and on the amount of pounds to be allocated to other vessels. Since these vessels will have to share total

general category allocation with the qualifiers that were not active in the scallop fishery in recent years, if TAC is lower than their landings plus the share of the vessels that were not active during the recent years, they will incur a loss from limited access. Out of these 548 qualifiers, 247 vessels that did not fish in 2005 and 274 vessels that did not fish in 2006 will gain from a limited access program since they will be allocated scallop pounds (or trips) that they can land in the future, or even lease or sell under some alternatives.

The analysis based on the recent activity of the qualifiers show, however, that a higher poundage criterion will reduce the number of qualifiers that were not active in the recent years. For example, 1000 lb. criteria will include 369 qualifiers, out of which 224 vessels landed scallops in 2005 whereas 145 vessels did not fish for scallops. As the qualification criteria is increased to 5000 lb., 130 vessels out of 188 qualifiers that were active in 2005 would have to share the TAC with only 58 additional qualifiers that did not fish in 2005. As a result, any loss in revenue for recent participants will be minimized since TAC will be shared with a smaller pool of vessels. Similarly, if the TAC was set larger than the sum of pounds the active could land under status quo management, these vessels could gain from the limited access program since the share per qualified vessel will be higher. Overall, the same conclusions will be valid for the 11 year and 2 year qualification periods, that is, higher poundage criteria will benefit those qualifiers that were active in the recent years relatively more compared to lower poundage criteria within each time period. An analysis of the distributional impacts of qualification criteria and period alternatives on vessels that were active in the fishery versus those vessels with historical participation only is provided in Section 5.4.6.2.

#### **5.4.6.1.2 The impacts on vessels that had a permit and were active before the control date but do not qualify for limited access (Group 2).**

The qualification criteria and time period alternatives will differential economic impacts on this group of vessels depending on their recent participation of in the general category fishery. For example, for 5 year qualification period and 1000 lb. criteria , 308 vessels that had a permit before the control date will not qualify for limited access because their annual scallop landings from their best year was below 1000 lb. during 2000-2004 fishing years (Table 120). Majority of these vessels, 188 vessels in 2005 and 196 vessels in 2006, did not participate in the scallop fishery during the recent years, however, and will not be impacted from the proposed alternatives in terms of any loss in current revenue from scallops.

The qualification criteria and time period alternatives will have negative impacts on those no qualifiers that were active in the general category scallop fishery during the recent years. Again using 5 year period as an example combined with the 1,000 lb. criteria, Table 120 shows that 120 vessels out of 308 no qualifiers landed scallops in 2005 and 112 vessels landed scallops in 2006. These vessels that will not be allowed to fish in the future if a limited access program were instituted using these criteria. Assuming that the future conditions with status quo resemble to the conditions observed in 2005 -2006 fishing years, these vessels will loose their revenues from scallops ranging from \$4.7 million (2005) to at least \$5.1 million (2006). Comparing the scallop revenue for the groups of vessels for each qualification criteria within the same time period, it is evident that by disqualifying a greater number of vessels, a higher poundage criterion will have larger negative economic impacts on those vessels. For example, a 5000 lb. criterion would

almost double the revenue loss by excluding 214 vessels in 2005 that were active and 193 vessels that were active in 2006 from limited access.

The negative impacts on group two vessels do not seem to change significantly across qualification time alternatives, however. Again using the same example with 1000 lb. criteria, 130 vessels that were active in 2005 and 124 vessels that were active in 2006 will disqualify for limited access with the 11 year qualification period. These loss in scallop revenue for these vessels would range between \$5.4 million to \$5.5 million for these vessels if it is assumed that they could land similar amounts and receive similar prices in the future with the status quo management. If instead, a two year period was implemented with the 1000 lb. criteria, 105 vessels that were active in 2005 and 100 vessels that were active in 2006 will be impacted by these measures, with a future potential loss in revenue ranging from \$4.3 million (2006) to \$4.5 million (2005). In other words, it seems that a 2 year qualification period will have less negative impacts for this group of vessels compared to 11 year period, but this is only because 2 year period eliminated many vessels that were active during the longer period but did not participated in the general category fishery during the last 2 years. For example, the number of vessels that had a permit before the control date and were active in 2005 but were not active during the qualification period increase from 152 vessels for the 11 year qualification period to 210 vessels for 2 year qualification period. Some of these additional 68 vessels are already included among vessels that do not qualify with 1000 lb. criteria and 11 year qualification period. In other words, it is not because 2 year qualification period had less negative impacts in terms of total number of participants and their loss in scallop revenue, but because some of these impacts were grouped under Group 1 vessels.

For these reasons, overall impacts of the qualification time period alternatives could be better assessed in Table 122, which sums the total landings and revenue of the recent participants that had a permit before the control date but do not qualify for limited access under various alternatives (Sum of Group 1 and Group 2 vessels). Comparing the total revenue in 2005 of no qualifiers for 11 year period with 2 year period, again using 1000 lb. criteria as an example, indicates that the negative impacts on the vessels that disqualify will be larger with the 2 year period (315 vessels and \$20.6 million scallop revenue) than with the 11 year period (282 vessels and \$18.4 million scallop revenue).

#### **5.4.6.1.3 The impacts on vessels that had a permit before the control date but were not active until after the control date (Group 3)**

The impacts on those vessels that had a permit before the control date but were not active in general category fishery until after the control date are shown in the first row (Not active) of each qualification time period. For example, for 11 years qualification time period, the first row shows that 152 vessels that that a permit before the control date and landed scallop during 2005 will not qualify for limited access because they had no landings of scallops prior to the control date. For 2006 fishing year, 128 such vessels that landed scallops would not qualify for limited access. These vessels landed 1.7 million lb. of scallops in 2005 and 1.1 million lb. of scallops in 2006 fishing year. If conditions for the productivity of the scallop resource and prices and costs remained at the similar levels that were observed during 2005-06 scallop resource allowing these vessels to participate in the general category fishery at the same rate in the future with status quo management, these vessels could derive an income from the scallop fishery ranging from \$6.9

million (2006 level) to \$13.0 million (2005 level) in a year. These amounts would equal to the loss in future revenue for these vessels since they will not qualify for limited access with any of the qualification criteria alternatives. Reducing the qualification time period from 11 years to the last five or two years up to the control date, will result in more vessels (172 for 5 years, 210 for 2 years in 2005) being disqualified for limited access because of no activity and/or permit during these periods. As a consequence, future loss in revenue will increase with the 2 years qualification period resulting in largest loss in revenue ranging from \$10.2 million (2006 level) to \$16.1 million (2005 level) for these vessels. As discussed above, future landings and revenues could be less (more) than these levels under status quo management depending on the conditions affecting scallop resource and prices. In such a scenario, the absolute impacts of all the qualification time period alternatives will be lower (higher) than estimated. But the relative impacts would not change. By disqualifying a larger number of vessels, the shorter qualification periods would still have larger negative economic impacts on the recent participants. The three qualification criteria alternatives will have the same impacts on these group of vessels since require all vessels have some level of scallop landings during the qualification time period to qualify for limited access.

#### **5.4.6.1.4 The impacts on vessels that did not have a permit before the control date (Group 4)**

Under all qualification period alternatives, 81 vessels that participated in the general category fishery in 2005 and 88 vessels that landed scallops in 2006 will be disqualified from limited access because they did not have a general category permit before the control date (Table 118 to Table 122). There were 119 such unique vessels for 2005-06 fishing years. The revenue loss for these vessels would range between \$6.7 million (2006 level) to \$11.2 million (2005 level) as a result of the proposed limited access program if future level of landings and prices with status quo were approximately similar to what has been observed during 2005-06. This loss could be lower than these levels, however, if the scallop biomass and productivity decline in the future years, and/or the general category landings were managed by TAC lower than the present level of general category landings.

**Table 122. Combined Impacts (total include vessels which had a permit before control date but did not land scallops during the qualification time period).**

Time Period	Qual lb. Criteria	Qualify	Qualification Period Activity		2005 fish year: March 2005 to February 2006			2006 fish year: March 2006 to January 2006		
			Number of active vessels	Total best year scallop landings (lb)	Number of active vessels	Scallop Landings (lb.)	Scallop Revenue (\$)	Number of active vessels	Scallop Landings (lb.)	Scallop Revenue (\$)
<b>General category vessels that had a permit before the control date</b>										
11 Years	GTE 100	NO	219	27,618	198	1,973,458	14,801,581	166	1,433,503	8,910,375
		YES	705	4,289,112	318	3,835,237	29,194,439	289	3,019,278	18,824,350
	GTE 1000	NO	465	130,428	282	2,431,686	18,427,448	252	2,108,150	13,226,507
		YES	459	4,187,989	234	3,377,009	25,568,572	203	2,344,631	14,508,218
	GTE 5000	NO	721	713,786	385	2,999,588	22,855,128	336	2,849,078	17,867,621
		YES	203	3,604,631	131	2,809,107	21,140,892	119	1,603,703	9,867,104
5 Years	GTE 100	NO	129	12,397	215	2,054,262	15,479,832	181	1,552,954	9,708,669
		YES	548	3,963,266	301	3,754,433	28,516,188	274	2,899,827	18,026,056
	GTE 1000	NO	308	93,091	292	2,456,724	18,600,922	256	2,129,964	13,355,626
		YES	369	3,883,173	223	3,351,971	25,395,098	199	2,322,817	14,379,099
	GTE 5000	NO	489	502,964	386	3,018,274	22,999,253	337	2,863,998	17,955,697
		YES	188	3,473,300	130	2,790,421	20,996,767	118	1,588,783	9,779,028
2 Years	GTE 100	NO	83	7,888	246	2,294,281	17,390,980	211	1,742,891	10,957,909
		YES	399	2,969,856	270	3,514,414	26,605,040	244	2,709,890	16,776,816
	GTE 1000	NO	205	64,204	315	2,730,543	20,664,499	280	2,294,397	14,450,869
		YES	277	2,913,614	201	3,078,152	23,331,521	175	2,158,384	13,283,856
	GTE 5000	NO	339	368,799	402	3,265,708	24,768,314	353	2,995,794	18,817,811
		YES	143	2,609,019	114	2,542,987	19,227,706	102	1,456,987	8,916,914
<b>General category vessels that had a permit only <u>after</u> the control date</b>										
From March 2005 to Jan.2006		NO	-	-	81	1,442,777	11,264,313	88	1,064,389	6,740,284
<b>General category fleet totals for 2005-06 fishing years</b>					597	7,251,472	55,260,333	543	5,517,170	34,475,009

**Table 123. Composition of scallop landings and revenues in 2005 and 2006 fishing years by qualification and time period**

Time Period	Qualification lb. Criteria	Qualify	2005 fish year: March 2005 to February 2006			2006 fish year: March 2006 to January 2006		
			Number of active vessels	Scallop Landings (lb.)	Scallop Revenue (\$)	Number of active vessels	Scallop Landings (lb.)	Scallop Revenue (\$)
<b>General category vessels that had a permit before the control date</b>								
11 Years	100	NO	33%	27%	27%	31%	26%	26%
		YES	53%	53%	53%	53%	55%	55%
	1000	NO	47%	34%	33%	46%	38%	38%
		YES	39%	47%	46%	37%	42%	42%
	5000	NO	64%	41%	41%	62%	52%	52%
		YES	22%	39%	38%	22%	29%	29%
5 Year	100	NO	36%	28%	28%	33%	28%	28%
		YES	50%	52%	52%	50%	53%	52%
	1000	NO	49%	34%	34%	47%	39%	39%
		YES	37%	46%	46%	37%	42%	42%
	5000	NO	65%	42%	42%	62%	52%	52%
		YES	22%	38%	38%	22%	29%	28%
2 Year	100	NO	41%	32%	31%	39%	32%	32%
		YES	45%	48%	48%	45%	49%	49%
	1000	NO	53%	38%	37%	52%	42%	42%
		YES	34%	42%	42%	32%	39%	39%
	5000	NO	67%	45%	45%	65%	54%	55%
		YES	19%	35%	35%	19%	26%	26%
<b>General category vessels that had a permit only after the control date</b>								
From March 2005 to Jan.2006		NO	14%	20%	20%	16%	19%	20%
<b>General category fleet totals for 2005-06 fishing</b>			100%	100%	100%	100%	100%	100%

#### 5.4.6.2 Distributional impacts of alternatives between qualified vessels according to their recent activity in the general category fishery

The distributional impacts of the qualification alternatives on the qualifiers that were active and not active in the general category fishery during the recent years are examined in Table 125 and Table 126. For the purposes of demonstration, general category TAC is assumed to be 4 million lb.

The economic impacts on the qualified vessels will vary according to whether they participated in the general category fishery in the recent years and derived revenue from scallops. Not all the vessels that qualify for limited access according to their historical participation landed any scallops during the last two fishing years. For example, with the 5 year qualification period and 1000 lb. pound criteria, 369 vessels would qualify for limited access, which includes 241 vessels that participated in the general category scallop fishery in 2005 and 2006. These vessels landed 3.3 million lb. of scallops in 2005 and 2.3 million lb. of scallops in 2006 fishing year so far. If the general category TAC was set to 2 million lb., for example, and then divided among the 369 qualified vessels, the vessels that were not active in recent years will gain and the vessels that

were active during the recent years will loose. The magnitude of the gains and losses will change with the TAC.

**Table 124. The impacts of qualification alternatives on allocation pounds for vessels that qualify for limited access according to their recent participation in the fishery using an example of 4 million lb. of TAC**

Period	Qualification	2005-06 total activity	Number of vessels	Total scallop landings (best year)	Scallop landings (2005)	Scallop landings (2006)
11 Years	100	Active one or both	352	3,162,809	3,835,237	3,019,278
		Not active	353	1,126,303		
	100 lb. Total		705	4,289,112	3,835,237	3,019,278
	1000	Active one or both	252	3,113,822	3,377,009	2,344,631
		Not active	207	1,074,166		
	1000 Total		459	4,187,989	3,377,009	2,344,631
5000	Active one or both	141	2,870,070	2,809,107	1,603,703	
	Not active	62	734,560			
5000 Total		203	3,604,631	2,809,107	1,603,703	
5 Year	100	Active one or both	333	3,121,417	3,754,433	2,899,827
		Not active	215	841,849		
	100 LB. Total		548	3,963,266	3,754,433	2,899,827
	1000	Active one or both	241	3,076,071	3,351,971	2,322,817
		Not active	128	807,102		
	1000 Total		369	3,883,173	3,351,971	2,322,817
5000	Active one or both	140	2,859,879	2,790,421	1,588,783	
	Not active	48	613,421			
5000 Total		188	3,473,300	2,790,421	1,588,783	
2 Year	100	Active one or both	292	2,561,188	3,514,414	2,709,890
		Not active	107	408,668		
	100 LB. Total		399	2,969,856	3,514,414	2,709,890
	1000	Active one or both	211	2,521,249	3,078,152	2,158,384
		Not active	66	392,365		
	1000 Total		277	2,913,614	3,078,152	2,158,384
5000	Active one or both	118	2,312,486	2,542,987	1,456,987	
	Not active	25	296,533			
5000 Total		143	2,609,019	2,542,987	1,456,987	
Grand Total			4,215	36,210,688	33,131,045	23,320,751

**Table 125. The impacts of qualification alternatives on allocation pounds for vessels that qualify for limited access according to their recent participation in the fishery using an example of 4 million lb. of TAC**

Period	Qualification criteria	2005-2006 active	Number of vessels	Average best year lb. per vessel	Average of ALLO TAC with all	Avg.lb. 2005 fish year	Avg.lb. 20056 fish year
11 years	100	Active both years	255	9,935	9,287	13,615	10,152
		Active 2005 only	63	6,660	6,226	5,768	
		Active 2006 only	34	6,171	5,768		12,664
		Not active	353	3,191	2,983		
		100 LB.Total	705	6,084	5,687	12,060	10,447
	1000	Active both years	185	13,495	12,616	16,474	11,328
		2005 only	49	8,437	7,887	6,721	
		Active 2006 only	18	11,323	10,585		13,826
		Not active	207	5,189	4,851		
		1000 Total	459	9,124	8,529	14,432	11,550
	5000	Active both years	109	21,403	20,008	23,926	14,447
		2005 only	22	15,783	14,754	9,146	
		Active 2006 only	10	18,995	17,757		2,897
		Not active	62	11,848	11,076		
		5000 Total	203	17,757	16,600	21,444	13,476
5 Year	100	Active both years	242	10,376	13,981	14,048	10,229
		2005 only	59	6,806	9,170	6,016	
		Active 2006 only	32	6,524	8,790		13,265
		Not active	215	3,916	5,276		
		100 LB.Total	548	7,232	9,744	12,473	10,583
	1000	Active both years	182	13,618	18,348	16,668	11,396
		2005 only	42	9,399	12,664	7,583	
		Active 2006 only	17	11,930	16,074		14,630
		Not active	128	6,305	8,496		
		1000 Total	369	10,524	14,179	14,964	11,672
	5000	Active both years	108	21,507	28,977	23,974	14,443
		2005 only	22	15,783	21,265	9,146	
		Active 2006 only	10	18,995	25,593		2,897
		Not active	48	12,780	17,219		
		5000 Total	188	18,475	24,892	21,465	13,464
2 Year	100	Active both years	222	9,882	13,314	14,639	10,389
		2005 only	48	5,699	7,679	5,511	
		Active 2006 only	22	4,266	5,748		18,345
		Not active	107	3,819	5,146		
		100 LB.Total	399	7,443	10,029	13,016	11,106
	1000	Active both years	165	13,112	17,667	17,164	11,727
		2005 only	36	7,487	10,087	6,838	
		Active 2006 only	10	8,820	11,884		22,350
		Not active	66	5,945	8,010		
		1000 Total	277	10,518	14,172	15,314	12,334
	5000	Active both years	98	20,574	27,720	24,604	14,787
		2005 only	16	13,665	18,412	8,239	
		Active 2006 only	4	19,406	26,147		1,974
		Not active	25	11,861	15,981		
		5000 Total	143	18,245	24,582	22,307	14,284

**Table 126. The impacts of qualification alternatives on revenues for vessels that qualify for limited access according to their recent participation in the fishery using an example of 4 million lb. of TAC**

Period	Qual. Criteria	2005-2006 activity	Number of vessels	Scallop revenue per vessel (Best Year)	Scallop revenue per vessel (allocation)	Scallop Revenue per vessel (2005 fy)	Scallop Revenue per vessel (2006 fy)
11 Years	100	Not active	353	24,249	22,669		
		Active both years	255	75,506	70,585	103,811	63,334
		2005 only	63	50,617	47,318	43,217	
		Active 2006 only	34	46,897	43,840		78,651
		100 LB.Total	705	46,237	43,224	91,806	65,136
	1000	Not active	207	39,438	36,868		
		Active both years	185	102,562	95,878	125,117	69,979
		2005 only	49	64,122	59,943	49,427	
		Active 2006 only	18	86,056	80,448		86,784
		1000 Total	459	69,344	64,824	109,267	71,469
	5000	Not active	62	90,043	84,174		
		Active both years	109	162,661	152,060	180,741	88,741
		2005 only	22	119,947	112,130	65,462	
		Active 2006 only	10	144,360	134,952		19,435
		5000 Total	203	134,952	126,156	161,381	82,917
5 Year	100	Not active	215	29,758	40,095		
		Active both years	242	78,861	106,253	106,881	63,587
		2005 only	59	51,727	69,694	44,931	
		Active 2006 only	32	49,580	66,802		82,435
		100 LB.Total	548	54,965	74,057	94,738	65,789
	1000	Not active	128	47,922	64,567		
		Active both years	182	103,498	139,448	126,710	70,431
		2005 only	42	71,432	96,244	55,570	
		Active 2006 only	17	90,668	122,161		91,801
		1000 Total	369	79,979	107,759	113,371	72,257
	5000	Not active	48	97,125	130,861		
		Active both years	108	163,450	220,225	181,080	88,747
		2005 only	22	119,947	161,611	65,462	
		Active 2006 only	10	144,360	194,504		19,435
		5000 Total	188	140,410	189,182	161,514	82,873
2 Year	100	Not active	107	29,027	39,109		
		Active both years	222	75,101	101,188	111,192	64,328
		2005 only	48	43,316	58,362	40,007	
		Active 2006 only	22	32,425	43,687		113,459
		100 LB.Total	399	56,569	76,218	98,537	68,757
	1000	Not active	66	45,181	60,875		
		Active both years	165	99,653	134,268	130,752	72,109
		2005 only	36	56,899	76,662	48,820	
		Active 2006 only	10	67,035	90,319		138,591
		1000 Total	277	79,940	107,708	116,077	75,908
	5000	Not active	25	90,146	121,458		
		Active both years	98	156,360	210,671	186,749	90,478
		2005 only	16	103,857	139,932	57,895	
		Active 2006 only	4	147,486	198,715		12,508
		5000 Total	143	138,661	186,825	168,664	87,421

## **5.4.7 Economic impacts of the contribution factor alternatives combined with qualification criteria, period and general category TAC**

### **5.4.7.1 Overall impacts on qualifying vessels according to the level of annual scallop landings**

There are two alternatives that determine a vessel's contribution factor, best year and best year indexed with options A and B. With the best year alternative high volume participants of the general category fishery would get the larger share (contribution factor). Best year indexed alternatives would take into account historical activity, assign weights to the number of years a vessel was active and multiply a vessel's best year landings by these weights. For example, best year indexed option A was derived using following weights: One year activity=0.9, 2 years activity=0.95, 3 years activity=1.0, 4 years activity=1.05, 5 years activity=1.10. Option B assigns a higher weight to years of activity, 1.25 for five or more years of activity. The advantage of these methods is that although they take into account the years of activity, they make sure that no vessel is allocated more than a specific percentage of its best year landings, 10% in the first case and 25% in the second case.

The alternatives will not impact the number of qualifiers and the total landings and revenues for the general category fishery since these amounts will be determined by general category TAC under all alternatives. They will impact the allocation amounts for different participants, thus will have distributional impacts. These impacts will not be uniform for general category vessels that qualify for limited access fishery; however, and will vary according to the contribution factor, qualification criteria and period alternatives. Because the 'Best year indexed' alternatives with either option A or option B criteria take into account the number of years a vessel was active in the general category fishery, they will increase the share and allocation pounds for those vessels that were active in the fishery for a longer period of time and reduce the share of those that were active in the fishery for a very short period. The number of qualifying vessels by number of years-active and qualification criteria is shown in Table 127. For example, the reduction in the number of qualifiers with only one year of activity from 203 vessels (with the 100 criteria) to 42 vessels (with the 5000 lb. criteria) indicates that most of these vessels landed less than 5000 lb. during the best year of their activity.

**Table 127. The number of qualified vessels by years active and qualification criteria**

	Years Active	Qualification Criteria		
		100 lb.	1000 lb.	5000 lb.
11 years	1	213	108	34
	2	163	106	51
	3	97	77	43
	4	73	49	26
	5 or more	159	119	49
	Total	705	459	203
5 years	1	203	116	42
	2	136	93	51
	3	94	70	45
	4	56	43	26
	5	59	47	24
	Total	548	369	188
2 years	1	202	126	50
	2	197	151	93
	Total	399	277	143

The distribution of allocations are examined in Table 128 to Table 133 for three qualification criteria, periods and contribution factor alternatives applied to determine the number of qualifiers. The allocations are scaled by assuming a general category TAC of 4 million and 2 million respectively. Table 128 shows that the majority of the qualifiers with 100 lb. criteria will receive less than 5000 lb. of allocation with 11 year period and 4 million TAC since this qualification criterion includes all the vessels with landings of 100 lb. from any one trip. None of the qualifiers will receive 50,000 lb. or more with this option under any of the contribution factor alternatives. There are only minor differences between the average allocations per vessel for each contribution factor criteria. The number of vessels that will receive a specific amount of allocation changes from one alternative to another. For example, with 5000 lb. criteria, 23 vessels would receive an allocation of 30,000 to 39,999 lb. if best year is used as the contribution factor. If instead best-indexed option B (25%) was used, then only 17 vessels will receive the same allocation amount since some vessels in the former group were not active long enough in the general category fishery. The following tables show the distribution of allocations using 5 year and 2 year periods respectively for the three contribution factor alternatives.

Again, the average allocations per vessel change more with the qualification period and criteria than with the contribution factor. As the length of qualification period shortens or the qualification criteria pounds increase, more vessels will receive larger allocation pounds. With 5 year period and 5000 lb. criteria, almost no vessel will receive less than 5000 lb. and 22 vessels will receive more than 40000 lb. with best year criteria, and slightly more, 27 vessels, with best indexed-option B. If the 100 lb. criterion was used, however, for the same qualification period, 178 vessels would receive 2,310 lb. on the average, and 16 vessels would receive more than 40,000 lb. with the best year criteria.

The distribution of allocations could also change with the TAC that will be allocated to the general category fleet. To illustrate the impact of various TAC levels and allocation decisions for the general category fleet (2.5% to 11%), the figures below compare the number of vessels that

would be allocated various amounts of quota under a 2.0 million pounds scenario versus a 4.0 million pound scenario. The same vessels qualify for a permit, but individual allocations vary based on how much quota is available. The impacts of a 2 million lb. TAC on the distribution of allocations are analyzed in Table 131 to Table 133. The results show that average allocation per vessel will not exceed 30,000 lb. if the qualification period was 11 or five years, and more vessels will receive smaller allocations with a lower TAC.

**Table 128. Allocations by qualification and allocation criteria assuming a 4 million lb. TAC and 11-year qualification period.**

Scallop Pounds per vessel (scaled at TAC = 4 million lb.)	Qualification Criteria	Best year		Best indexed-10%		Best indexed-25%	
		# of vessels	Allocation (lb.) per vessel	# of vessels	Allocation (lb.) per vessel	# of vessels	Allocation (lb.) per vessel
Less than 1000 lb.	100	261	433	261	422	275	428
	1000	4	977	8	942	26	891
1000 lb. to 4999 lb.	100	246	2,257	248	2,259	235	2,317
	1000	255	2,247	251	2,244	235	2,328
	5000					2	4,592
5000 lb. to 9999 lb.	100	73	6,900	76	7,101	76	7,026
	1000	73	6,929	78	7,086	78	7,069
	5000	64	7,445	64	7,381	66	7,424
10,000 lb. to 19,999 lb.	100	64	13,722	59	13,962	59	13,934
	1000	65	13,840	59	13,948	57	13,864
	5000	67	14,391	68	14,253	64	14,272
20,000 lb. to 29,999 lb.	100	28	24,515	28	24,573	24	23,926
	1000	27	24,559	27	24,208	26	23,776
	5000	27	24,605	27	24,861	27	24,531
30,000 lb. to 39,999 lb.	100	17	33,257	18	34,098	21	34,858
	1000	19	33,661	21	34,270	19	34,586
	5000	23	35,101	20	35,465	17	34,981
40,000 lb. to 49,999 lb.	100	16	43,633	15	44,295	15	45,034
	1000	16	44,697	15	45,348	18	45,151
	5000	11	45,283	12	44,598	15	44,925
50,000 lb. or more	100						
	1000						
	5000	11	53,596	12	53,556	12	54,715

**Table 129. Allocations by qualification and allocation criteria assuming a 4 million lb. TAC and 5-year qualification period.**

Scallop Pounds per vessel (scaled at TAC = 4 million lb.)	Qualification Criteria	Best year		Best indexed-10%		Best indexed-25%	
		# of vessels	Allocation (lb.) per vessel	# of vessels	Allocation (lb.) per vessel	# of vessels	Allocation (lb.) per vessel
Less than 1000 lb.	100	179	462	181	453	181	457
	1000			1	976	1	947
1000 lb. to 4999 lb.	100	180	2,286	178	2,242	178	2,263
	1000	178	2,310	179	2,284	179	2,289
	5000						4,496
5000 lb. to 9999 lb.	100	63	7,122	63	6,990	63	6,966
	1000	63	7,111	61	7,035	61	7,023
	5000	51	7,625	53	7,517	53	7,383
10,000 lb. to 19,999 lb.	100	63	14,340	58	13,690	58	13,990
	1000	63	14,315	60	13,837	60	14,189
	5000	63	14,495	61	14,321	61	14,049
20,000 lb. to 29,999 lb.	100	26	25,388	29	24,179	29	24,859
	1000	26	25,166	28	24,465	28	25,156
	5000	27	24,778	27	24,818	27	24,448
30,000 lb. to 39,999 lb.	100	20	34,773	20	34,761	20	35,234
	1000	21	34,753	20	34,965	20	35,592
	5000	20	34,865	19	34,918	19	34,622
40,000 lb. to 49,999 lb.	100	13	45,782	14	45,123	14	45,334
	1000	12	45,598	15	45,650	15	46,210
	5000	14	44,059	14	44,213	14	44,013
50,000 lb. or more	100	4	50,724	5	51,301	5	52,506
	1000	6	51,309	5	52,338	5	53,520
	5000	13	54,984	14	55,394	14	55,885

**Table 130. Allocations by qualification and allocation criteria assuming a 4 million lb. TAC and 2-year qualification period.**

Scallop Pounds per vessel (scaled at TAC = 4 million lb.)	Qualification Criteria	Best year		Best indexed-10%		Best indexed-25%	
		# of vessels	Allocation (lb.) per vessel	# of vessels	Allocation (lb.) per vessel	# of vessels	Allocation (lb.) per vessel
Less than 1000 lb.	100	98	507	99	505	104	513
	1000						
1000 lb. to 4999 lb.	100	138	2,335	139	2,348	137	2,388
	1000	114	2,648	116	2,650	119	2,635
	5000						
5000 lb. to 9999 lb.	100	48	7,079	47	7,205	45	7,377
	1000	47	7,153	47	7,342	44	7,455
	5000	21	8,687	22	8,739	22	8,654
10,000 lb. to 19,999 lb.	100	51	15,354	52	15,538	47	15,040
	1000	52	15,545	48	15,466	46	14,996
	5000	41	14,765	42	14,930	43	14,668
20,000 lb. to 29,999 lb.	100	21	23,497	18	23,648	25	24,001
	1000	20	23,637	22	23,398	26	23,882
	5000	36	23,827	33	23,883	31	23,956
30,000 lb. to 39,999 lb.	100	15	34,634	17	34,752	12	35,324
	1000	16	34,984	15	34,763	13	35,546
	5000	10	35,985	11	35,454	11	34,363
40,000 lb. to 49,999 lb.	100	13	45,320	12	46,084	13	45,182
	1000	12	45,876	12	45,215	13	46,017
	5000	12	44,951	9	43,537	11	43,928
50,000 lb. or more	100	15	60,209	15	60,507	16	60,588
	1000	16	60,662	17	60,374	16	61,709
	5000	23	63,267	26	61,952	25	63,002

**Table 131. Allocations by qualification and allocation criteria assuming a 2 million lb. TAC and 11-year qualification period.**

Scallop Pounds per vessel (scaled at TAC = 4 million lb.)	Qualification Criteria	Best year		Best indexed-10%		Best indexed-25%	
		Number of vessels	Allocation (lb.) per vessel	Number of vessels	Allocation (lb.) per vessel	Number of vessels	Allocation (lb.) per vessel
Less than 1000 lb.	100	385	377	388	375	390	364
	1000	132	703	137	704	138	675
1000 lb. to 4999 lb.	100	195	2,261	197	2,332	196	2,326
	1000	200	2,243	200	2,327	201	2,327
	5000	64	3,722	64	3,691	68	3,670
5000 lb. to 9999 lb.	100	64	6,861	59	6,981	59	6,967
	1000	65	6,920	59	6,974	57	6,932
	5000	67	7,195	68	7,127	64	7,136
10,000 lb. to 19,999 lb.	100	45	13,909	46	14,150	45	14,514
	1000	46	14,159	48	14,305	45	14,170
	5000	50	14,716	47	14,687	44	14,284
20,000 lb. or more	100	16	21,817	15	22,147	15	22,517
	1000	16	22,348	15	22,674	18	22,575
	5000	22	24,720	24	24,539	27	24,638

**Table 132. Allocations by qualification and allocation criteria assuming a 2 million lb. TAC and 5-year qualification period.**

Scallop Pounds per vessel (scaled at TAC = 4 million lb.)	Qualification Criteria	Best year		Best indexed-10%		Best indexed-25%	
		Number of vessels	Allocation (lb.) per vessel	Number of vessels	Allocation (lb.) per vessel	Number of vessels	Allocation (lb.) per vessel
Less than 1000 lb.	100	269	395	272	391	276	378
	1000	84	724	90	723	97	699
1000 lb. to 4999 lb.	100	153	2,387	150	2,362	150	2,380
	1000	157	2,349	151	2,347	149	2,409
	5000	51	3,812	53	3,759	57	3,666
5000 lb. to 9999 lb.	100	63	7,170	58	6,845	57	6,995
	1000	63	7,157	60	6,918	58	7,094
	5000	63	7,247	61	7,161	56	7,024
10,000 lb. to 19,999 lb.	100	46	14,734	49	14,249	44	14,434
	1000	47	14,725	48	14,420	44	14,713
	5000	47	14,535	46	14,495	45	14,146
20,000 lb. or more	100	17	23,472	19	23,374	21	24,033
	1000	18	23,751	20	23,661	21	24,497
	5000	27	24,660	28	24,902	30	25,370

**Table 133. Allocations by qualification and allocation criteria assuming a 2 million lb. TAC and 2-year qualification period.**

Scallop Pounds per vessel (scaled at TAC = 4 million lb.)	Qualification Criteria	Best year		Best indexed-10%		Best indexed-25%	
		Number of vessels	Allocation (lb.) per vessel	Number of vessels	Allocation (lb.) per vessel	Number of vessels	Allocation (lb.) per vessel
Less than 1000 lb.	100	160	432	163	437	170	446
	1000	37	828	37	817	45	825
1000 lb. to 4999 lb.	100	124	2,312	122	2,347	116	2,417
	1000	124	2,326	126	2,349	118	2,404
	5000	21	4,344	22	4,369	22	4,327
5000 lb. to 9999 lb.	100	51	7,677	52	7,769	47	7,520
	1000	52	7,772	48	7,733	46	7,498
	5000	41	7,383	42	7,465	43	7,334
10,000 lb. to 19,999 lb.	100	36	14,069	35	14,521	37	13,837
	1000	36	14,340	37	14,003	39	13,885
	5000	46	13,235	44	13,388	42	13,341
20,000 to 29,999 lb	100	19	24,311	18	24,609	20	24,234
	1000	17	24,134	19	24,297	19	24,386
	5000	22	24,626	22	24,703	22	24,464
30,000 lb. or more	100	9	31,580	9	31,927	9	32,634
	1000	11	31,843	10	32,282	10	32,945
	5000	13	35,039	13	35,217	14	35,067

#### 5.4.7.2 Distributional impacts of contribution factor alternatives according to the years of activity in the general category fishery

Although average allocation per qualified vessel changes in a relatively small amount with each contribution factor alternative, the impacts of best year indexed alternatives could be significant for some vessels. These impacts are described in Table 134 for some hypothetical vessels, with activity levels resembling many participants in the general category fleet, using 5 year qualification period for 100 lb. criteria as an example. For example, Vessel A and Vessel B represent some high volume participants in the general category fishery both having landed 48,000 lb. in their best year, followed by vessels C and D with 20000 lb. of landings in their best year. Vessels E, F, G, on the other hand, provide examples for lower volume participants in the general category scallop fishery.

Another way of taking into historical activity would be to assign weights to the number of years a vessel was active rather than to each year and then multiplying a vessel's best year landings by these weights. For example, years-active indexed best year (1) was derived using following weights: One year activity=0.9, 2 years activity=0.95, 3 years activity=1.0, 4 years activity=1.05, 5 years activity=1.10. In other words, this system makes sure that no vessel is allocated more than a specific percentage its best year landings, 10% in the first case and 25% in the second case. If the first set of weights were used, vessel B would receive 5% more than its best year pounds, 53,300 lb., of allocation at a TAC of 4 million lb., more than its best year landings (48,000 lb.), but less than vessel A (55,900 lb.) since it has only 4 four years of activity whereas vessel A has 5 years. If years of activity was placed a larger weight, vessel B would receive

57,800 lb. (12.5% higher than its best year) whereas vessel A would get 64,200 lb. (25% higher than its best year).

With the best year criteria, both vessel A and vessel B would have the same contribution factor, 48,000 lb., corresponding to their best year of landings during the 2000-2004 (up to the control date). Because vessel A was active in each of these 5 years, however, its share will be multiplied by 1.10 according to option A, and with 1.25 according to option B with the best year indexed alternatives. As a result, vessel A's contribution factor will increase to 52,800 lb. for option A and to 60,000 lb for option B. Vessel B's contribution factor stays at 48,000 lb. since it fished only 3 out of 5 years during this period, its share is multiplied by "1". The contribution factors for the other vessels are calculated in the same way.

In the second step, percentage share of the qualifiers are calculated for each alternative using their contribution factor and total scallop pounds for all the qualifiers, which is simply the sum of contribution factors for all qualifiers. These amounts are shown in Table 135 corresponding to each qualification criteria and period. For example, with 5 year period and 100 criteria, the sum of contribution factors equals to 3,925,408 lb. for best year, to 3,875,398 lb. for best indexed option A, and to 3,787,294 lb. for best indexed option B. The percentage share of each vessel in Table 134 is calculated by dividing each vessel's contribution factor with these total pounds corresponding to each alternative. It is clear that the vessels that were active in the fishery for longer periods of time and landed a large amount of scallops will have a bigger share of the general category fishery.

In order to estimate the allocation pounds for each vessel, their percentage share for each of the contribution factor alternatives is multiplied by the general category TAC. Again for illustrative purposes only, TAC is set to 4 million lbs. in Table 134. The numbers in these tables are rounded, thus, represent approximate values. If share of each participant in the general category TAC was calculated according to their best year landings, vessels A and B would have the same allocation, so would vessels C and D, and vessels E and F. Best year indexed alternatives would allocate different amounts to these vessels in each pair because some vessels were active for longer periods of time than others. Because option B with best indexed alternative rewards longer years of activity relatively more than option A, the vessels that were active 4 or 5 years, such as Vessel A, C and E and G will gain more allocation pounds with this option as compared to best year alternative and option A. The gain in pounds is greater, however, for vessels with a large best year scallop landings. For example, vessel A would gain an additional 14,458 lb. (63370 lb.-48912 lb.) allocation with option B and 5,585 lb. with option A compared to its best year pounds. Clearly, these amounts will translate into significant amount of revenue for vessel A, to over \$86,000 for option B, and over \$33,000 for option A even if the price of scallops were as low as \$6.00 per pound. The gain for vessel C would be around 6000 lb. with option B because its best year landings were about 20000 lb., and lower for vessel G (an increase of 300 lb.) with option B. In the same way, having less years of activity reduces the share and allocation of vessels with the best indexed options. For example, vessel D would receive only 15,842 lb. of allocation with option B because it participated in the general category for only one year.

**Table 134. Comparisons of vessel allocations with 100 lb. criteria for five year qualification period (2000-04 fishing years) and for a TAC of 4 million lb.**

Data	Vessel A	Vessel B	Vessel C	Vessel D	Vessel E	Vessel F	Vessel G
Years active	5	3	5	1	4	2	5
<b>Contribution factors</b>							
Best year scallop lb.	48,000	48,000	20,000	20,000	5,000	5,000	1,000
Best year indexed: Option A (10%)	52,800	48,000	22,000	18,000	5,250	4,750	1,100
Best year indexed: Option B (25%)	60,000	48,000	25,000	15,000	5,625	4,375	1,250
<b>Percentage shares</b>							
Best year	1.223%	1.223%	0.510%	0.510%	0.127%	0.127%	0.025%
Best year indexed: Option A (10%)	1.362%	1.239%	0.568%	0.464%	0.135%	0.123%	0.028%
Best year indexed: Option B (25%)	1.584%	1.267%	0.660%	0.396%	0.149%	0.116%	0.033%
<b>Scaled allocation for 4 million TAC</b>							
Best year	48,912	48,912	20,380	20,380	5,095	5,095	1,019
Best year indexed: Option A (10%)	54,498	49,543	22,707	18,579	5,419	4,903	1,135
Best year indexed: Option B (25%)	63,370	50,696	26,404	15,842	5,941	4,621	1,320

Option A: One year activity=0.9, 2 years activity=0.95, 3 years activity=1.0, 4 years activity=1.05, 5 years activity=1.10.  
 Option B: One year activity=0.75, 2 years activity=0.875, 3 years activity=1.0, 4 years activity=1.125, 5 years activity=1.25.

**Table 135. Total contribution pounds**

Qualification Period	Qualification Criteria	Best year	Best year indexed: Option A (10%)	Best year indexed: Option B (25%)
11 Years	100	4,251,254	4,253,968	4,243,203
	1000	4,150,131	4,155,172	4,147,896
	5000	3,566,773	3,576,642	3,576,607
5 Year	100	3,925,408	3,875,398	3,787,294
	1000	3,845,315	3,798,637	3,715,533
	5000	3,435,442	3,403,616	3,342,788
2 Year	100	2,968,789	2,771,826	2,474,782
	1000	2,912,547	2,720,110	2,429,854
	5000	2,607,952	2,439,173	2,184,404

Table 136 to Table 138 provides a detailed analysis for the same hypothetical vessels shown in Table 134 for all 3 qualification criteria (100 lb. 1000 lb., 5000 lb.) and time period. The allocations are scaled by assuming a general category TAC 4 million lb. as an example. A higher (or lower) TAC will increase (decrease) allocations for each vessel proportionately. For example, Table 136 shows that with 11 year qualification period and 1000 lb. criteria, vessel A would be allocated 46,264 lb. with best year criteria, 50828 lb, with the best indexed option A and 57,861 lb. with the best indexed option B. If TAC was set to 2 million lb., its allocation would be exactly half of what it is with 4 million TAC, 23,132 lb. with the best year and 28,931 with the best indexed option B. Both of these amounts would be considerably less than the level during its best year (48,000 lb. scallops). Similarly, a TAC of 8 million will double the allocation pounds shown in these Tables for all vessels.

It is evident from these Tables that with a TAC of 4 million lb., all vessels will receive an allocation exceeding their best year landings, with the exception for 100 lb. criteria with 11 year qualification period. The shorter the qualification period, the larger the allocation pounds with

all qualification criteria because the same TAC will be divided among a smaller number of qualifiers. For the same reasons, a larger qualification criterion will result in increased allocation for all qualifiers. Two year qualification period combined with the 5000 lb. criteria will qualify the smallest number of vessels and will result in maximum allocations per vessel qualified for limited access. On the other hand, these alternatives exclude a large number of vessels from the general category fishery and will have negative economic impacts on these vessels and the communities associated with them (See Section 5.5, Social Impact Assessment).

**Table 136. 11 Year and 4 million TAC.**

Qualification Criteria	Data	Vessel A	Vessel B	Vessel C	Vessel D	Vessel E	Vessel F	Vessel G
	Years active	5	3	5	1	4	2	5
	Best year scallop lb.	48,000	48,000	20,000	20,000	5,000	5,000	1,000
<b>100 lb.</b>	Best year allocation (scaled)	45,163	45,163	18,818	18,818	4,704	4,704	941
<b>705 vessels</b>	Best indexed option A (scaled)	49,648	45,134	20,687	16,925	4,937	4,466	1,034
	Best indexed option B (scaled)	56,561	45,249	23,567	14,140	5,303	4,124	1,178
<b>1000 lb.</b>	Best year allocation (scaled)	46,264	46,264	19,277	19,277	4,819	4,819	964
<b>459 vessels</b>	Best indexed option A (scaled)	50,828	46,207	21,178	17,328	5,054	4,573	1,059
	Best indexed option B (scaled)	57,861	46,289	24,109	14,465	5,424	4,219	1,205
<b>5000 lb.</b>	Best year allocation (scaled)	53,830	53,830	22,429	22,429	5,607	5,607	0
<b>203 vessels</b>	Best indexed option A (scaled)	59,050	53,682	24,604	20,131	5,871	5,312	0
	Best indexed option B (scaled)	67,103	53,682	27,959	16,776	6,291	4,893	0

Note: All the allocations will be halved if TAC=2 million lb. and will double if TAC= 8 million lb.

**Table 137. 5 Year and 4 million TAC.**

Qualification Criteria	Data	Vessel A	Vessel B	Vessel C	Vessel D	Vessel E	Vessel F	Vessel G
	Years active	5	3	5	1	4	2	5
	Best year scallop lb.	48,000	48,000	20,000	20,000	5,000	5,000	1,000
<b>100 lb.</b>	Best year allocation (scaled)	48,912	48,912	20,380	20,380	5,095	5,095	1,019
<b>548 vessels</b>	Best indexed option A (scaled)	54,498	49,543	22,707	18,579	5,419	4,903	1,135
	Best indexed option B (scaled)	63,370	50,696	26,404	15,842	5,941	4,621	1,320
<b>1000 lb.</b>	Best year allocation (scaled)	49,931	49,931	20,805	20,805	5,201	5,201	1,040
<b>369 vessels</b>	Best indexed option A (scaled)	55,599	50,544	23,166	18,954	5,528	5,002	1,158
	Best indexed option B (scaled)	64,594	51,675	26,914	16,148	6,056	4,710	1,346
<b>5000 lb.</b>	Best year allocation (scaled)	55,888	55,888	23,287	23,287	5,822	5,822	0
<b>188 vessels</b>	Best indexed option A (scaled)	62,052	56,411	25,855	21,154	6,170	5,582	0
	Best indexed option B (scaled)	71,796	57,437	29,915	17,949	6,731	5,235	0

Note: All the allocations will be halved if TAC=2 million lb. and will double if TAC= 8 million lb.

**Table 138. 2 Years and 4 million TAC**

Qualification Criteria	Data	Vessel A	Vessel B	Vessel C	Vessel D	Vessel E	Vessel F	Vessel G
	Years active	2	1	2	1	1	2	2
	Best year scallop lb.	48,000	48,000	20,000	20,000	5,000	5,000	1,000
<b>100 lb.</b>	Best year allocation (scaled)	64,673	64,673	26,947	26,947	6,737	6,737	1,347
<b>399 vessels</b>	Best indexed option A (scaled)	65,805	62,342	27,419	25,976	6,494	6,855	1,371
	Best indexed option B (scaled)	67,885	58,187	28,285	24,245	6,061	7,071	1,414
<b>1000 lb.</b>	Best year allocation (scaled)	65,922	65,922	27,467	27,467	6,867	6,867	1,373
<b>277 vessels</b>	Best indexed option A (scaled)	67,056	63,527	27,940	26,470	6,617	6,985	1,397
	Best indexed option B (scaled)	69,140	59,263	28,808	24,693	6,173	7,202	1,440
<b>5000 lb.</b>	Best year allocation (scaled)	73,621	73,621	30,675	30,675	7,669	7,669	1,534
<b>143 vessels</b>	Best indexed option A (scaled)	74,779	70,844	31,158	29,518	7,380	7,790	1,558
	Best indexed option B (scaled)	76,909	65,922	32,045	27,467	6,867	8,011	1,602

Note: All the allocations will be halved if TAC=2 million lb. and will double if TAC= 8 million lb.

#### **5.4.7.3 Capping the contribution pounds: alternatives in determining the share of each individual vessel (Alternative 3.1.2.3.6)**

General category scallop landings per vessel is widely distributed according to the fishing effort and pounds landed. Figure 47 shows that scallop pounds landed during the best year by general category vessels ranged from 300 lb. to over 50,000 lb. if all the 550 vessels that landed 100 lb. or more scallops from any one trip are included in the sample. The cumulative distribution of landings also show that the majority (about two thirds) of these 550 vessels, landed less than 5,000 lb., whereas 186 vessels, or one third landed 5000 lb. or more in their best year during 2000-2004 fishing years.

**Figure 47. Cumulative distribution of the best year scallop lb. per vessel during 2000-2004 (up to the control date)**

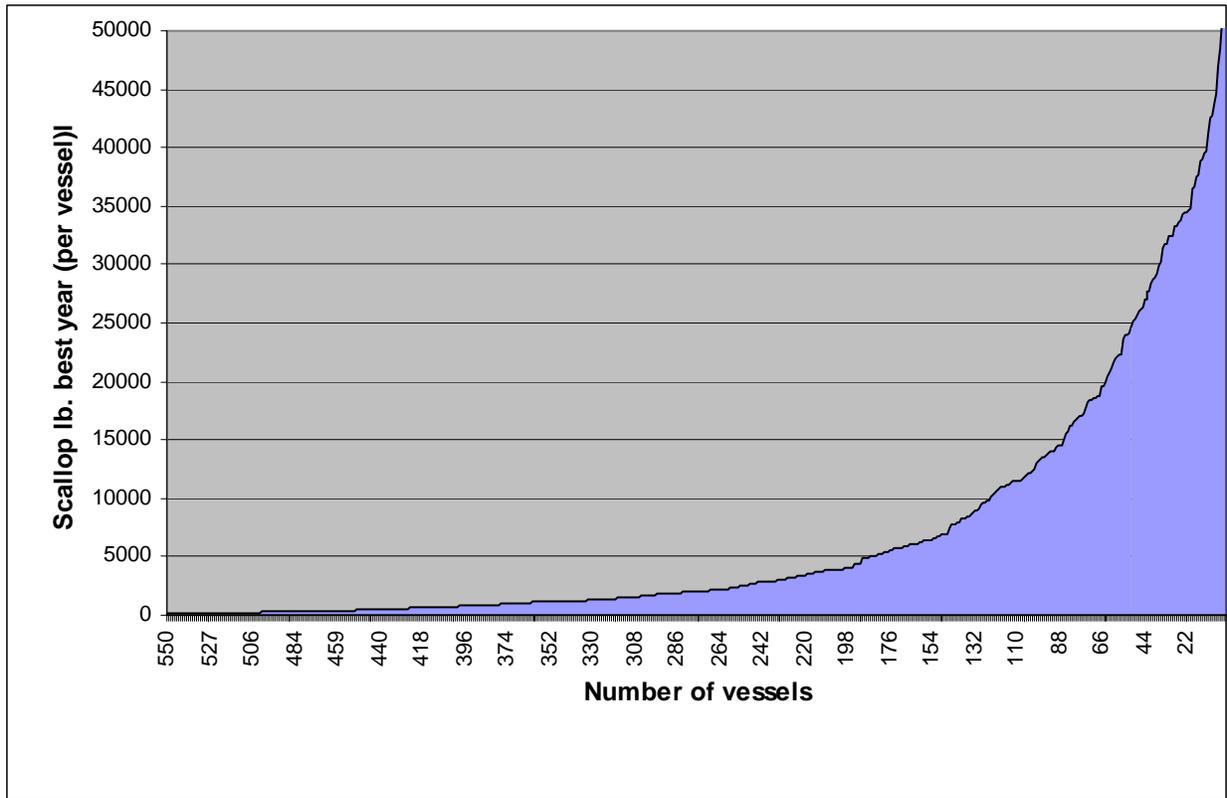


Table 139 shows percentile distribution of pounds landed by individual vessels with the top percentile (90% or more) shown in more detail. For example, the third column shows that 90% of the 550 general category vessels landed less than 22,000 lb., 60% of the vessels less than 3,300 lb. and 40% of the vessels less than 1,200 lb. of scallops in their best year. Column 2, however, shows the number of vessels that landed equal to or more of the amounts shown in column 1 corresponding to each percentile. As an example, column 2 indicates that only 56 vessels landed 22,000 lb. or more in their best year, which corresponds approximately to the 10% of the 550 vessels.

It is evident from Table 139 that only 1% of the vessels, or 6 vessels landed 47,000 lb. or more during their best year. This includes some vessel records much above this level due to scallop landings from some trips far exceeding 400 lb. possession limit. Even though these records are examined by NMFS, in some cases it is not certain if they are due to data entry mistakes or recording pounds in shell weight or arise from recording multiple trip landings on a single date. For this reason, in cases where the cause is not determined or cannot be proven that some trips were not legal (i.e., exceeded the possession limit), it is possible for a vessel to receive a large allocation, whereas for another vessel that have correct records, i.e., scallop pounds reflecting a single trip and corresponding to meat weight not exceeding 400 lb., to get a smaller allocation. In addition, the allocation for the first vessel (with trips exceeding 400 lb.) will be magnified if it had more than one year of activity and years active were taken into account in determining the

final allocations. Putting a cap on a vessel's contribution factor could prevent some of these data problems and could diminish the extent of an outlier vessel's landings affecting the allocations for all other vessels with accurate trip entries. As examined in Section 5.4.5.6, 50,000 lb. allocation would provide sufficient revenue from scallops for the majority of general category vessels to pay for crew, trip expenses, and fixed costs and derive positive profits. Under this alternative it is still possible for a vessel to receive more than 50000 lb. of scallop allocation, however, depending on the level of general category TAC and also the number of years a vessel was active in the fishery.

**Table 139. Percentile distribution of best year scallop pounds by 550 general category vessels that landed 100 lb. or more from any one trip during 2000-04.**

Scallop landings per vessel (best year (lb))	Number of vessels that landed this amount or more in their best year	Number of vessels that landed less
47,000	6	99%
40,000	11	98%
33,000	28	95%
22,000	56	90%
11,500	111	80%
5,800	166	70%
3,300	221	60%
2,000	275	50%
1,200	330	40%
800	385	30%
500	440	20%
300	495	10%

## 5.4.8 Allocation of access for general category limited access qualifiers

### 5.4.8.1 Individual fishing quota for all qualifiers

Under this alternative (3.1.2.4.1) each vessel that qualifies for limited access will be allocated an individual amount in pounds or total number of trips. The economic impacts of individual fishing quota combined with general category TAC is analyzed in Section 5.4.5 to Section 5.4.7 for each qualification criteria, period and qualification amount alternative. This section provides a discussion of the pros and cons of the IQ management in general and as it applies to the general category scallop fishery<sup>5</sup>.

One of the positive aspects of individual fishing quotas (IQ) is the elimination of the race-to-fish that occurs with a TAC management only fishery. Since an individual quota assures that each qualifier can land a given quantity anytime during the fishing season, the vessels will have the flexibility to select the time and the area to fish in order to minimize their costs and/or maximize their revenues. As a result, the vessel profits will increase under individual quota.

<sup>5</sup> The discussion of the pros and cons of individual quota management in this section follow closely the analyses provided in OECD(1997), Towards Sustainable Fisheries, Economic Aspects of the Management of Living marine Resources", pp.77-83.

The elimination of the derby-style fishing will provide more time to fishermen to handle and process scallops, and select the size of combination that will maximize revenues. As a result, product quality will improve. Safety is also expected to improve as the vessels could wait to land their quota until the weather conditions are better. Since the fishing effort will be spread over a longer period of time, the price of scallops will be more stable throughout the season. This, combined with the availability of a fresh and/or higher quality scallops over a longer season, will benefit consumers as well as producers. Because IQ's provide flexibility to the fishermen about when and where to fish, they will be able to respond better to the resource and market conditions and avoid costly and dangerous fishing's conditions, there will be greater economic stability. This will reduce the risk from investing and provide more incentive to invest in maintenance, better gear and equipment. Individual allocation system, combined with the 400 lb. possession limit, will reduce, however, the need to invest in more capacity, if a vessel's quota more or less matches the amount it traditionally fishes.

The combined impacts of TAC and IQ management may not be positive for all vessels that will qualify for limited access, however. Some vessels could receive less quota than desired for a profitable full-time operation depending on the level of general category TAC and the number of qualifiers. As a result, they may not be cover their variable costs and may be induced to leave the fishery (See Section 5.4.5.6 for an analysis of the economic impacts associated with different allocation amounts). Consequently, the actual number participants in the fishery could decline especially if the TAC is set to significantly below the pre-TAC level, and the composition of the general category fleet could change to include relatively more part-time vessels. This in turn, would reduce the employment and crew incomes in the general category fishery. Transferability of the individual quota among the participants would provide more flexibility to the qualifying vessels and would reduce these negative impacts (5.4.8.4).

Option B of the individual allocation option proposes to allocate each qualifying vessels a certain number of trips rather than pounds of scallop (See Table 101). There are some important differences between option A (in pounds) and option B, however. If some vessels land less than 400 lb. of scallops from their trips, total general category scallop landings could be less than the general category TAC, resulting in reduced revenue for the general category fleet. On the other hand, these vessels could spend more time at sea to increase their trip landings to the possession limit in order to maximize annual landings from their trip allocations. Such change in fishing behavior would increase trip costs and could also have some safety impacts if the trip is extended, for example, during difficult weather conditions. On the other hand, trip allocation has an advantage over quota allocation in terms of monitoring and enforcement since with VMS it is easier to determine the number of trips per vessel than to monitor landings per trip.

One problematic side of the IQ management is the initial allocation of individual quotas (in pounds or trips) among the participants, which could be quite time consuming, costly and controversial. The alternatives proposed by Amendment 11 determine the quota shares of participants from their historical landings during a qualification period. In this respect, the accuracy of the historical data for general category landings is an important factor for a fair distribution of the initial allocations. Unfortunately, dealer records for the general category trips are far from perfect, and include trip landing records in pounds exceeding the 400 lb. general category trip limit potentially due to errors in permit numbers (selecting a limited access trip as

general category trip), reporting in units other than pounds, recording incorrect species code, sale of multiple trips to the dealer on the same day. For this reason, last year NMFS reviewed the dealer database and corrected some entries. There are other trip records that were not officially corrected in the database, but identified as incorrect and will be taken into account if the individual allocation system is implemented. There are however, still many other entries which are in excess of 400 lb. possession limit (up to 5000 lb. in this final set) that were either not reviewed by NMFS (some of the earlier data for 1994-99) or that the source and nature of error could not be determined. Comparison with the VTR also showed that there were some general category trips with no corresponding record in the dealer database. These data imperfections will probably not affect the number of qualifiers in any significant way. There is no question, however, these inaccuracies will have some impact on the individual quota for each vessel when combined with a general category TAC to distribute the individual shares. For example, if some boats have inflated landings because of shell stocking, this will reduce the shares of all the rest of the vessels. This is because IQ management combined with a TAC is like a zero-sum game, in the sense that everybody's share should add up to '1'. A vessel-owner who thinks the dealer records underestimate vessel's landings could appeal to NMFS for a review of records. But there is not much opportunity for a vessel-owner to determine why his/her share is lower than it should be because another vessel's landings are overestimated due to the data errors. This could pose a serious challenge for NMFS in determining the initial allocations of qualifiers accurately and fairly. Determining the a vessel's contribution from it best year landings and capping the total contribution amount at 50,000 lb. will reduce the impacts of these inaccuracies but will not eliminate them completely. In addition, a prequalification procedure that will set maximum landing from a trip at 400 lb. would reduce the negative impacts of data inaccuracies.

#### **5.4.8.1.1 Impacts of 2000 lb. trip limit**

The impacts of this alternative will depend on how the individual quota is allocated. If vessels are allocated individual trips (option B) and if the number of trips were determined from the historical data, then increasing the trip limit from 400 lb. to 2000 lb. will increase the scallop pounds a vessel can land from each trip and on an annual basis. As a result, the landings of a larger vessel with more capacity to take longer trips and access remote areas, will increase, resulting in overall increase in general category landings, possibly exceeding the TAC. If a hard TAC was implemented the fishery will close sooner with negative impacts on smaller boats that cannot land large amounts of scallops. If however, number of trips was reduced in proportion of the pounds landed from each trip, such that a 2000 lb. trip counting as 5 trips, then this alternative will reduce the trip costs for vessels that could land large amounts of scallops. Similarly, if IQ is allocated in pounds and combined with an increase in trip limit to 2000 lb., the number of trips and the fishing costs will decline for these vessels that could land more than 400 lb. per trip. The preferred alternative would keep general category possession limit at 400 pounds in order to maintain the historical nature of the general category fishery as small boat day fishery.

#### **5.4.8.2 Individual fishing quota for two permit types (part-time and full-time, Section 3.1.2.4.2).**

Another alternative (Section 3.1.2.4.2) proposes to group the qualifiers into two groups, as part-time and full-time vessels. Any vessel that had landings of 5,000 lb. or more scallops in any one fishing year during the qualification period would qualify for the full-time permit with a

possession limit of 400 pounds. Those vessels that qualify for limited access according to qualification criteria and period alternatives, but did not have landings of 5000 lb. will receive part-time permit and individual allocation based on their historical activity, but would be restricted to a 200 pound possession limit.

The number of vessels, average scallop landings and trips per vessel during their best year, and average scallop pounds per trip are shown in Table 140. Pounds per vessel show the average of scallop pounds per vessel in each group and allocated amounts could diverge from these values. Since the vessels in the full-time category will receive individual fishing quota, the impacts of this alternative on these vessels will be the same as the individual fishing quota alternative with 5000 lb. criteria. As discussed in Section 5.4.5 above, the economic impacts on the qualifiers are expected to vary with the level of TAC, price of scallops and fishing costs.

The economic impacts of this alternative will be negative, however, for the majority of the part-time vessels compared to the impacts of individual quota alternatives with 400 possession limit. Although Table 140 indicates that the vessels in the part-time category had lower scallop landings per trip compared to the full-time group, average scallop pounds per trip was still larger than 200lb. In fact, a significant proportion of these vessels had average scallop landings per trip exceeding 300 lb. (Table 141). Table 190 (Social Impact Assessment) also showed that the vessels that would qualify for part-time permit landed the majority of their scallops on trips where scallops were in excess of 200 lbs. Therefore, reducing trip limit will either increase the number of trips and the trip costs for these vessels, or it will reduce the incentive for taking scallop trips due to the reduced profitability with 200 lb. of possession limit. The vessels with average trip landings of 200 lb. or less of scallops, however, will not be affected from the reduced possession limit.

The economic impacts of reducing the possession limit is examined in Table 142 using a scenario analysis with scallop prices ranging from \$6.00 to \$7.60 and trips costs from \$350 to \$500 per day-at-sea. The results show that even if a vessel doubles its trips to land the same amount of scallops with 200 lb. limit, the net revenue could still decline due to the increase in trip costs. In addition, not all vessels could increase the number of trips they take due to constraints on the vessel size, weather conditions or fishing activity in other fisheries. As a result, these vessels could incur larger losses than shown in Table 142.

**Table 140. Qualifying vessels by tier category and best year landings, trips and average pounds per trip.**

Period	Qualification Criteria	TIERS	Number of vessels	Scallop landings per vessel (lb., best year)	Average scallop trips per vessel	Average scallop landings per trip (lb.)
11 Years	100 lb.	Full-time	203	17,757	54	353
		Part-time	502	1,364	8	253
	100 lb. Total		705	6,084	21	282
	1000 lb.	Full-time	203	17,757	54	353
		Part-time	256	2,279	13	315
	1000 lb. Total		459	9,124	31	332
5000 lb.	Full-time	203	17,757	54	353	
	5000 lb. Total		203	17,757	54	353
5 Year	100 lb.	Full-time	188	18,475	55	355
		Part-time	360	1,361	7	238
	100 lb. Total		548	7,232	24	278
	1000 lb.	Full-time	188	18,475	55	355
		Part-time	181	2,264	11	286
	1000 lb. Total		369	10,524	34	321
5000 lb.	Full-time	188	18,475	55	355	
	5000 lb. Total		188	18,475	55	355
2 Year	100 lb.	Full-time	143	18,245	55	346
		Part-time	256	1,410	7	237
	100 lb. Total		399	7,443	24	276
	1000 lb.	Full-time	143	18,245	55	346
		Part-time	134	2,273	11	270
	1000 lb. Total		277	10,518	34	309
5000 lb.	Full-time	143	18,245	55	346	
	5000 lb. Total		143	18,245	55	346

**Table 141. Part-time vessels by average scallop pounds per trip (Best year)**

Period	Qualification Criteria	Average scallop lb. per trip	Number of vessels	Scallop landings per vessel (lb., best year)	Average scallop trips per vessel	Average scallop landings per trip (lb.)
11 Years	100 lb.	>= 200lb.	246	1,692	6	399
		< 200lb.	256	1,048	11	113
	100 lb. Total		502	1,364	8	253
	1000 lb.	>= 200lb.	159	2,331	8	434
< 200lb.		97	2,193	22	119	
1000 lb. Total		256	2,279	13	315	
5 Year	100 lb.	>= 200lb.	195	1,684	6	340
		< 200lb.	165	979	9	117
	100 lb. Total		360	1,361	7	238
	1000 lb.	>= 200lb.	129	2,274	8	349
< 200lb.		52	2,240	20	130	
1000 lb. Total		182	2,264	11	286	
2 Year	100 lb.	>= 200lb.	154	1,640	6	313
		< 200lb.	102	1,061	9	123
	100 lb. Total		256	1,410	7	237
	1000 lb.	>= 200lb.	102	2,195	8	310
< 200lb.		32	2,522	20	143	
1000 lb. Total		134	2,273	11	270	

**Table 142. Impacts of possession limit on net revenue from scallops.**

Data	Scallop Price per lb.			
	\$6.00	\$7.60	\$6.00	\$7.60
<b>Scenario 1: Possession limit=400 lb. Number of trips = 10</b>				
Trip costs per DAS (\$)	350	350	500	500
Trip revenue from scallops (\$)	2400	3040	2400	3040
Net scallop revenue from trip (\$)	2050	2690	1900	2540
Net scallop revenue from all trips (\$)	20500	26900	19000	25400
<b>Scenario 2: Possession limit=200 lb. Number of trips = 20</b>				
Trip costs per DAS	350	350	500	500
Trip revenue from scallops	1200	1520	1200	1520
Net scallop revenue from trip	850	1170	700	1020
Net scallop revenue from all trips	17000	23400	14000	20400
Change in net scallop revenue	-3500	-3500	-5000	-5000
% Change in net scallop revenue	-17%	-13%	-26%	-20%

**5.4.8.3 Individual fishing quota – equal allocation for three tiered permits (Section 3.1.2.4.3).**

This alternative proposes a three tiered permit system based on annual landings from the qualification time period as follows:

- Tier 1:** 20,000 pounds;
- Tier 2:** 5,000 – 19,999 pounds;
- Tier 3:** 100 – 4,999 pounds

In order to qualify for a certain tier a vessel would have to show landings within that tier for one year only during the qualification time period. One of the major difference of this alternative from others is that all vessels that qualify for each tier would receive an equal allocation in pounds or in total number of trips. The possession limit will stay at 400 pounds of scallops.

Table 143 summarizes the number of vessels, average pounds (best year) per vessel for each qualification period and criteria. The 100 pound trip alternative would qualify about twice as many Tier 3 vessels as compared to the 1,000 annual pound alternative, while the number of vessel qualify for tiers 1 and 2 will not change with the qualification criteria. The 2 year period alternative will result in only 44 vessels qualifying for the top tier, and 99 vessels qualifying for the second tier. The impacts of this alternative combined with the qualification criteria and period could be analyzed by comparing the scaled allocations per vessel. Table 143 shows allocation pounds (option A) and trips (option B) per vessel assuming a 4 million lb. TAC as an example. Estimated scallop pounds allocated per vessel for tier 3 would be half for the 100 pound trip alternative compared to the 1,000 pound alternative (1,387 versus 2,356 pounds with 5 year criteria) because twice as many vessels would qualify with 100 lb. criteria. These amounts are close to the average landings per vessel from best year, slightly lower for 11 year period, and slightly higher for the 5 year and 2 year periods. Allocations per Tier 2 and Tier 1 vessel do not change significantly with 100 lb. or 1000 lb criteria for 5 year and 11 year periods. Because 5000 lb. criteria qualify the least number of vessels and no vessels will qualify for Tier 3, allocations for the top tier vessels will increase significantly. For example, for 2 year period, the top tier vessels would receive 52,815 lb. and tier 2 vessels 16,930 lb. per vessel even though their average scallop landings from best year did not exceed 34,459 lb. and 11,038 lb. respectively. A larger (smaller) TAC would increase (decrease) the allocations beyond the levels shown in Table 143. For example, a allocations per vessels would be half (double) of the amounts shown in this Table if TAC was 2 million lb. (8 million lb.). The comparative impacts of the qualification criteria and period alternatives for each tier will not change, however.

If instead of allocating equal pounds, an equal number of trips were allocated to each vessel within a tier, the economic impacts would be the same for vessels that normally land 400 lb. of scallops from each trip. On the other hand, the economic impacts for vessels that land scallops as a bycatch from some trips, or usually land less than 400 lb. of scallops per trip could be negative since they will receive less trips than they took previously to land the same amount of scallops.

The economic impacts of this alternative on vessels in terms of scallop revenue and costs will be similar to the impacts examined in Section 5.4.5 above. A limitation of a tiered allocation system, however, is the uneven distribution of pounds gained or reduced by the vessels within a group from their best year landings. For example in Table 143 , a vessel that landed 20,000 lb. would be placed in the same group as a vessel that landed 50,000 lb. If every vessel in this group received approximately 30,000 lb., a vessel that landed 20,000 lb. would receive 10,000 lb. more, or 50% more pounds than its best year landings. On the other hand, a vessel that landed 50,000 lb. would get 20,000 lb. less, or 40% less than its best year landings. The percentage increase or reduction from the best year level is different for Tier 2. For example, for the 5 year criteria, if 126 vessels that are placed in this group were allocated the group average of 10,000 lb., a vessel that landed 5,000 lb. would get double (100% more), whereas a vessel landed close to 20,000 lb. would receive 50% less of its best year landings. Such as system would maximize economic

losses for some vessels and maximize gains for others. One advantage of this system would be to reduce the inequities in allocations due to data errors, however. The dealer data for general category scallop landings include many errors some of which could be impossible to correct especially for the earlier years of the qualification periods. Under individual allocation, it could be possible for a vessel to receive a large share of general category TAC due to inaccurate record of trip landings in excess of 400 lb. possession limit, thus reduce the share for other vessels that have correct records. With this alternative, those inaccuracies will affect average pounds per vessel and distribute the impacts among the vessels in each tier. Therefore, allocating equal pounds (or trips) to each vessel in each tier could diminish the extent of an outlier vessel's landings affecting the allocations for all other vessels with accurate trip entries.

**Table 143. Allocation for vessels with a three tiered permit system (Based on best-year of landing)**

Period	Qualification Criteria	TIERS	Number of vessels	Scallop lb. per vessel (Best year)	Scaled allocation per vessel (Option A) (TAC: 4 million lb.)	Number of trips per vessel (Option B) (TAC: 4 million lb.)	% share of general category TAC	
11 Years	100 lb.	TIER 1: >=20000	62	34,377	32,059	80	50%	
		TIER 2: 5K-19.9K	141	10,448	9,743	24	34%	
		TIER 3: < 5000 lb.	502	1,364	1,272	3	16%	
	100 lb. Total			705	6,084	5,674	14	100%
	1000 lb.	TIER 1: >=20000	62	34,377	32,834	82	51%	
		TIER 2: 5K-19.9K	141	10,448	9,979	25	35%	
TIER 3: < 5000 lb.		256	2,279	2,177	5	14%		
1000 lb. Total			459	9,124	8,715	22	100%	
5000 lb.	TIER 1: >=20000	62	34,377	38,147	95	59%		
	TIER 2: 5K-19.9K	141	10,448	11,594	29	41%		
	5000 lb. Total			203	17,757	19,704	49	100%
5 Years	100 lb.	TIER 1: >=20000	62	34,377	34,697	87	54%	
		TIER 2: 5K-19.9K	126	10,650	10,749	27	34%	
		TIER 3: < 5000 lb.	360	1,361	1,374	3	12%	
	100 lb. Total			548	7,232	7,299	18	100%
	1000 lb.	TIER 1: >=20000	62	34,377	35,410	89	55%	
		TIER 2: 5K-19.9K	126	10,650	10,970	27	35%	
TIER 3: < 5000 lb.		181	2,264	2,332	6	11%		
1000 lb. Total			369	10,524	10,840	27	100%	
5000 lb.	TIER 1: >=20000	62	34,377	39,590	99	61%		
	TIER 2: 5K-19.9K	126	10,650	12,265	31	39%		
	5000 lb. Total			188	18,475	21,276	53	100%
2 Years	100 lb.	TIER 1: >=20000	44	34,459	46,413	116	51%	
		TIER 2: 5K-19.9K	99	11,038	14,867	37	37%	
		TIER 3: < 5000 lb.	256	1,410	1,899	5	12%	
	100 lb. Total			399	7,443	10,025	25	100%
	1000 lb.	TIER 1: >=20000	44	34,459	47,310	118	52%	
		TIER 2: 5K-19.9K	99	11,038	15,154	38	38%	
TIER 3: < 5000 lb.		134	2,273	3,121	8	10%		
1000 lb. Total			277	10,518	14,440	36	100%	
5000 lb.	TIER 1: >=20000	44	34,459	52,830	132	58%		
	TIER 2: 5K-19.9K	99	11,038	16,923	42	42%		
	5000 lb. Total			143	18,245	27,972	70	100%

\* Number of trips=Allocation per vessel/400 lb.

#### 5.4.8.4 Stand alone individual transferable fishing quota alternative (3.1.2.4.4)

According to this alternative all vessels that had a permit before the control date would be given a permit, not just vessels that had landings. Each vessel would be allocated their share in historical landings for the 5 year period, however. Therefore, a permit that did not have landings history would not be allocated specific access to the fishery, but would be permitted to lease or buy quota from another vessel (individual transferable fishing quota system). There were 3562 unique vessels that obtained general category permits during 5 year period, but only 677 of these

vessels landed scallops of one pound or more, thus will receive an allocation. This alternative will also have positive impacts on the limited access qualifiers that do not receive an initial allocation because they haven't been active in the general category fishery during the 5-year qualification time period. These fishermen will not have to buy a new vessel with limited access permit to enter the fishery. Instead, they could buy or lease quota from others and fish for scallops with the vessel they already have. Therefore, this alternative will reduce the cost of entry to general category fishery for many vessels that had general category permits during the 5-year qualification period. The economic impacts of this alternative on active general category vessels were analyzed in Section 5.4.5, Table 98 to Table 107.

This alternative will qualify more vessels for limited access compared to the alternatives which require a certain amount of scallop landings for qualification. According to the estimates, 677 general category vessels landed some amount of scallops since the 2000 fishing year up to the control date and will qualify for an allocation (Table 144). The impacts of this alternative on allocations are compared with 100 lb., 1000 lb. and 5000 lb. qualification criteria in Table 144. Allocation per vessel will decline only marginally for 100 lb. and 1000 lb. criteria if all 677 vessels were included in limited access assuming a 4 million lb. TAC. Compared to 5000 lb. alternative, however, the impacts individual allocations could be higher. For example, if all of the 677 vessels received allocation, those 188 vessels that qualify with the 5000 lb. criteria would receive on the average, 21,276 lb. of scallops (some more some less depending on the individual share). If, however, a 4 million lb. TAC was distributed among 677 qualifiers (last column of Table 144) the average allocation for the 188 vessels will decline to 18,585 lb. But the impacts on the 489 vessels will be positive since they will receive 1035 lb. of individual allocation as an average (again some vessels will receive more than this some less than this amount depending on the individual shares). Many of these vessels that receive a small quota of scallops may opt to sell their share to other general category vessels that target scallops on a full-time basis. As a result, this alternative will distribute the gains from limited access among more vessels, while reducing the potential share of participants that would have qualified under other individual quota alternatives (100 lb., 1000lb. or 5000 lb. criteria).

**Table 144. Impacts of stand-alone alternative on number of qualifiers and individual allocation**

Qualification Criteria	Qualify	Number of vessels	Scallop landings (Total lb., best year)	Scallop allocation per vessel (lb., best year)	Scallop landings per vessel if all 677 qualify (lb., best year)
100 lb.	NO	129	12,397	-	97
	YES	548	3,963,266	7,299	7,275
100 lb. Total		677	3,975,663	5,908	5,908
1000 lb.	NO	308	93,091	-	304
	YES	369	3,883,173	10,840	10,586
1000 lb. Total		677	3,976,264	5,908	5,908
5000 lb.	NO	489	502,964	-	1,035
	YES	188	3,473,300	21,276	18,585
5000 lb. Total		677	3,976,264	5,908	5,908

The caps on the percent of quota that could be owned per vessel will prevent a few general category vessels dominating the fishery and will again help to redistribute gains from the limited

access more equitably (1% to 5% of the quota). If the scallop prices and the level of general category TAC are too low, however, some vessels may not be able to generate enough revenue from scallop fishing alone to pay for trip expenses, fixed costs and the crew, or to carry scallop fishing as a full-time operation. This alternative provides opportunity for vessels to buy quota from other vessels in order to land scallops in amounts necessary for economic viability. The analyses in Section 5.4.5.6 (Table 112 to Table 117) can help to evaluate possible impacts of a general category TAC and percent quota combinations on the economic viability for these vessels. For example, according to the estimates provided in Table 113 a small general category vessel that has no income from species other than scallops could cover its costs, have income for crew and vessel owner if it receives an allocation of 20,000 lb., which is 1% of a 2 million TAC, even if the scallop price were \$6.00 per lb. However, for a larger vessel with higher fishing costs, 20,000 lb. might be just sufficient to cover for these expenses without providing much return for the vessel owner after fixed costs are deducted even at a higher price (Table 114). The vessels that also participate on other fisheries, a smaller allocation could be sufficient to pay for expenses, the crew and derive some profits from scallop fishing. In general, maximum quota shares should be set at levels in order to provide flexibility to vessels to adjust their operations according to the level of TAC, scallop resource conditions, prices and costs.

#### **5.4.8.5 Stand alone alternative - Quarterly hard TAC with limited entry (3.1.2.4.5)**

This alternative is another version of quarterly hard TAC with limited entry (3.1.2.4.7) with a grouping of vessels similar to alternative 3.1.2.4.2 with two permit types using 11 year qualification period. Therefore, the analyses for these alternatives are also relevant for this alternative as discussed below.

Like the fleetwide quarterly hard TAC alternative, this alternative combine limited access with a quarterly hard TAC and instead of allocating individual quota (or trips), provides equal access to all qualifiers. It would include a limited entry program for vessels with a general category permit before the control date and some level of landings during the 11 year qualification period. Similar to the two permit type alternative (3.1.2.4.2), however, this alternative would group vessels into two categories. A vessel would qualify for a 200 pound permit if they landed 100-5,000 pounds in any fishing year from March 1, 1994 – November 1, 2004. This group is similar to the part-time permit group in alternative 3.1.2.4.2., except that more vessels (557 vessels instead 502 vessels) are included since any vessel that landed more than 100 lb. would be qualified regardless of trip landing (Table 140, Table 145). A vessel would qualify for a 400 pound permit if they landed over 5,000 pounds in any one fishing year from 1994-2004. Similar to the full-time group in alternative 3.1.2.4.2, 203 vessels would qualify for this group (Table 140, Table 145). Table 145 shows the number of vessels, scallop landings and trips by these groups. Overall, 760 vessels would qualify for limited access under this alternative, more than that would qualify under the least restrictive 100 lb. qualification criteria with other alternatives (705 vessels).

**Table 145. Qualifying vessels by trip limit group**

Trip limit	Number of vessels	Total scallop lb. (best year)	Percentage of total scallop lb. (best year)	Average scallop lb. per vessel (best year)	Total scallop trips	Scallop Pounds per trip
200 lb.	557	707,734	16.41%	1,271	4,807	147
>5000	203	3,604,631	83.59%	17,757	10,930	330
Grand Total	760	4,312,365	100.00%	5,674	15,737	274

Vessels in either category could possess up to 200 or 400 pounds per trip respectively (depending on the category they qualify for) and fish under a quarterly hard TAC. Unlike the alternative for two permit types and individual quota alternatives, all vessels would have equal opportunity to fish and no individual or tiered allocation would be awarded under this alternative. Once the TAC is reached in a given quarter all vessels can only possess up to 40 pounds of scallops per trip.

The impacts of this alternative will be similar to a certain extent to the impacts of the hard TAC alternative with quarterly TAC corresponding to the 11 year qualification period. In general, as discussed in Section 5.4.8.6, TAC management, without allocation of quota or trips to individual vessels, could lead to derby fishing and result in market gluts with negative impacts on prices and revenues (see Section 5.4.8.6 for further discussion). Hard TAC by quarter combined with a lower trip limit (200 lb.) for the majority of qualifiers (557 vessels out of 760 vessels) under this alternative will spread out the fishing season and reduce negative impacts from derby fishing (compared to fleetwide or quarterly hard TAC). Table 147 describes the seasonal distribution of scallop landings by general category vessels from 2001 through 2006. The average for the years combined is roughly 25% for Quarter 1, 44% for Quarter 2, 19% for Quarter 3 and 12% for Quarter 4. Similar percentages could be considered for the quarterly hard TACs under this alternative.

As with the alternative for two permit types, the economic impacts of this alternative could be negative, however, for the majority of the vessels that will be restricted to 200 lb. possession limit, compared to the fleetwide quarterly TAC alternative. Although Table 145 indicates that the vessels in this category had lower scallop landings per trip compared to the 400 lb. group, for many vessels in this group, average scallop pounds per trip was still larger than 200lb. In fact, a significant proportion of these vessels had average scallop landings per trip exceeding 300 lb. (Table 141). Table 190 (Social Impact Assessment) also showed that the vessels that would qualify 200 lb. permit landed the majority of their scallops on trips where scallops were in excess of 200 lbs. Therefore, reducing trip limit will either increase the number of trips and the trip costs for these vessels, or it will reduce the incentive for taking scallop trips due to the reduced profitability with 200 lb. of possession limit. The vessels with average trip landings of 200 lb. or less of scallops, however, will not be affected from the reduced possession limit. The economic impacts of reducing the possession limit were examined in Table 142 using a scenario analysis with scallop prices ranging from \$6.00 to \$7.60 and trips costs from \$350 to \$500 per day-at-sea. The results showed that even if a vessel doubles its trips to land the same amount of scallops with 200 lb. limit, the net revenue could still decline due to the increase in trip costs. In addition, not all vessels could increase the number of trips they take due to constraints on the vessel size, weather conditions or fishing activity in other fisheries. On the other hand, this alternative would

have positive impacts on many vessels in this group, which could be altogether excluded from limited access with other alternatives, such as with 5000 lb. criteria.

#### **5.4.8.6 Fleet wide hard-TAC under limited entry (3.1.2.4.6, 3.1.2.4.7)**

These alternatives combine limited access with a hard TAC and instead of allocating individual quota (or trips), they provide equal access to all qualifiers. Alternative 3.1.2.4.6 will set an annual hard TAC, whereas alternative 3.1.2.4.7 will spread out the TAC into either quarters (option A) or trimesters (option B). When the Regional Administrator projects that TAC is going to be reached, the fishery would close. Only those vessels that qualify for a general category permit will be able to participate in the scallop fishery before it closes and fish for scallops up to 400 pounds per trip. The number of vessels qualifying for limited access will be the same as shown in Table 79 in Section 5.4.3 corresponding to each qualification criteria and period alternative.

The economic impacts of hard TAC alternatives will be quite different from the individual allocation or tiered allocation alternatives since every qualifier will have equal access to the resource. If the TAC were set above the initial capacity of the fleet (comprised of the qualifying vessels), the change in the length of the fishing season may not be significant. Usually, however, TAC's are set below this level which, in turn, causes changes in the fishing season and intensifies competition among the fishermen. The fishing season will shorten as the difference between the pre-TAC landings and the TAC increase creating a race to fish among vessels before the fishery is closed. This will have negative impacts especially on smaller vessels that fish seasonally and in more favorable weather, or cannot access all areas due to the constraints on their capacity. As a result, some vessels may leave the general category scallop fishery or others may not participate as much as before due to the shorter season with TAC implementation. For some other vessels, shorter season could have some negative implications on safety if they rush to fish in unsafe weather conditions. TAC management could also have some negative impacts on the scallop resource if the vessels try to maximize their catch in a short-time without giving too much attention to the individual size of scallops they land. Given that general category fishery constitute a small proportion of the sea scallop fishery, these impacts may not be significant in terms of the overall scallop resource, but could be significant for some local areas.

On the other hand, those vessels with a higher fishing power could benefit from TAC implementation if some vessels leave the fishery and if the prices increase with the initial reduction in total effort due to the TAC and shorter season. Increase in profit margins for the remaining participants could lead, however, to increased investment in fishing power and overcapacity. For example, a higher horsepower could reduce the time steaming to fishing grounds, increase the fishing time per trip and could make it easier for a vessel to access areas further from the port. This increased investment in the fishing power will increase the costs and lower the profits for the participants over the long-term<sup>6</sup>. On the other hand, 400 lb. trip limit could reduce the incentive to invest in capacity to some extent since there will be no gains from a longer trip made possible, for example, investing in a larger vessel.

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<sup>6</sup> According to an OECD study (1997), the evidence from fisheries with TAC management indicated reduced profitability and increased costs and capital stuffing in many OECD countries. See "Towards Sustainable Fisheries, Economic Aspects of the Management of Living marine Resources", pp.72-77.

If the race to fish and investment in fishing capacity continues, the fishing season could become shorter and shorter<sup>7</sup>. This could have negative impacts on scallop prices since more will be caught in a shorter time and the markets will become glutted. On the other hand, because landings will be concentrated at the beginning of the fishing season, the uneven supply of scallops could result in an increase scallop prices after the fishery close, and could lower the benefits for the consumers. The extent of these impacts will depend, however, on the overall scallop landings since the scallop fishery will remain open to the limited access vessels which land the main bulk of scallops for the market. In short, TAC management is expected, in general, to create volatility in prices and to worsen the product quality due to uneven distribution of supply throughout the year. Depending on the proportion of the market supplied by general category fishery, which in turn will be determined by the hard TAC, these impacts could be slight during some seasons, but significant during others.

Fleet-wide hard TAC by trimester (3.1.2.4.7, Option B) or by quarter (3.1.2.4.7, Option A) will spread out the fishing season and reduce negative impacts from derby fishing and market gluts to some extent. Scallop landings, prices and percentage distribution of landings by quarter and by trimester are shown in Table 146 to Table 151 for fishing years 2004 to 2006 for all vessels with general category permit. As expected, fishing activity by the general category vessels were concentrated in the second quarter, from June to August during the 2001-2006 fishing years, whereas the least activity occurred in the winter months (fourth quarter), from December to the end of February. An annual TAC could push the main season for general category fishing to the earlier months, to March to June, Trimester 1 or quarter 1. This could lower the scallop prices and reduce the revenue for the participants. Hard TAC by quarter or trimester is expected to reduce these negative impacts to the extent these levels are not too different that the level of landings that would take place without the imposition of TAC.

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<sup>7</sup> According to the same OECD study, shortened fishing seasons were reported for 23 fisheries and spreading out the seasons over the year had limited effectiveness in reducing excess capacity.

**Table 146. Scallop landings (lb.) by quarter**

FISHYEAR	Q1.Mar-May	Q2.June-Aug.	Q3.Sept.Nov.	Q4.Dec. to Feb.
2001	409,550	1,047,006	279,893	288,844
2002	397,968	428,714	173,043	123,934
2003	499,446	767,034	390,460	110,720
2004	567,693	1,464,334	773,519	446,398
2005	1,219,608	3,086,640	1,816,375	916,279
2006	2,050,699	2,617,240	651,516	1,202*

\*ec.2006 only.

**Table 147. Percentage distribution of landings by quarter**

FISHYEAR	Q1.Mar-May	Q2.June-Aug.	Q3.Sept.Nov.	Q4.Dec. to Feb.
2001	20%	52%	14%	14%
2002	35%	38%	15%	11%
2003	28%	43%	22%	6%
2004	17%	45%	24%	14%
2005	17%	44%	26%	13%
2006	34%	43%	11%	13%*
All years	25%	44%	19%	12%

\*Estimated using dealer data for March 2006- Dec.2006.

**Table 148. Scallop prices by quarter (nominal)**

FISHYEAR	Q1.Mar-May	Q2.June-Aug.	Q3.Sept.Nov.	Q4.Dec. to Feb.
2001	4.31	3.90	3.62	4.22
2002	4.29	4.29	4.93	5.53
2003	4.75	4.29	4.73	5.58
2004	4.88	4.80	5.66	6.36
2005	6.82	7.32	8.67	7.86
2006	6.52	5.81	5.63	6.65*

\* Dec.2006 only.

**Table 149. Scallop landings (lb.) by trimester**

FISHYEAR	T1. Mar-Jun	T2.Jul-Oct.	T3.Nov to Feb
2001	947,808	748,903	328,582
2002	562,343	402,654	158,662
2003	714,052	857,407	196,201
2004	1,025,306	1,589,452	637,186
2005	2,104,490	3,588,256	1,346,156
2006	3,111,914	2,201,209	7,534*

\*Up to Dec.2006.

**Table 150. Percentage distribution of landings by trimester**

FISHYEAR	T1. Mar-Jun	T2.Jul-Oct.	T3.Nov to Feb
2001	46.8%	37.0%	16.2%
2002	50.0%	35.8%	14.1%
2003	40.4%	48.5%	11.1%
2004	31.5%	48.9%	19.6%
2005	29.9%	51.0%	19.1%
2006	48.0%	33.9%	18.1%*
All years	41.1%	42.5%	16.4%

\*Estimated using dealer data for March 2006 - Dec.2006.

**Table 151. Scallop prices by trimester (nominal)**

FISHYEAR	T1. Mar-Jun	T2.Jul-Oct.	T3.Nov to Feb
2001	4.19	3.68	4.11
2002	4.23	4.54	5.54
2003	4.54	4.53	5.12
2004	4.80	5.13	6.19
2005	6.80	7.98	8.09
2006	6.35	5.65	5.95

#### **5.4.9 Impacts of limited entry permit provisions (3.1.2.5)**

This amendment will consider measures to govern activities such as vessel sales, limited access permit transfers, permit splitting, changes to vessel size, and establishment of vessel baselines to evaluate changes to vessel size, etc. These measures would apply to all general category permits that qualify for limited access if limited access is adopted under Amendment 11.

Fishing History and Permit Transfers (3.1.2.5.1) are intended set the rules for determining eligibility for limited access and for appeals for all vessels to follow in case of denial of permit (based on the consistency amendment). In addition to third party verification, such as dealer receipts, VTR records could be incorporated to identify errors during the appeal process. A pre-qualification process that would cap scallop landings per trip at 400 lb. would reduce the negative economic impacts on vessels due to inaccurate entries for others in excess of 400 lb. due to data errors. If landings from a trip record were in excess of 400 lb. because several trips were reported as one in the dealer data, a vessel can appeal for a higher allocation subject to verification from VTR. These measures will indirectly benefit all participants by ensuring that only those vessels that provide verification of permit and landings history will qualify and receive allocation based on accurate records.

The qualification and retention of permits specified in the sale of vessels (3.1.2.5.1.2) would have positive economic impacts on participants that sold their vessel to another but retained the fishing history. If the buyer qualifies for limited access as well based on its own landings and subject to the determination by Regional Administrator, then the number of qualifiers will increase. If limited entry were combined with TAC management, this would reduce the percentage share of each qualifier in the general category fishery and to some extent their revenues from scallops depending on the number of additional vessels that would qualify for limited access with this provision.

The alternatives related to vessel upgrade restrictions, which allow a vessel to increase its fishing power either without restriction or subject to a 10:10:20 upgrade of length, gross tonnage and horsepower, will provide vessels the flexibility to adjust their fishing power to changing circumstances, with conceivably positive economic impacts on these vessels. For example, increasing horsepower could help a small vessel to reduce its trip length and thus minimize its trip costs. It could also increase a smaller vessel's capability to access areas further from the port. As long as Amendment 11 action limits the total harvest of limited entry qualifiers, these alternatives are unlikely to result in overfishing of the resource. The individual allocation system, combined with the 400 lb. possession limit, will also reduce the need to upgrade and invest in more capacity if a vessel's quota does not significantly exceed the amount it traditionally fishes. On the other hand, TAC management without allocation to individual vessels could increase the incentives for upgrading since the vessels with a higher fishing power would have an advantage over smaller vessels and could maximize their landings before the fishery is closed. As a result, the nature of the general category fishery could change and negatively impact the small day-boat vessels that are unable to invest in more capacity. Upgrading without any restrictions (Alternative 2) would magnify these impacts compared to the 10:10:20 upgrade provision.

Stacking of permits will allow the general category permit holders with more one than one qualifying boat to consolidate their allocation into one vessel to help reduce fishing costs, such as repairs, maintenance and insurance. This will also help the vessels to maintain an economically viable operation if the allocations for separate vessels is too low to generate revenue to cover variable and fixed expenses. In short, a stacking provision would have positive impacts especially on those vessels that target scallops and depend on this fishery as the main source of their income. In this respect, an alternative that restricts stacking pounds to 60,000 lb. at a maximum (3.1.2.5.4.3) will allow more flexibility to vessels compared to limiting stacking to two permits only. However, consolidation of permits in fewer boats could have possible negative impacts at the community level and negative impacts on cultural values emphasizing the small, day-boat character of the fishery as discussed in Section 5.5, Social Impact Assessment.

Voluntary Relinquishment of Eligibility (3.1.2.5.5) and Permit Splitting (3.1.2.5.6) provisions are expected to have positive economic impacts on the sea scallop fishery as a whole by reducing and/or preventing an increase in capacity in the general category fishery. This is because no new permits would be issued to replace permits relinquished by qualifiers that exit the fishery later on, and the limited access permits would not be allowed to split apart and distributed among other and/or replacement vessels with different fishing power. These measures are in line with the consistency amendment.

The economic impacts of permit renewals and confirmation of permit history provisions (3.1.2.5.8) are expected to be positive for the limited access qualifiers. These measures will help to determine the fishermen who have an active interest in participating in the general category fishery. This would enable vessel owners that qualify for limited access to retain their fishing history and to transfer it to a replacement vessel in the future.

The percentage ownership restriction (3.1.2.5.9) will prevent a few general category vessels from dominating the fishery and will help to redistribute gains from the limited access more equitably among more fishermen. It could also reduce the potentially negative impacts of consolidation on employment and crew incomes due to the decrease in the number of vessels, with positive

economic impacts on communities that depend on small day-boat fishery. Alternative 3.1.2.5.9, as modified at the Scallop Committee meeting on March 20, 2007, will restrict maximum ownership of allocation (either in pounds or in number of trips) to 1%-5% of total allocation for general category fishery. Table 152 provides a comparison of this alternative with the permit stacking corresponding to various levels of general category TAC. Fourth column in Table 152 shows the percentage of general category access with 60,000 maximum stacking corresponding to different levels of general category TAC. It shows that a 1% ownership restriction will be more restrictive than the maximum permit stacking option of 60,000 lb. if General category TAC is less than 6 million pounds. On the other hand, 60,000 lb. stacking alternative will be more restrictive than the % ownership alternative depending on the maximum percentage and level of general category. In general, a vessel could lease/own more than 60,000 lb. if general category TAC is greater than 3 million lb. and percentage restriction is 2% or more.

**Table 152. Comparison of permit stacking and percentage ownership restriction**

Total scallop harvest (Million lb.)	General category TAC as a % of total harvest	GC TAC (Mil.lb.)	% share of allocation with stacking up to 60,000 lb.	Maximum pounds corresponding to percentage ownership restriction				
				1%	2%	3%	4%	5%
40	2.50%	1	6.0%	10,000	20,000	30,000	40,000	50,000
40	5%	2	3.0%	20,000	40,000	60,000	80,000	100,000
40	7%	2.8	2.1%	28,000	56,000	84,000	112,000	140,000
40	10%	4	1.5%	40,000	80,000	120,000	160,000	200,000
40	11%	4.4	1.4%	44,000	88,000	132,000	176,000	220,000
50	2.50%	1.3	4.6%	13,000	26,000	39,000	52,000	65,000
50	5%	2.5	2.4%	25,000	50,000	75,000	100,000	125,000
50	7%	3.5	1.7%	35,000	70,000	105,000	140,000	175,000
50	10%	5	1.2%	50,000	100,000	150,000	200,000	250,000
50	11%	5.5	1.1%	55,000	110,000	165,000	220,000	275,000
60	2.50%	1.5	4.0%	15,000	30,000	45,000	60,000	75,000
60	5%	3	2.0%	30,000	60,000	90,000	120,000	150,000
60	7%	4.2	1.4%	42,000	84,000	126,000	168,000	210,000
60	10%	6	1.0%	60,000	120,000	180,000	240,000	300,000
60	11%	6.6	0.9%	66,000	132,000	198,000	264,000	330,000
70	2.50%	1.8	3.3%	18,000	36,000	54,000	72,000	90,000
70	5%	3.5	1.7%	35,000	70,000	105,000	140,000	175,000
70	7%	4.9	1.2%	49,000	98,000	147,000	196,000	245,000
70	10%	7	0.9%	70,000	140,000	210,000	280,000	350,000
70	11%	7.7	0.8%	77,000	154,000	231,000	308,000	385,000

#### 5.4.10 The impacts of trawl gear measures (3.1.2.6)

These alternatives reduce the incentive for qualifying vessels to target scallops with trawl gear. Alternative 3.1.2.6.2 was developed to prevent an expansion in general category scallop effort using trawl gear, and Alternatives 3.1.2.6.3 and 3.1.2.6.4 were developed to reduce incentive to fish for scallops with trawl gear.

Overall, prohibition of switching to trawl gear would have minimal impacts on most participants in the general category fishery, while reducing scallop mortality from an increase in fishing

effort by trawl gear. Since most ( $\frac{3}{4}$  of all) of the general category scallops trips in 2005 involved the use of the scallop dredge (Table 190, Social Impact Assessment), prohibition of switching to trawl gear is not expected to affect negatively the majority of the vessels compared to no action (3.1.2.6.1). In addition, a gear switching prohibition will not affect those trawl vessels that qualify for limited access based on their fishing history. For example, of the 452 general category vessels whose landings are recorded in logbook records and would qualify based on at least one of the qualification criteria, over half (185) used only scallop or other dredges to land scallops, 195 vessels used trawl gear only, and 72 vessels used a combination of dredge and trawl during the 11-year qualification period to catch scallops, (Section 5.5.1.1.4, Social Impact Assessment). The last group of vessels would be prohibited from using trawl gear. Since most of these vessels do not catch the majority of their scallops with trawl gear, this alternative would reduce their scallop revenue from mixed trips only.

The lower possession limit for trawl vessels (3.1.2.6.3), or the measure to limit scallop trips to 5% of regulated species (3.1.2.6.4), could have less negative impact on trawl fishermen compared to 3.1.2.6.2, in that they could continue to use trawl on mixed trips for landing scallops. About half of the trawls vessel land 300 lb. or less of scallop pounds from their trips (Table 5, Section 3.1.2.6.3). The overall positive impacts of this measure on the scallop resource and future yield are expected to outweigh the negative impacts on some participants and to increase scallop landings and revenue compared to no action. Section 5.5.1.1.4, Social Impact Assessment, provides further discussion of the impact of these measures on vessels and ports.

#### **5.4.11 Sectors and Harvesting Cooperatives (3.1.2.7)**

This action is considering a process for the creation of fishing “sectors” and the allocation of TAC shares to the sectors within the general category fishery. The establishment of sectors will not impact overall scallop landings and revenues from the general category fishery. It will have positive impacts on the participants, however, by allowing fishermen to combine their allocations and to fish using fewer vessels in order to reduce fishing costs. This will provide an opportunity for fishermen to establish and benefit from an economically viable operation when the allocations of individual vessels are too small to make scallop fishing profitable. Under these conditions, general category scallop TAC is likely to be fully utilized by qualifiers with positive impacts on revenues and producer and consumer benefits. There could be some indirect positive impacts if sectors identify ways to fish more efficiently, reduce bycatch, and prevent interactions with the protected species. This could help prevent more stringent measures in the future such as closing areas to further scallop fishing.

There is some concern that sectors could change the nature of the general category fishery from a small day-boat fishery to a fishery dominated by a few large boats fishing like offshore boats with multiple day trips. As long as general category fishery is subject to a 400 lb. possession limit per trip, however, there will be less incentive to consolidate shares on boats with higher fishing power or to invest in larger capacity boats. On the other hand, for fishing in the access areas, it may be beneficial to put allocations on vessels with higher fishing power in order to maximize the landings before an area closes to general category fishing. In such a case the participants of a sector could gain at the expense of other vessels that fish individually or belong to a sector with smaller vessels. If the general category fishery is managed by a vessel allocation system (whether in terms of individual fishing quota, trips, or tiers.), there will be less incentive

for race to fish in access areas since scallop pounds or trips would be deducted from a vessel's allocation no matter where they fish.

It remains to be seen how cooperatives will affect employment and crew incomes in the general category fishery. Although scallop fishing with fewer vessels would reduce employment to some extent, given that many general category vessels participate in other fisheries as well, these negative impacts on crew could be small. There are also potential issues related to sectors and cooperatives such as a decline in competition and price fixing, especially when a few sectors dominate the fishery. Such impacts for sectors in general category fishery could be small since the general category fleet lands a small proportion of the total scallop catch. A 20% limit on sector shares would also reduce such potentially negative impacts.

#### **5.4.12 Interim measures for transition period to limited entry**

The Council is considering two alternatives for interim measures until a limited entry and allocation program could be implemented.

##### **5.4.12.1 Interim temporary 10% TAC alternative**

This alternative will establish a temporary hard general category TAC of 10% of the overall scallop harvest for 2 years during the transition period to limited entry (or until the individual / tier allocation program can be implemented). This measure will also establish a similar temporary hard TAC quota for limited access vessels fishing in the general category for the transition period to individual allocation. All those who had a permit during the qualifying years (and have appealed their eligibility) prior to the control date would qualify to fish. Qualification would be based on measures voted in under Amendment 11 and put in place at the end of the appeals process or 2 years, whichever is shorter.

This transition alternative is similar to the status transition alternative in all aspects except that total general category scallop landings (from all qualifiers) would be controlled by a hard TAC not to exceed 10% of the overall scallop harvest. All the analyses provided above for status quo alternative is relevant for this alternative as well in terms of the number of qualifiers, vessels that are likely to appeal, and recent participation. By limiting the general category landings at 10% of the total scallop landings, however, this alternative will prevent a short-term increase in overfishing of the scallop resource and also will prevent a consequent decline in limited access allocations to compensate for an increase in general category effort. In other words, the overall economic impacts of this alternative may not be very different from the status quo scenario estimated in Framework 18. On the other hand, this alternative could have negative impacts on the general category fishery by leading to derby style fishing as vessels try to maximize their landings before the fishery closes when the hard TAC is reached. Given that the general category landings by vessels that had a permit before the control date was around 11% of total landings in 2005, a 10% hard TAC does not constitute a significant constraint on recent landings, and as a result, could minimize the incentive for race to fish if there is not an unexpected increase in the number of and effort by general category vessels. As with the status transition alternative, the implementation of limited entry and management of the general category fishery by a TAC combined with individual (or tiered) allocations (either in trips or pounds) once the transition period is completed will have positive long-term economic impacts on the sea scallop

fishery compared to status quo alternative as discussed in Section 5.4.2 to Section 5.4.8 and other relevant sections of Economic Analysis of DSEIS.

#### **5.4.12.2 Transition to limited entry alternative without a hard-TAC**

Under this alternative, general category scallop permit holders will fish under existing regulations during the appeals process. All those who had a permit during the qualifying years (and have appealed their eligibility) prior to the control date would qualify to fish. Qualification would be based on measures voted in under Amendment 11 and put in place at the end of the appeals process or 2 years, whichever is shorter.

The number of vessels that would be qualified for limited access, thus would be allowed to participate in the general category fishery during the transition period were estimated in Table 79 for each qualification (poundage) criteria and period alternative. In addition to these vessels, the vessels that had a permit before the control date will be qualified to appeal and fish during the transition period. Since it is not known at this point how many vessels will appeal, the total number of vessels that are likely to fish can not be estimated with certainty. Potentially, this could include over 4000 permit holders for 11 year fishing period, over 3000 permit holders for 5 year fishing period and over 2000 permit holders for 2 year fishing period depending on the qualification criteria. Given that only 924 out of 4777 unique vessels that had a general category permit landed a pound or more scallops during 11 year period and fewer vessels landed any scallops during the 5 and 2 year qualification periods, the number of vessels that will apply for appeal would probably be much lower than the whole universe of vessels that had a permit during a qualification time period.

Although participation in the general category fishery increased during the recent years, the number of active vessels was still significantly less than the total number of general category permits obtained before the control date. For example, 516 vessels that had a permit before the control date participated in the general category fishery in 2005 fishing year and 234 of them would qualify for limited access under the preferred alternative (11 year period and 1000 lb. criteria) without no need for appeal (Table 118 to Table 120). The remaining 282 vessels (516 minus 234) that participated in the general category fishery in 2005 may not qualify for limited access according to the estimates based on the dealer data, but they could still continue to fish during the transition period if they appeal their eligibility. Similarly, preliminary estimates indicated that 455 vessels that had a permit before the control date participated in general category fishery during 2006 fishing year (up to January 2006) and 203 of these vessels would qualify for limited access under the preferred alternative. If all the 516 vessels that were active in 2005 (2006) fishing year and had a permit before the control date continued to fish during the transition period either because they were eligible or because they appealed their eligibility, then the general category scallop landings could be over 5.8 million lb. if they landed the same amounts as they in 2005 fishing year.

Under this alternative general category scallop landings would estimated based on the recent participation in the fishery by vessels that had a permit before the control date, and the estimated amount would be removed out of the limited access allocations during the transition period. For example, if it is estimated that general category landings would be similar to 2005 level, then 5.8 million pounds would be deducted from the total estimated scallop harvest, 56 million pounds in

2008 and 61 million pounds in 2009 to determine day-at-sea allocations for limited access vessels. This is in line with the status quo estimates in Framework 18, since general category share would constitute slightly above 10% of total scallop harvest in 2008 and less than 10% of the harvest in 2009. Therefore, if the participation by general category vessels that had a permit before the control date does not increase significantly above the recent levels, the economic impacts of this alternative compared to the status quo would be negligible during the transition period. On the other hand, it is possible for the number of appeals to be greater than the number of vessels that fished during the recent years, thus for more vessels to participate in the fishery. If this happens and the general category scallop landings increase above 10% of total scallop harvest, then there would be a short-term increase in overfishing of the scallop resource with negative impacts on economic benefits. After the transition period is completed, however, any short-term increase in fishing mortality would be corrected by adjusting allocations down for the general category and limited access vessels. Although, this would have negative short-term economic impacts on vessels, the implementation of limited entry and management of the general category fishery by a TAC combined with individual (or tiered) allocations (either in trips or pounds) once the transition period is completed will have positive long-term economic impacts on the sea scallop fishery as discussed in Section 5.4.2 to Section 5.4.8 and other relevant sections of Economic Analysis of DSEIS.

#### **5.4.13 Hard TAC without limited access (3.1.3)**

In addition to the hard TAC alternatives with limited access, alternative 3.1.3.1 proposes to control mortality in the general category fishery with a hard TAC providing equal access to all participants. This alternative will magnify the negative impacts of TAC management discussed in Section 5.4.8.6. Since general category fishery will remain open access, the race to fish will intensify if there are new entrants to the fishery, fishing season will shorten, and the negative impacts on prices and revenues will increase. The general category vessels that traditionally participate in the scallop fishery would incur more losses with this alternative compared to the hard TAC management with limited access since there will be more participants racing to land scallops before the quota is reached.

#### **5.4.14 Impacts of Northern Gulf of Maine (NGOM) Scallop Management Area alternatives (Section 3.1.4)**

##### **5.4.14.1 No Action**

Since no specific measures would be considered for the Northern Gulf of Maine, the impacts on the number of qualifiers, allocations, revenues and costs would be the same as the impacts analyzed in Section 5.4.3 to Section 5.4.8.4 above. Many vessels with a primary port of landing in Maine will qualify for limited access because they have landed scallops during the alternative qualification periods (Table 86 through Table 89). However, this alternative does not provide access opportunity for general category vessels that could not establish a scallop landings history especially in the recent years due to the poor scallop resource conditions in NGOM. Therefore, Amendment 11 could potentially have negative economic impacts on these vessels by disqualifying them from access to the scallop fishery in the future.

#### **5.4.14.2 Amendment 11 would not apply to the Northern Gulf of Maine**

If this alternative is selected by the Council then an open access permit to fish for scallops under general category would remain for this area, and a vessel could land up to 400 pounds of scallops per trip if the have VMS (IB permit). Any vessel from any area would be permitted to apply for and fish under an open access NGOM general category permit. A hard TAC would be established for this area and if reached vessels would be limited to possession of up to 40 pounds of scallops after the TAC was reached.

This alternative will retain the opportunity for those general category vessels that do not qualify for limited access with the Amendment 11 alternatives to fish for scallops in NGOM when there is an improvement in the scallop resource in this area. As a result, the economic impacts on these vessels will be positive. As examined in Section 5.5.3 of Social Impact Assessment, these positive impacts could be significant for some ports and communities where these vessels are located. On the other had, this alternative will let any general category fishermen regardless of their homeport to land scallops in this area. Therefore, the positive impacts on the general category fishermen that traditionally fished in this area could be reduced if there is an influx of vessels from other areas to participate in the open access fishery of NGOM.

A hard TAC for this area will help prevent overfishing of the scallop resource that could happen with open access; therefore, will minimize negative economic impacts from a reduced yield in the future. There could be some negative impacts from derby fishing with a hard TAC, however, especially if there are new vessels from other ports that want to participate in the open access fishery. There may also be some negative impacts on the portions of the scallop resource related to the boundary options, however. For example, with Option A, an additional area (compared to Option B) to the south will be added for open access, which could result in some vessels fishing with limited access and some vessels fishing with open access permits. This would complicate the estimation of TAC and could result in overfishing of this area, which in turn, could have negative economic impacts for both limited access and open access general category vessels.

#### **5.4.14.3 Establish a Northern Gulf of Maine Management Area Limited Entry Program**

This alternative would develop a separate limited entry general category program in the GOM exemption area north of 42°20N (**Option A**) or— waters in the EEZ north of 43N (**Option B**). To qualify for a NGOM scallop permit, a vessel one must have had a General Category scallop permit in any fishing year between 1994 and Nov. 1, 2004 and must have landed at least one 100 pound trip in the same fishing year in any area. In order words, the same 705 vessels that qualify for 11 year period with the 100 lb. qualification criteria will also qualify for NGOM scallop permit. All the information and analyses relevant for these vessels were provided in Section 5.4.3 and Section 5.4.5 (Table 78, Table 79 and Table 98 to Table 107), thus will not be repeated here. Table 154 provides information, however, about scallop landings per vessel, years active, gross tonnage of these vessels by the primary state of landing. This alternative will qualify 186 vessels from Maine, 17 from NH and 244 from MA for NGOM permit, as well as many vessels from Rhode Island, Connecticut and from Mid-Atlantic states. If a separate management area for NGOM is not implemented, the same vessels, including 186 vessels from Maine would still qualify for limited access with 11 year qualification period and 100 lb. criteria, although they wouldn't be allocated a separate TAC for fishing in the NGOM area. If, however, a more restrictive qualification criteria or a shorter qualification period was selected for qualification,

the number of vessels from Maine qualify for limited access will decline. For example, a 5 year qualification period will reduce the number qualifiers to 95 vessels, and the 5000 lb. qualification criterion, to 34 vessels with a primary state of landing in Maine (Table 153).

**Table 153. Vessels with a primary port from Maine: Number of qualifying vessels and estimated landings based on an individual allocation system and best year of landings during the specified time period**

Time period	Qualification Criteria	Qualified	Number of vessels	Total scallop landings (lb., Best year)	Avg. Scallop landings per vessel (lb., best year)	Avg.GRT per vessel
1994-04 (Up to the control date)  Total: 223 active vessels	100 lb. Criteria	NO	37	11,782	318	28
		YES	186	710,968	3,822	29
	1000 lb. Criteria	NO	93	32,453	349	42
		YES	130	691,298	5,318	23
	5000 lb. Criteria	NO	180	240,328	1,335	32
		YES	43	483,422	11,242	20
2000-04 (Up to the control date)  Total: 113 active vessels	100 lb. Criteria	NO	18	2,632	146	41
		YES	95	516,367	5,435	26
	1000 lb. Criteria	NO	43	13,394	311	44
		YES	70	506,200	7,231	19
	5000 lb. Criteria	NO	79	109,659	1,388	33
		YES	34	409,935	12,057	18
2003-04 (Up to the control date)  Total: 60 active vessels	100 lb. Criteria	NO	8	709	89	27
		YES	52	340,178	6,542	24
	1000 lb. Criteria	NO	19	5,511	290	36
		YES	41	335,376	8,180	20
	5000 lb. Criteria	NO	37	57,712	1,560	29
		YES	23	283,176	12,312	19

Establishing a separate management area and TAC for NGOM, will have positive economic impacts on those vessels that are not qualified for limited access but qualify for an NGOM permit that will provide them opportunity to land scallops in this area when the resource conditions are favorable. On the other hand, some of these non-qualifiers fish in other areas as well, but will not be able to do so with their NGOM permit.

Since a separate TAC will be set for this area, the risks from overfishing the scallop resource will be minimized. Although there will be some negative impacts from a potential derby fishing due to the hard TAC, a lower trip limit of 200 lb. and a maximum one trip per day could reduce these negative impacts to some extent. For the vessels that qualify for a regular general category

limited access permit, the trip limit will stay at 400 lb., but their landings from NGOM area will be deducted from their allocations. Therefore, establishing NGOM as a separate area is not likely to provide an incentive to fish in this area for those vessels that are not located in close proximity to the area. Restricting the dredge size for fishing in NGOM will also reduce the incentive to fish in that area by some vessels that normally employ a larger dredge size.

**Table 154. General category vessels qualify for NGOM permit by primary state of landing.**

Primary State of landing	Number of vessels	Average scallop lb. per vessel (Best year, 11 years period)	Total scallop landings (Best year, 11 years period)	Average number of years active	Average GRT
CT+RI	52	1,736	90,278	2.7	112
MA	244	5,121	1,249,564	4.2	72
ME	186	3,822	710,968	2.3	29
NH	17	2,235	37,996	3.9	20
NC	44	10,384	456,894	2.7	87
NJ	75	14,257	1,069,304	2.5	80
NY	47	7,266	341,525	3.4	65
Oth.MidAt	40	8,315	332,581	2.3	83
Grand Total	705	6,084	4,289,112	3.1	68

#### 5.4.15 Monitoring Provisions (3.1.5)

Under no action, vessels would still be required to report scallop landings through vessel trip reports (VTR). However, alternative 3.1.5.2 would require all general category vessels to report landings through VMS, and alternative 3.1.5.3 would require weekly landings reports through Interactive Voice Reporting (IVR). These alternatives are expected to have positive indirect economic benefits for the sea scallop fishery by improving the monitoring of the fishing effort in the general category fishery and ensuring better compliance with the regulations. There will be more positive impacts associated with VMS since the information provided will be real time and will include the location of the vessel. These measures will increase compliance costs for fishermen to some extent in terms of increased time and inconvenience associated with reporting. Since general category vessels that land over 40 lb. are already required to have a VMS onboard, these costs are not expected to be significant, however.

#### 5.4.16 Impacts of limited access fishing under general category rules (Alternatives in Section 3.1.6 of DSEIS)

##### 5.4.16.1 Qualification for limited access general category fishery

Currently limited access scallop vessels are permitted to fish for scallops under general category rules while not fishing on a scallop DAS. They are restricted to 400 pounds per trip. Amendment 11 is considering several alternatives related to limited access fishing under general category rules. One alternative would prevent it entirely (Alternative 3.1.6.1.4), one would permit it, but only for limited access vessels that qualify under the same criteria as general category vessel (Alternative 3.1.6.1.2), and one alternative would only permit part-time and occasional vessels to qualify and prevent full-time vessels from fishing under general category rules (Alternative 3.2.6.1.3).

The numbers of limited access vessels that qualify general category limited access with 100 lb., 1000 lb. and 5000 lb. criteria, scallops pounds and number of general category trips are shown in Table 155 to Table 157. For example, of the 231 unique limited access vessels that fished under general category rules during 2000-2004, only about 57 of them would potentially qualify under the 1000 pound qualification criteria (Table 156). Of these, 38 are full-time vessels, and about 19 of them have a part-time or occasional permit. The number of qualifiers would increase to 126 vessels, 96 full-time and 30 part-time and occasional, if the 11 year period is selected as the period of qualification. This significant increase in the number of qualifiers for the 11 year period could be due to several factors:

- Any trip landing record in dealer data of less than or equal to 400 lb. of scallops for limited access vessels are assumed to be general category trips, that is trips not taken when the vessel is under day-at-sea. This assumption would indeed provide an accurate estimation of general category trips after 1998 when landings per day-at-sea (LPUE) exceeded 400 lb. significantly (Table 18 in Section 4.4). But for earlier years from 1994 to 1998, because average LPUE was below 500 lb., some of the trips with less than 400 lb. of scallops could have been limited access trips rather than general category trips. As a result, the number of limited access vessels taking general category trips may have been overestimated. Thus, the number of actual qualifiers could be less than shown in the table for 11 year period depending on how NMFS will determine which trips by limited access vessels belong to the general category trip category.
- Since 11 year period include those early years from 1994 to 1998, during when the scallop productivity and average LPUE was low, some limited access vessels may have taken more general category trips to compensate for the decline in scallop landings when they fished under day-at-sea.

**Table 155. The limited access vessels qualify and do not qualify for general category limited access permit with 100 lb. criteria and qualification period**

Period	Qualify	Permit category	Number of vessels	Best year scallop pounds per vessel	Total scallop pounds (best year)	Number of trips per vessel (best year)
11 year	NO	Full-time	13	63	815	1.4
		Part-time+Occasional	9	85	763	1.3
	NO Total		22	72	1,578	1.4
	YES	Full-time	267	1730	461,889	6.1
		Part-time+Occasional	78	3123	243,630	11.6
YES Total		345	2045	705,519	7.3	
11 year Total			367	1927	707,097	7.0
5 years	NO	Full-time	30	55	1,642	1.2
		Part-time+Occasional	8	85	682	2.1
	NO Total		38	61	2,324	1.4
	YES	Full-time	144	1704	245,380	5.4
		Part-time+Occasional	49	4241	207,824	13.7
YES Total		193	2348	453,204	7.5	
5 years Total			231	1972	455,528	6.5
2 years	NO	Full-time	15	57	851	1.2
		Part-time+Occasional	5	64	320	1.4
	NO Total		20	59	1,171	1.3
	YES	Full-time	88	1711	150,609	5.4
		Part-time+Occasional	23	6737	154,952	20.3
YES Total		111	2753	305,561	8.5	
2 years Total			131	2341	306,732	7.4

**Table 156. The limited access vessels qualify and do not qualify for general category limited access permit with 1000 lb. criteria and qualification period**

Period	Qualify	Permit category	Number of vessels	Best year scallop pounds per vessel	Total scallop pounds (best year)	Number of trips per vessel (best year)
11 year	NO	Full-time	184	445	81,790	2.3
		Part-time+Occasional	57	413	23,562	2.8
	NO Total		241	437	105,352	2.4
	YES	Full-time	96	3968	380,914	12.6
		Part-time+Occasional	30	7361	220,831	25.2
YES Total		126	4776	601,745	15.6	
11 year Total			367	1927	707,097	7.0
5 years	NO	Full-time	136	339	46,155	1.6
		Part-time+Occasional	38	423	16,087	3.0
	NO Total		174	358	62,242	1.9
	YES	Full-time	38	5286	200,867	15.5
		Part-time+Occasional	19	10127	192,419	30.2
YES Total		57	6900	393,286	20.4	
5 years Total			231	1972	455,528	6.5
2 years	NO	Full-time	77	367	28,222	1.7
		Part-time+Occasional	19	462	8,785	3.8
	NO Total		96	385	37,007	2.1
	YES	Full-time	26	4740	123,238	13.7
		Part-time+Occasional	9	16276	146,487	44.6
YES Total		35	7706	269,725	21.7	
2 years Total			131	2341	306,732	7.4

**Table 157. The limited access vessels qualify and do not qualify for general category limited access permit with 5000 lb. criteria and qualification period**

Period	Qualify	Permit category	Number of vessels	Best year scallop pounds per vessel	Total scallop pounds (best year)	Number of trips per vessel (best year)
11 year	NO	Full-time	258	910	234,779	3.7
		Part-time+Occasional	80	986	78,860	5.7
	NO Total		338	928	313,639	4.2
	YES	Full-time	22	10360	227,925	30.4
		Part-time+Occasional	7	23648	165,533	65.4
YES Total		29	13568	393,458	38.9	
11 year Total			367	1927	707,097	7.0
5 years	NO	Full-time	162	630	102,113	2.6
		Part-time+Occasional	50	859	42,973	4.8
	NO Total		212	684	145,086	3.1
	YES	Full-time	12	12076	144,909	32.6
		Part-time+Occasional	7	23648	165,533	63.9
YES Total		19	16339	310,442	44.1	
5 years Total			231	1972	455,528	6.5
2 years	NO	Full-time	96	746	71,629	2.8
		Part-time+Occasional	23	821	18,889	5.1
	NO Total		119	761	90,518	3.3
	YES	Full-time	7	11404	79,831	31.1
		Part-time+Occasional	5	27277	136,383	71.2
YES Total		12	18018	216,214	47.8	
2 years Total			131	2341	306,732	7.4

The full-time vessels taking general category trips has a lower dependence on general category trips as a revenue source compared to part-time and occasional vessels (Table 158 to Table 160). Again using 1000 lb. criteria and five year qualification period as an example, Table 159 shows that full-time vessels derived only 3.3% of their revenue from general category trips, whereas part-time and occasional vessels derived 11% of their revenue fishing under the general category rules. Therefore, the alternative (3.1.6.1.4) that prevents all vessels with limited access permits from having access to general category fishery in the future would have more negative impacts on occasional and part-time vessels compared to the full-time vessels. The primary part of landings and average gross tonnage of the limited access vessels that could qualify for limited access under various qualification criteria are shown in Table 161 to Table 163. In general, part-time and occasional vessels are smaller than their full-time counterparts. Majority of the limited access vessels that may qualify for limited access under some alternatives are from Mid-Atlantic area.

**Table 158. Dependence on general category scallop landings as a % of total revenue in 2005 fishing year for a sample of limited access vessels that qualify for general category limited access permit with 100 lb. criteria**

Period	Permit category	Number of active vessels with general category trips	Total revenue per vessel	Scallop revenue per vessel	Scallop revenue as a % of total revenue	General category scallop lb. as a % of total scallop lb.	General category revenue as a % of total revenue
11 year	Full-time	70	\$1,177,515	\$1,066,362	91.4%	3.2%	2.9%
	Part-time+Occasional	26	\$710,539	\$591,089	80.9%	15.8%	12.8%
5 years	Full-time	56	\$1,116,633	\$1,007,825	91.0%	3.6%	3.3%
	Part-time+Occasional	22	\$697,740	\$575,447	83.6%	13.2%	11.0%
2 years	Full-time	41	\$1,106,033	\$996,684	91.0%	4.1%	3.7%
	Part-time+Occasional	11	\$638,572	\$497,409	78.7%	22.6%	17.8%

**Table 159. Dependence on general category scallop landings as a % of total revenue in 2005 fishing year for a sample of limited access vessels that qualify for general category limited access permit with 1000 lb. criteria**

Period	Permit category	Number of active vessels with general category trips	Total revenue per vessel	Scallop revenue per vessel	Scallop revenue as a % of total revenue	General category scallop lb. as a % of total scallop lb.	General category revenue as a % of total revenue
11 year	Full-time	33	\$1,154,186	\$1,047,152	91.6%	3.7%	3.4%
	Part-time+Occasional	12	\$665,252	\$525,169	72.6%	27.5%	20.0%
5 years	Full-time	20	\$1,066,814	\$952,118	90.3%	5.8%	5.2%
	Part-time+Occasional	9	\$737,365	\$563,104	74.6%	22.6%	16.9%
2 years	Full-time	17	\$1,043,530	\$950,843	92.0%	6.5%	6.0%
	Part-time+Occasional	7	\$785,781	\$584,948	70.5%	28.0%	19.7%

**Table 160. Dependence on general category scallop landings as a % of total revenue in 2005 fishing year for a sample of limited access vessels that qualify for general category limited access permit with 5000 lb. criteria**

Period	Permit category	Number of active vessels with general category trips	Total revenue per vessel	Scallop revenue per vessel	Scallop revenue as a % of total revenue	General category scallop lb. as a % of total scallop lb.	General category revenue as a % of total revenue
11 year	Full-time	11	\$1,028,917	\$915,834	90.4%	8.3%	7.5%
	Part-time+Occasional	4	\$952,874	\$735,584	76.3%	28.6%	21.8%
5 years	Full-time	9	\$1,046,850	\$923,103	89.9%	10.0%	9.0%
	Part-time+Occasional	4	\$952,874	\$735,584	76.3%	28.6%	21.8%
2 years	Full-time	7	\$1,014,154	\$879,267	88.7%	11.4%	10.1%
	Part-time+Occasional	4	\$952,874	\$735,584	76.3%	28.6%	21.8%

**Table 161. Primary port of landing in 2005 fishing year for a sample of limited access vessels that qualify for general category limited access permit with 100 lb. criteria**

Period	State of landing	Full-time		Part-time and occasional	
		Number of vessels	GRT (Average)	Number of vessels	GRT (Average)
11 year	MA+NH	15	118	5	90
	NY+NJ	27	131	14	111
	Oth.Mid.At.	28	142	7	108
11 year Total		70	133	26	106
5 years	MA+NH	10	99	4	83
	NY+NJ	23	123	13	114
	Oth.Mid.At.	23	145	5	111
5 years Total		56	128	22	108
2 years	MA+NH	7	82	3	70
	NY+NJ	18	114	4	116
	Oth.Mid.At.	16	140	4	107
2 years Total		41	119	11	100

**Table 162. Primary port of landing in 2005 fishing year for a sample of limited access vessels that qualify for general category limited access permit with 1000 lb. criteria**

Period	State of landing	Full-time		Part-time and occasional	
		Number of vessels	GRT (Average)	Number of vessels	GRT (Average)
11 year	MA+NH	6	101	NA	88
	NY+NJ	15	130	8	113
	Oth.Mid.At.	12	131	NA	107
11 year Total		33	125	12	110
5 years	MA+NH	4	76		
	NY+NJ	11	118	6	124
	Oth.Mid.At.	5	118	3	107
5 years Total		20	110	9	118
2 years	MA+NH	4	76		
	NY+NJ	10	116	4	116
	Oth.Mid.At.	3	108	3	107
2 years Total		17	105	7	112

**Table 163. Primary port of landing in 2005 fishing year for a sample of limited access vessels that qualify for general category limited access permit with 1000 lb. criteria**

Period	State of landing	Full-time		Part-time and occasional	
		Number of vessels	GRT (Average)	Number of vessels	GRT (Average)
11 year	MA+NH	3	64		
	NY+NJ	6	113	NA	122
	Oth.Mid.At.	2	155	NA	138
11 year Total		11	107	4	126
5 years	MA+NH	3	64		
	NY+NJ	6	113	NA	122
	Oth.Mid.At.			NA	138
5 years Total		9	97	4	126
2 years	MA+NH	3	64		
	NY+NJ	4	113	NA	122
	Oth.Mid.At.			NA	138
2 years Total		7	92	4	126

**5.4.16.2 Allocation of quota to limited access vessels under general category (Alternatives in Section 3.1.6 of DSEIS)**

If limited access vessels are permitted to land under general category rules and a hard TAC is implemented for the general category fishery under this action then scallops landed by limited access vessels under general category rules will have to be deducted from either the TAC awarded to the general category fleet ( Alternative 3.1.6.2.1), or a separate TAC, 0.5% of total scallop harvest, awarded to the limited access fishery for scallops caught under general category rules (Alternative 3.1.6.2.2).

Table 164 provides an analysis of alternative 3.1.6.2.1 assuming that limited access quota will be deducted from total general category % TAC according to the share of limited access qualifiers in total allocation amount. The last columns of this table show how a 5% and a 10% TAC will be distributed among the general category and limited access vessels. For example, with 11 year period and 1000 lb. qualification criteria, 87.4% of the scallop pounds from general category fishery was landed by general category vessels and 12.6% was landed by limited access vessels. Share of each category in total general category TAC will be proportional to these percentages. For example, if total general category TAC was set at 5% (10%), than only 4.4% (8.7%) of this amount will be allocated to the general category vessels and 0.6% (1.3%) of this amount will be allocated to limited access vessels qualifying for general category fishery (with 11 year and 1000 lb. criteria). Therefore, alternative 3.1.6.2.1 will reduce the amount of TAC allocated to general category vessels and will increase the quota for limited access vessels, with negative economic impacts on the first and positive economic impacts on the second group of vessels.

A separate allocation of 0.5% of the total catch for limited access vessels that qualify to fish under general category rules (Alternative 3.1.6.2.2) will result in limited access vessels receiving different allocations compared to the general category vessels depending on the % TAC and qualification alternatives. Using the same example above with 11 year period and 1000 lb. alternative and 5% (10%) TAC for general category vessels, limited access vessels would receive slightly less, 0.5%, with this alternative (3.1.6.2.2) compared to 0.6% (1.3%) with alternative

3.1.6.2.1. On the other hand, a five year qualification period combined with a 5% alternative would provide exactly the same share, 0.5% of TAC, for limited access under both alternatives. With a 2% combined TAC, however, limited access vessels with alternative 3.1.6.2.2 would receive slightly higher % share of TAC, 0.5%, instead of 0.3% they would have received with alternative 3.1.6.2.1. The impacts of a 0.5% separate TAC for limited access qualifiers corresponding to various levels of scallop harvest are shown in Table 165.

**Table 164. Allocation of general category TAC among general category and limited access vessels qualifying for limited access**

Period	Qualification	Permit category	Number of vessels	Average scallop lb. per vessel (Best year)	Total scallop lb. (Best year)	% share in total scallop lb.	Total general category TAC		
							2%	5%	10%
							% share in TAC	% share in TAC	% share in TAC
11 year	100	General category	705	6,084	4,289,220	85.9%	1.7%	4.3%	8.6%
		Limited access	345	2,427	705,519	14.1%	0.3%	0.7%	1.4%
	100 Total		1,050	4,255	4,994,739	100.0%	2.0%	5.0%	10.0%
	1000	General category	459	9,124	4,187,916	87.4%	1.7%	4.4%	8.7%
		Limited access	126	5,665	601,745	12.6%	0.3%	0.6%	1.3%
	1000 Total		585	7,394	4,789,661	100.0%	2.0%	5.0%	10.0%
	5000	General category	203	17,757	3,604,671	90.2%	1.8%	4.5%	9.0%
		Limited access	29	17,004	393,458	9.8%	0.2%	0.5%	1.0%
	5000 Total		232	17,381	3,998,129	100.0%	2.0%	5.0%	10.0%
	5 year	Stand-alone ITQ alternative*	General category	677	5,872	3,975,344	89.7%	1.8%	4.5%
Limited access			231	9,303	455,528	10.3%	0.2%	0.5%	1.0%
Stand-alone ITQ alternative* Total		908	7,588	4,430,872	100.0%	2.0%	5.0%	10.0%	
100		General category	548	7,232	3,963,136	89.7%	1.8%	4.5%	9.0%
		Limited access	193	2,973	453,204	10.3%	0.2%	0.5%	1.0%
100 Total		741	5,102	4,416,340	100.0%	2.0%	5.0%	10.0%	
1000		General category	369	10,524	3,883,356	90.8%	1.8%	4.5%	9.1%
		Limited access	57	7,707	393,286	9.2%	0.2%	0.5%	0.9%
1000 Total		426	9,115	4,276,642	100.0%	2.0%	5.0%	10.0%	
5000		General category	188	18,475	3,473,300	91.8%	1.8%	4.6%	9.2%
	Limited access	19	17,862	310,442	8.2%	0.2%	0.4%	0.8%	
5000 Total		207	18,169	3,783,742	100.0%	2.0%	5.0%	10.0%	
2 year	100	General category	399	7,443	2,969,757	90.7%	1.8%	4.5%	9.1%
		Limited access	111	4,224	305,561	9.3%	0.2%	0.5%	0.9%
	100 Total		510	5,834	3,275,318	100.0%	2.0%	5.0%	10.0%
	1000	General category	277	10,518	2,913,486	91.5%	1.8%	4.6%	9.2%
		Limited access	35	10,508	269,725	8.5%	0.2%	0.4%	0.8%
	1000 Total		312	10,513	3,183,211	100.0%	2.0%	5.0%	10.0%
5000	General category	143	18,245	2,609,035	92.3%	1.8%	4.6%	9.2%	
	Limited access	12	19,341	216,214	7.7%	0.2%	0.4%	0.8%	
5000 Total		155	18,793	2,825,249	100.0%	2.0%	5.0%	10.0%	

**Table 165. Impacts of 0.5% TAC on average allocation per vessel**

Qualification period			11 year period			5 year period			2 year period			
Qualification Criteria (lb.)			100	1000	5000	Stand-alone ITQ	100	1000	5000	100	1000	5000
Number of qualified vessels			345	126	29	231	193	57	19	111	35	12
Scallop lb. per vessel (Best year)			2,427	5,665	17,004	9,303	2,973	7,707	17,862	4,224	10,508	19,341
Total scallop landings (mill. lb., Best year)			0.71	0.60	0.39	0.46	0.45	0.39	0.31	0.31	0.27	0.22
Scallop Harvest (mil.lb.)	% TAC	Limited access TAC (mill. lb.)	Average allocation per vessel (pounds)									
40	0.5%	0.20	580	1,587	6,897	866	1,036	3,509	10,526	1,802	5,714	16,667
50	0.5%	0.25	725	1,984	8,621	1,082	1,295	4,386	13,158	2,252	7,143	20,833
60	0.5%	0.30	870	2,381	10,345	1,299	1,554	5,263	15,789	2,703	8,571	25,000
70	0.5%	0.35	1,014	2,778	12,069	1,515	1,813	6,140	18,421	3,153	10,000	29,167

### 5.4.17 Impacts of allocation between limited access and general category fisheries (section 3.1.7.2)

#### 5.4.17.1 No action (alternative 3.1.7.1):

Under status quo management, instead of allocating a certain percentage to the general category, a target TAC (or scallop landings corresponding to the target fishing mortality) would be determined and measures will be put in place for general category and limited access fisheries to stay within that target. Under the current regulations, general category landings are estimated and DAS allocations for limited access vessels are determined after deducting the estimated landings for general category. For example, Framework 18 estimated that general category share in total landings in 2007 fishing year will be 10% of total landings. If in the future years, general category landings go above this proportion, the Council could reduce the DAS allocations for limited access vessels, negatively impacting the group of vessels that has been subject to strict effort controls since 1994. The Council could also reduce the possession limit for all general category vessels, affecting negatively most of the general category vessels that participate in the fishery and those that depend on scallops as a significant source of income.

If there was no action, however, that is, if no management action is taken to adjust limited access allocations to counteract an increase in mortality due to general category landings, overfishing of the scallop resource could occur. Even though limited access would prevent entry of new effort to the general category fishery, total general category landings could increase if the qualifiers take more trips. If that happens, there is no question that the future yield and revenues from the scallop resource would decline, negatively affecting the vessels both with general category and/or limited access scallop permits. Under the “no action” scenario, impacts on the consumer benefits may also be negative due to reduced scallop landings in the future, coupled with possibly higher scallop prices. Similarly, producer benefits would decline over the long-term due to lower landings and revenues and higher fishing costs caused by the decline in the productivity of the scallop resource, measured by LPUE (landings per unit effort).

Table 166 provides a scenario analysis of the impacts of different levels of general category landings on the landings, revenues, crew and boat shares for limited access vessels compared to

for a total scallop harvest of 50 million pounds. These scenarios provide estimates for a range of prices, landings per day-at-sea (LPUE), and percentage of general category landings in total scallop harvest. The assumptions for each scenario and method of analysis are described in Section 5.4.17.2 below. Since it is not possible to predict if the extent of any potential increase (or decrease) in general category effort in the future, the impacts are analyzed here for range of general category range in total landings of 10% to 40%. As mentioned above, DAS allocations for limited access vessels in the recent management action (Framework 18) were calculated by assuming that general category share in total landings will be around 10% of total landings. Although in recent fishing years (2005-06) general category landings increased above 10%, most of the increase was due to the new entry into the fishery and the landings by vessels that had a permit before the control date still accounted about 10% of total scallop harvest. Table 166 shows how revenues, crew and boat shares for limited access vessels could be affected if general category effort increase above this level and DAS allocations for limited access vessels are reduced to offset the increase in scallop landings by general category fishery.

As last column of the table shows, net boat shares (a proxy for profits) could decline by 17% to 21% if general category landings increase to 20% of total scallop harvest and by more than half if general category landings constitute 40% of total scallop harvest. In the extreme scenario, the profits could entirely disappear if general category landings kept increasing further and DAS allocations for limited access vessels were reduced in order to keep scallop fishing mortality from increasing. Although, this scenario is highly unrealistic at least from a policy perspective, it shows that the negative distributional impacts of uncontrolled capacity in the general category fishery. A limited access program for general category as proposed by this Amendment could prevent to some extent an extreme increase in general category effort and capacity in this fishery when it is combined with 400 lb. possession limit. Under the no action alternative, there is also the possibility that the possession limit for the general category trips could be reduced below 400 pounds to lower the incentives for further expansion in general category effort. Given that the number of trips by general category vessels is not controlled under the present regulations, however, reducing possession limit may not entirely eliminate increase in effort in this fishery.

It is also possible for general category effort to decline in the future if a decrease in scallop prices and/or scallop productivity makes general category trips less profitable. The analyses provided in Section 5.4.17.3 and Section 5.4.17.4 below could also be used to evaluate the change in revenues, crew and boat shares if general category landings declined below 11% of the total scallop landings (Table 180 and Table 181). In general, the relative economic impacts will vary with the level of scallop harvest and percentage share of general category in total landings. For example, if the total scallop harvest is 60 million pounds and general category landings or TAC is larger than 6.0 million pounds, then the limited access DAS allocations would translate into 70 days-fished (Table 180 – Scenario A). If, however, general category landings are 3 million pounds (or 5% of total), then days-fished for limited access vessels could increase to 74 days resulting in increase net boat shares by 10%.

A cost/benefit analysis of the status quo scenarios and of the proposed TAC allocation is conducted in Section 5.4.17.2 below for several scenarios. Overall, short-term and long-term economic impacts on consumer and producer surpluses and total economic benefits are analyzed qualitatively. This is because biological projections are done by assuming that fishing mortality

will be kept at target levels and that limited access allocations will be determined by removing estimated general category landings from total scallop harvest. Section 5.4.17.2 examines, however, the distributional impacts of a TAC allocation on scallop revenues, costs and producer surplus for both the general category and limited access fisheries. If it is assumed that there will be no significant decline in total scallop biomass and yield due to status quo policy of adjusting limited access day-at-sea allocations to counteract an increase in general category effort, total scallop landings and prices would not be significantly different status quo compared to the allocation of TAC as proposed with this Amendment. As a result, there would be no significant change in the consumer surplus. The analyses in Section 5.4.17.2 shows that there would be a small decline in total producer surplus if a higher proportion of scallops are landed by general category fishery rather than by limited access fishery. Although this decline is small, less than 1%, for the range of general category share in total landings (2.5% to 11% of total harvest), an increase in general category effort significantly above 11% could lead to a higher reduction in producer surplus. As a result, total economic benefits, that is, the sum of consumer and producer surpluses, could decline both in the short- and in the long-term depending on the increase in fishing mortality due to general category effort. In addition, an unexpected increase in general category effort in the short-term could accentuate these negative impacts since it may not be possible to adjust limited access allocations right away to prevent an increase in fishing mortality. These analyses assume, however, that the increase in general category effort will lead to decline day-at-sea allocations for limited access vessels in order to keep mortality at sustainable levels. If instead, general category landings could be successfully reduced by lowering the possession limit below 400 pounds, the impacts on limited access vessels could be negligible. Given that the number of trips by general category vessels is not controlled under the present regulations, reducing possession limit may not entirely eliminate, however, the increase in fishing mortality from the general category landings. Under no action, that is, in the absence of a management action to adjust limited access allocations to counteract an increase in mortality due to general category landings, the negative impacts on consumer and producer surpluses and total economic benefits would be magnified (See also Section 5.4.2 and Section 5.4.5).

**Table 166. Impacts of increase in general category effort and landings on limited access vessels.**

Total Scallop harvest (mill.)	% of landings by general category fishery	Total landings by general category	Limited access landings (mill.)	Landings per vessel (lb.)	DAS-used per vessel	Revenue per vessel (\$)	Trips costs per vessel (\$)	Crew income net of trip costs (\$)	Boat share (\$)	Boat share net of fixed costs (\$)	% change in net boat share (compare with 11% GC-TAC)
<b>Scenario A: Assuming scallop price=\$8.30 per pound, LPUE=2300 per day-at-sea used, 334 full-time equivalent vessels, fixed costs of \$175,150, trip costs of 1,170 per day-at-sea</b>											
50	40%	20.0	30.0	89,820	39	745,509	45,691	364,339	335,479	160,329	-51%
50	30%	15.0	35.0	104,790	46	869,760	53,306	425,062	391,392	216,242	-34%
50	20%	10.0	40.0	119,760	52	994,012	60,922	485,785	447,305	272,155	-17%
50	15%	7.5	42.5	127,246	55	1,056,138	64,729	516,147	475,262	300,112	-9%
50	10%	5.0	45.0	134,731	59	1,118,263	68,537	546,508	503,219	328,069	0%
<b>Scenario B: Assuming scallop price=\$6.00 per pound, LPUE=1800 per day-at-sea used, 334 full-time equivalent vessels, fixed costs of \$175,150, trip costs of 1,170 per day-at-sea</b>											
50	40%	20.0	30.0	89,820	50	538,922	58,383	238,024	242,515	67,365	-64%
50	30%	15.0	35.0	104,790	58	628,743	68,114	277,695	282,934	107,784	-43%
50	20%	10.0	40.0	119,760	67	718,563	77,844	317,365	323,353	148,203	-21%
50	15%	7.5	42.5	127,246	71	763,473	82,710	337,201	343,563	168,413	-11%
50	10%	5.0	45.0	134,731	75	808,383	87,575	357,036	363,772	188,622	0%

**5.4.17.2 Overall economic impacts TAC allocation on the general category and limited access fleets**

According to the alternative described in Section 3.1.7.2, a proportion of the total available scallop harvest would be allocated to the general category fishery ranging from 2.5% to 11%. Then the TAC for general category fishery will be determined by applying the percent share to the overall expected scallop yield. The allocations for the limited access fishery will be determined by subtracting general category's share (or TAC) from the overall scallop yield. Therefore, this alternative will have opposite economic impacts on general category and the limited access vessels, since the higher the share of general category fishery, the lower will be the share of the limited access vessels in total scallop landings. This section examines the overall economic impacts of allocation on general category and limited access fleets. The next section will examine the economic impacts on individual vessels in these fisheries.

The economic impacts are examined for scallop harvest levels ranging from 40 million lb. to 70 million lb. of scallops. The biological simulations for the next 11 years indicated that sustainable scallop yield could vary between 56 million lb. (for 2008 fishing year) to 68 million lb. (for 2015 fishing year, Table 96), but levels less than these amounts (40 to 50 million lb.) were also included in this analysis to evaluate impacts in less favorable scallop resource conditions. Prices, revenues, trip costs and producer surplus corresponding to each TAC level are estimated as follows:

- The prices are estimated using the price model presented in Appendix 5.4.22, which takes into account the impacts of changes in meat count, domestic landings, exports, income of consumers, and composition of landings by market category (i.e., size of scallops) including a price premium on under count 10 scallops. There has been significant variability in the scallop prices during the recent years due to changes in the import prices (related also to changes in the value of dollar), in composition of landings toward larger

scallops, and in the volume of exports among many other factors. For example, the scallop prices increased to \$7.60 during the 2005 fishing year from \$4.85 per pound in 2004 due to many factors including the increase in size of scallops landed, a surge in exports from 16.8 million lb. to 25 million lb. and an increase in import prices from about \$3.30 per lb. to \$5.10 per lb.. This increase in scallop prices did not continue in 2006, however, as the prices dropped to about \$6.25 per pound as both landings and scallop import prices declined (\$4.15 per lb. in 2006). Thus, there is a lot of uncertainty regarding future scallop prices due to the unpredictability of the factors that have an impact on price.

- Since it is beyond the scope of this analysis to predict the future import prices, exports, composition of scallops by market category, or changes in the consumer preferences and income, ex-vessel prices are calculated for two different scenarios to provide a range of estimates with various values for these variables. Scenario A assumes that both the import prices and the exports will remain at the recent levels, of \$4.15 per lb., and 25 million lb. annually. This scenario also assumes that the size composition of scallops will be similar to the levels predicted for 2008 fishing year from the biological model. Scenario B provides a less optimistic scenario by assuming that import prices and exports will revert back to the previous levels of \$3.50 per pound, and 10 million lb. per year. It furthermore assumes that the size distribution of scallops will be similar for what is predicted for 2007 fishing year, with smaller scallops landed compared to Scenario A,. Both scenarios assume that there will be no changes in the consumer preferences for scallops compared to the recent levels. Scenario A results in higher prices for scallops compared to Scenario B in all cases.
- Day-at-sea used per full-time vessel corresponding to each level of TAC is estimated by dividing average landings per vessel with landings per-day-at-sea (LPUE) estimates from the biological model. Scenario A assumes that LPUE will be 2,300 lb. per day-at-sea, which is about the average LPUE from biological projections for fishing 2008 to 2009 (Table 180). If overfishing of the scallop resource is prevented, LPUE could vary between 2,300 lb. to 2,450 lb. over the long-term (2009-2017, Table 96). Scenario B assumes, however, that LPUE will be less, at 1,800 lb. per day-at-sea, corresponding to what is projected for the 2007 fishing year (Table 181).
- Average trip costs per day-at-sea were \$1094 for limited access vessels in 2005 according to the observer cost data for scallop vessels. These costs include food, ice, water, oil and fuel, and are usually paid by crew in the scallop fishery out of their shares from the gross stock. The cost estimates are adjusted for the increase in prices in 2006 using the change in the producer price index relative to 2005 (increased by 6.7%). With this adjustment, average trip costs per day-at-sea are estimated to be \$1,170 for limited access vessels. For general category vessels, average trip costs are estimated to be \$350 per day-at-sea. Actual trip costs will vary from these averages for each vessel according to the vessel's gross tonnage, horsepower, number of crew, and the fuel costs, length of trip, area and season fished. Annual trip costs per vessel are estimated by multiplying trip costs per day-at-sea with the day-at-sea used.

Table 167 to Table 170 shows the distributional impacts of various percentages of TAC allocations for general category on both general category and limited access fisheries. Landings and revenues for each percent of general category TAC are compared to the upper bound of

11%, which is close to the status quo level. According to Framework 18, the allocations for limited access vessels were determined by assuming that general category landings will constitute 11% of total scallop landings in 2006, and about 10% of total scallop landings in the 2007 fishing year. If general category is allocated at 2.5% of total scallop harvest, scallop landings and revenues for this fishery as whole and also for an average vessel could decline by 77% , whereas that of the limited access fishery could increase by 10% compared to an 11% TAC allocation for the general category fishery. In other words, a lower TAC for general category will have larger negative proportional impacts on general category vessels due to the lower volume of scallop landings by general category compared to landings by limited access fishery. Although, general category vessels have lower catch rates compared to limited access vessels, allocating a smaller percentage of scallop harvest to these vessels does not result in a significant increase (less than 1%) in total producer surplus, defined as gross revenue net of variable costs, for the range of impacts examined here. This is because general category vessels tend to be smaller vessels with lower trip costs per day-at-sea.

Overall short-term and long-term economic impacts of TAC allocation between the limited access and general category vessels are expected to be positive on total economic benefits, although these impacts could not be estimated quantitatively. This is because biological projections are done by assuming that fishing mortality will be kept at target levels and that limited access allocations will be determined by removing estimated general category landings from total scallop harvest. In other words, it is assumed that there will be no significant decline in total scallop biomass and yield due to this status quo policy of adjusting limited access day-at-sea allocations to counteract an increase in general category effort. As a result, total scallop landings and prices, thus the consumer surplus, would not be significantly different under no action/status quo compared to the allocation of TAC as proposed with this Amendment. The analyses in this section show, however, that there would be a small increase in total producer surplus if a higher proportion of scallops are landed by limited access fishery rather than by general category fishery (Table 180 and Table 181). Although this increase is small (less than 1%) for the range of percentage TAC examined here (2.5% to 11% of total harvest), the proposed action would prevent a further reduction in producer surplus from a significant increase in general category effort above 11%. Therefore, total economic benefits, that is, the sum of consumer and producer surpluses, are expected to be positive compared to no action/status quo scenarios both in the short- and long-term. These analyses assume, however, that the increase in general category effort will lead to decline in day-at-sea allocations for limited access vessels under the no action/status quo scenario. If instead, general category landings could be successfully reduced by lowering the possession limit below 400 pounds, the impacts on limited access vessels would be negligible. On the other hand, the number of trips by general category vessels is not controlled under the present regulations; therefore, it may not be possible to entirely eliminate the increase in the general category landings by reducing possession limit.

**Table 167. Impacts of allocation on landings and revenues of the general category and limited access fleets (Scenario A)**

Total Scallop TAC (Million lb.)	GC TAC as a % of Total TAC	General category TAC (lb.)	Limited access TAC (landings, lb.)	Ex-vessel Price	Total scallop revenue			% Change in landings and revenue compared to 11% for GC TAC		
					General category	Limited access	Total	Limited access	General category	Total change
40	2.50%	1.0	39.0	9.45	9.5	368.5	378.0	10%	-77%	0%
40	5%	2.0	38.0	9.45	18.9	359.1	378.0	7%	-55%	0%
40	7%	2.8	37.2	9.45	26.5	351.5	378.0	4%	-36%	0%
40	10%	4.0	36.0	9.45	37.8	340.2	378.0	1%	-9%	0%
40	11%	4.4	35.6	9.45	41.6	336.4	378.0	0%	0%	0%
50	2.50%	1.3	48.8	8.30	10.4	404.6	415.0	10%	-77%	0%
50	5%	2.5	47.5	8.30	20.8	394.2	415.0	7%	-55%	0%
50	7%	3.5	46.5	8.30	29.0	386.0	415.0	4%	-36%	0%
50	10%	5.0	45.0	8.30	41.5	373.5	415.0	1%	-9%	0%
50	11%	5.5	44.5	8.30	45.7	369.3	415.0	0%	0%	0%
60	2.50%	1.5	58.5	6.90	10.3	403.7	414.0	10%	-77%	0%
60	5%	3.0	57.0	6.90	20.7	393.3	414.0	7%	-55%	0%
60	7%	4.2	55.8	6.90	29.0	385.0	414.0	4%	-36%	0%
60	10%	6.0	54.0	6.90	41.4	372.6	414.0	1%	-9%	0%
60	11%	6.6	53.4	6.90	45.5	368.5	414.0	0%	0%	0%
70	2.50%	1.8	68.3	5.50	9.6	375.4	385.0	10%	-77%	0%
70	5%	3.5	66.5	5.50	19.3	365.7	385.0	7%	-55%	0%
70	7%	4.9	65.1	5.50	27.0	358.0	385.0	4%	-36%	0%
70	10%	7.0	63.0	5.50	38.5	346.5	385.0	1%	-9%	0%
70	11%	7.7	62.3	5.50	42.3	342.7	385.0	0%	0%	0%

**Table 168. Impacts of allocation on costs and producer surplus by permit category (Scenario A, higher prices, LPUE=2300 lb.)**

Total Scallop TAC (Million lb.)	GC TAC as a % of Total TAC	General category TAC (lb.)	Limited access TAC (landings, lb.)	Trip costs		Producer Surplus			
				General category	Limited access	General category	Limited access	Total	% Change compared to 11% TAC
40	2.50%	1.0	39.0	0.88	19.8	8.6	348.7	357.3	0.3%
40	5%	2.0	38.0	1.75	19.3	17.2	339.8	356.9	0.2%
40	7%	2.8	37.2	2.45	18.9	24.0	332.6	356.6	0.2%
40	10%	4.0	36.0	3.50	18.3	34.3	321.9	356.2	0.0%
40	11%	4.4	35.6	3.85	18.1	37.7	318.3	356.0	0.0%
50	2.50%	1.3	48.8	1.09	24.8	9.3	379.8	389.1	0.4%
50	5%	2.5	47.5	2.19	24.2	18.6	370.1	388.6	0.3%
50	7%	3.5	46.5	3.06	23.7	26.0	362.3	388.3	0.2%
50	10%	5.0	45.0	4.38	22.9	37.1	350.6	387.7	0.0%
50	11%	5.5	44.5	4.81	22.6	40.8	346.7	387.6	0.0%
60	2.50%	1.5	58.5	1.31	29.8	9.0	373.9	382.9	0.5%
60	5%	3.0	57.0	2.63	29.0	18.1	364.3	382.4	0.3%
60	7%	4.2	55.8	3.68	28.4	25.3	356.6	381.9	0.2%
60	10%	6.0	54.0	5.25	27.5	36.2	345.1	381.3	0.1%
60	11%	6.6	53.4	5.78	27.2	39.8	341.3	381.1	0.0%
70	2.50%	1.8	68.3	1.53	34.7	8.1	340.7	348.8	0.6%
70	5%	3.5	66.5	3.06	33.8	16.2	331.9	348.1	0.4%
70	7%	4.9	65.1	4.29	33.1	22.7	324.9	347.6	0.3%
70	10%	7.0	63.0	6.13	32.0	32.4	314.5	346.8	0.1%
70	11%	7.7	62.3	6.74	31.7	35.6	311.0	346.6	0.0%

**Table 169. Impacts of allocation on landings and revenues of the general category and limited access fleets  
(Scenario B: lower prices)**

Total Scallop TAC (Million lb.)	GC TAC as a % of Total TAC	General category TAC (lb.)	Limited access TAC (landings, lb.)	Ex-vessel Price	Total scallop revenue			% Change in revenue compared to 11% for GC TAC		
					General category	Limited access	Total	General category	Limited access	Limited access
40	2.50%	1.0	39.0	7.70	7.7	300.3	308.0	-77%	10%	0%
40	5%	2.0	38.0	7.70	15.4	292.6	308.0	-55%	7%	0%
40	7%	2.8	37.2	7.70	21.6	286.4	308.0	-36%	4%	0%
40	10%	4.0	36.0	7.70	30.8	277.2	308.0	-9%	1%	0%
40	11%	4.4	35.6	7.70	33.9	274.1	308.0	0%	0%	0%
50	2.50%	1.3	48.8	6.00	7.5	292.5	300.0	-77%	10%	0%
50	5%	2.5	47.5	6.00	15.0	285.0	300.0	-55%	7%	0%
50	7%	3.5	46.5	6.00	21.0	279.0	300.0	-36%	4%	0%
50	10%	5.0	45.0	6.00	30.0	270.0	300.0	-9%	1%	0%
50	11%	5.5	44.5	6.00	33.0	267.0	300.0	0%	0%	0%
60	2.50%	1.5	58.5	4.80	7.2	280.8	288.0	-77%	10%	0%
60	5%	3.0	57.0	4.80	14.4	273.6	288.0	-55%	7%	0%
60	7%	4.2	55.8	4.80	20.2	267.8	288.0	-36%	4%	0%
60	10%	6.0	54.0	4.80	28.8	259.2	288.0	-9%	1%	0%
60	11%	6.6	53.4	4.80	31.7	256.3	288.0	0%	0%	0%
70	2.50%	1.8	68.3	3.80	6.7	259.4	266.0	-77%	10%	0%
70	5%	3.5	66.5	3.80	13.3	252.7	266.0	-55%	7%	0%
70	7%	4.9	65.1	3.80	18.6	247.4	266.0	-36%	4%	0%
70	10%	7.0	63.0	3.80	26.6	239.4	266.0	-9%	1%	0%
70	11%	7.7	62.3	3.80	29.3	236.7	266.0	0%	0%	0%

**Table 170. Impacts of allocation on landings and revenues of the general category and limited access fleets (Scenario B, Lower prices, LPUE=1800 lb.)**

Total Scallop TAC (Million lb.)	GC TAC as a % of Total TAC	General category TAC (lb.)	Limited access TAC (landings, lb.)	Trip costs		Producer Surplus			
				General category	Limited access	General category	Limited access	Total	% Change compared to 11% TAC
40	2.50%	1.0	39.0	0.88	25.4	6.8	275.0	281.8	0.3%
40	5%	2.0	38.0	1.75	24.7	13.7	267.9	281.6	0.2%
40	7%	2.8	37.2	2.45	24.2	19.1	262.3	281.4	0.1%
40	10%	4.0	36.0	3.50	23.4	27.3	253.8	281.1	0.0%
40	11%	4.4	35.6	3.85	23.1	30.0	251.0	281.0	0.0%
50	2.50%	1.3	48.8	1.09	31.7	6.4	260.8	267.2	0.4%
50	5%	2.5	47.5	2.19	30.9	12.8	254.1	266.9	0.3%
50	7%	3.5	46.5	3.06	30.2	17.9	248.8	266.7	0.2%
50	10%	5.0	45.0	4.38	29.3	25.6	240.8	266.4	0.0%
50	11%	5.5	44.5	4.81	28.9	28.2	238.1	266.3	0.0%
60	2.50%	1.5	58.5	1.31	38.0	5.9	242.8	248.7	0.5%
60	5%	3.0	57.0	2.63	37.1	11.8	236.6	248.3	0.3%
60	7%	4.2	55.8	3.68	36.3	16.5	231.6	248.1	0.2%
60	10%	6.0	54.0	5.25	35.1	23.6	224.1	247.7	0.1%
60	11%	6.6	53.4	5.78	34.7	25.9	221.6	247.5	0.0%
70	2.50%	1.8	68.3	1.53	44.4	5.1	215.0	220.1	0.6%
70	5%	3.5	66.5	3.06	43.2	10.2	209.5	219.7	0.4%
70	7%	4.9	65.1	4.29	42.3	14.3	205.1	219.4	0.3%
70	10%	7.0	63.0	6.13	41.0	20.5	198.5	218.9	0.1%
70	11%	7.7	62.3	6.74	40.5	22.5	196.2	218.8	0.0%

#### 5.4.17.3 Impacts on general category vessels

The following tables show the impacts of the range of percentage TAC on average allocation per general category vessel for each qualification criteria. TAC management could have negative economic impacts on general category vessels to the extent that it is different from the historical levels and/or from the level of scallop landings in recent years. These impacts will not be uniform among the qualifying vessels, however, and will vary according to the qualification criteria and qualification period alternatives. Clearly, the number of qualifiers will decline and average allocation per vessel will increase as qualification poundage criteria increases and length of qualification period shortens (Table 171). The impact of 5000 pound criteria on the number of qualifying vessels, and average pounds per vessel is larger as compared to impacts of a shorter period.

The allocations for individual vessels will vary from these averages as shown in Table 174 and Table 176. General category vessels are shown in 3 groups in these tables according to their best year scallops landings during the qualification period. These groups also corresponds to three tiers proposed by alternative 3.1.2.4.3, with tier-3 including vessels with 20,000 lb. or more landings and tier-1 those with scallop landings of less than 5000 lb. Similarly, tier-3 includes vessels with full-time permits and tiers 1 and 2 include vessels with part-time permits as proposed by alternative 3.1.2.4.2. Although, a lower % TAC for general category will reduce the allocations per vessel in the same proportion, the absolute impacts as measured in terms of pounds of scallops will be larger for vessels that land scallops in larger volumes and depend on

scallop fishing for main source of their revenue. For example, for 62 vessels with historical landings of 20,000 or more scallops, a 2.5% TAC will reduce their average allocation to 11,508 lb. with 1000 lb. criteria and 5 year qualification period, from 48,688 lb. with 11% TAC, a decline of more than 37,000 lb. (Table 174). The 181 vessels that landed less than 5000 lb. during the same period will have their allocations reduced by about 3,400 lb. if a 2.5 % TAC is applied (1,096 lb.) instead of an 11% TAC (4,489 lb. Table 176).

**Table 171. Average scallop pounds per vessel by percentage of scallop harvest allocated to general category fishery**

Total scallop harvest (Million lb.)	General category TAC as a % of total harvest	GC TAC (Mil. lb.)	11 Year period			5 year period				2 year period		
			100 lb. Criteria (705 vessels)	1000 lb. Criteria (459 vessels)	5000 lb. Criteria (203 vessels)	Stand alone-ITQ (677 vessels)	100 lb. criteria (548 vessels)	1000 lb. Criteria (369 vessels)	5000 lb. Criteria (188 vessels)	100 lb. Criteria (399 vessels)	1000 lb. Criteria (277 vessels)	5000 lb. Criteria (143 vessels)
40	2.50%	1.0	1,418	2,179	4,926	1,477	1,825	2,710	5,319	2,506	3,610	6,993
40	5%	2.0	2,837	4,357	9,852	2,954	3,650	5,420	10,638	5,013	7,220	13,986
40	7%	2.8	3,972	6,100	13,793	4,136	5,109	7,588	14,894	7,018	10,108	19,580
40	10%	4.0	5,674	8,715	19,704	5,908	7,299	10,840	21,277	10,025	14,440	27,972
40	11%	4.4	6,241	9,586	21,675	6,499	8,029	11,924	23,404	11,028	15,884	30,769
50	2.50%	1.3	1,773	2,723	6,158	1,846	2,281	3,388	6,649	3,133	4,513	8,741
50	5%	2.5	3,546	5,447	12,315	3,693	4,562	6,775	13,298	6,266	9,025	17,483
50	7%	3.5	4,965	7,625	17,241	5,170	6,387	9,485	18,617	8,772	12,635	24,476
50	10%	5.0	7,092	10,893	24,631	7,386	9,124	13,550	26,596	12,531	18,051	34,965
50	11%	5.5	7,801	11,983	27,094	8,124	10,036	14,905	29,255	13,784	19,856	38,462
60	2.50%	1.5	2,128	3,268	7,389	2,216	2,737	4,065	7,979	3,759	5,415	10,490
60	5%	3.0	4,255	6,536	14,778	4,431	5,474	8,130	15,957	7,519	10,830	20,979
60	7%	4.2	5,957	9,150	20,690	6,204	7,664	11,382	22,340	10,526	15,162	29,371
60	10%	6.0	8,511	13,072	29,557	8,863	10,949	16,260	31,915	15,038	21,661	41,958
60	11%	6.6	9,362	14,379	32,512	9,749	12,044	17,886	35,106	16,541	23,827	46,154
70	2.50%	1.8	2,482	3,813	8,621	2,585	3,193	4,743	9,309	4,386	6,318	12,238
70	5%	3.5	4,965	7,625	17,241	5,170	6,387	9,485	18,617	8,772	12,635	24,476
70	7%	4.9	6,950	10,675	24,138	7,238	8,942	13,279	26,064	12,281	17,690	34,266
70	10%	7.0	9,929	15,251	34,483	10,340	12,774	18,970	37,234	17,544	25,271	48,951
70	11%	7.7	10,922	16,776	37,931	11,374	14,051	20,867	40,957	19,298	27,798	53,846

**Table 172. Average scallop revenue per vessel by percentage of scallop harvest allocated to general category fishery (Scenario A, higher prices)**

Total scallop harvest (Million lb.)	General category TAC as a % of total harvest	GC TAC (Mil. lb.)	11 Year period			5 year period				2 year period		
			100 lb. Criteria (705 vessels)	1000 lb. Criteria (459 vessels)	5000 lb. Criteria (203 vessels)	Stand alone-ITQ (677 vessels)	100 lb. criteria (548 vessels)	1000 lb. Criteria (369 vessels)	5000 lb. Criteria (188 vessels)	100 lb. Criteria (399 vessels)	1000 lb. Criteria (277 vessels)	5000 lb. Criteria (143 vessels)
40	2.50%	1.0	13,400	20,592	46,551	13,958	17,246	25,610	50,265	23,682	34,115	66,084
40	5%	2.0	26,810	41,174	93,101	27,915	34,493	51,219	100,529	47,373	68,229	132,168
40	7%	2.8	37,535	57,645	130,344	39,085	48,280	71,707	140,748	66,320	95,521	185,031
40	10%	4.0	53,619	82,357	186,203	55,831	68,976	102,438	201,068	94,736	136,458	264,335
40	11%	4.4	58,977	90,588	204,829	61,416	75,874	112,682	221,168	104,215	150,104	290,767
50	2.50%	1.3	14,716	22,601	51,111	15,322	18,932	28,120	55,187	26,004	37,458	72,550
50	5%	2.5	29,432	45,210	102,215	30,652	37,865	56,233	110,373	52,008	74,908	145,109
50	7%	3.5	41,210	63,288	143,100	42,911	53,012	78,726	154,521	72,808	104,871	203,151
50	10%	5.0	58,864	90,412	204,437	61,304	75,729	112,465	220,747	104,007	149,823	290,210
50	11%	5.5	64,748	99,459	224,880	67,429	83,299	123,712	242,817	114,407	164,805	319,235
60	2.50%	1.5	14,683	22,549	50,984	15,290	18,885	28,049	55,055	25,937	37,364	72,381
60	5%	3.0	29,360	45,098	101,968	30,574	37,771	56,097	110,103	51,881	74,727	144,755
60	7%	4.2	41,103	63,135	142,761	42,808	52,882	78,536	154,146	72,629	104,618	202,660
60	10%	6.0	58,726	90,197	203,943	61,155	75,548	112,194	220,214	103,762	149,461	289,510
60	11%	6.6	64,598	99,215	224,333	67,268	83,104	123,413	242,231	114,133	164,406	318,463
70	2.50%	1.8	13,651	20,972	47,416	14,218	17,562	26,087	51,200	24,123	34,749	67,309
70	5%	3.5	27,308	41,938	94,826	28,435	35,129	52,168	102,394	48,246	69,493	134,618
70	7%	4.9	38,225	58,713	132,759	39,809	49,181	73,035	143,352	67,546	97,295	188,463
70	10%	7.0	54,610	83,881	189,657	56,870	70,257	104,335	204,787	96,492	138,991	269,231
70	11%	7.7	60,071	92,268	208,621	62,557	77,281	114,769	225,264	106,139	152,889	296,153

**Table 173. Average scallop revenue per vessel by percentage of scallop harvest allocated to general category fishery (Scenario B, lower prices)**

Total scallop harvest (Million lb.)	General category TAC as a % of total harvest	GC TAC (Mil. lb.)	11 Year period			5 year period				2 year period		
			100 lb. Criteria (705 vessels)	1000 lb. Criteria (459 vessels)	5000 lb. Criteria (203 vessels)	Stand alone-ITQ (677 vessels)	100 lb. criteria (548 vessels)	1000 lb. Criteria (369 vessels)	5000 lb. Criteria (188 vessels)	100 lb. Criteria (399 vessels)	1000 lb. Criteria (277 vessels)	5000 lb. Criteria (143 vessels)
40	2.50%	1.0	10,919	16,778	37,930	11,373	14,053	20,867	40,956	19,296	27,797	53,846
40	5%	2.0	21,845	33,549	75,860	22,746	28,105	41,734	81,913	38,600	55,594	107,692
40	7%	2.8	30,584	46,970	106,206	31,847	39,339	58,428	114,684	54,039	77,832	150,766
40	10%	4.0	43,690	67,106	151,721	45,492	56,202	83,468	163,833	77,193	111,188	215,384
40	11%	4.4	48,056	73,812	166,898	50,042	61,823	91,815	180,211	84,916	122,307	236,921
50	2.50%	1.3	10,638	16,338	36,948	11,076	13,686	20,328	39,894	18,798	27,078	52,446
50	5%	2.5	21,276	32,682	73,890	22,158	27,372	40,650	79,788	37,596	54,150	104,898
50	7%	3.5	29,790	45,750	103,446	31,020	38,322	56,910	111,702	52,632	75,810	146,856
50	10%	5.0	42,552	65,358	147,786	44,316	54,744	81,300	159,576	75,186	108,306	209,790
50	11%	5.5	46,806	71,898	162,564	48,744	60,216	89,430	175,530	82,704	119,136	230,772
60	2.50%	1.5	10,214	15,686	35,467	10,637	13,138	19,512	38,299	18,043	25,992	50,352
60	5%	3.0	20,424	31,373	70,934	21,269	26,275	39,024	76,594	36,091	51,984	100,699
60	7%	4.2	28,594	43,920	99,312	29,779	36,787	54,634	107,232	50,525	72,778	140,981
60	10%	6.0	40,853	62,746	141,874	42,542	52,555	78,048	153,192	72,182	103,973	201,398
60	11%	6.6	44,938	69,019	156,058	46,795	57,811	85,853	168,509	79,397	114,370	221,539
70	2.50%	1.8	9,432	14,489	32,760	9,823	12,133	18,023	35,374	16,667	24,008	46,504
70	5%	3.5	18,867	28,975	65,516	19,646	24,271	36,043	70,745	33,334	48,013	93,009
70	7%	4.9	26,410	40,565	91,724	27,504	33,980	50,460	99,043	46,668	67,222	130,211
70	10%	7.0	37,730	57,954	131,035	39,292	48,541	72,086	141,489	66,667	96,030	186,014
70	11%	7.7	41,504	63,749	144,138	43,221	53,394	79,295	155,637	73,332	105,632	204,615

**Table 174. Average scallop pounds per vessel for limited access qualifiers with 20,000 lb. or more scallop landings from best year (or Tier 1)**

Total scallop harvest (Million lb.)	General category TAC as a % of total harvest	GC TAC (Mil. lb.)	11 Year period			5 year period				2 year period			
			100 lb. Criteria	1000 lb. Criteria	5000 lb. Criteria	Stand alone-ITQ	100 lb. criteria	1000 lb. Criteria	5000 lb. Criteria	100 lb. Criteria	1000 lb. Criteria	5000 lb. Criteria	
			62 vessels	62 vessels	62 vessels	62 vessels	62 vessels	62 vessels	62 vessels	62 vessels	44 vessels	44 vessels	44 vessels
			% share= 49.7%	% share= 50.9%	% share= 59.1%	% share= 53.6%	% share= 53.8%	% share= 54.9%	% share= 61.4%	% share= 51.1%	% share= 52.0%	% share= 58.1%	
40	2.50%	1.0	8,015	8,209	9,537	8,647	8,674	8,852	9,898	11,603	11,827	13,208	
40	5%	2.0	16,029	16,417	19,074	17,294	17,348	17,705	19,795	23,207	23,655	26,415	
40	7%	2.8	22,441	22,984	26,703	24,211	24,288	24,787	27,713	32,489	33,117	36,981	
40	10%	4.0	32,059	32,834	38,147	34,588	34,697	35,410	39,590	46,413	47,310	52,830	
40	11%	4.4	35,265	36,118	41,962	38,047	38,166	38,951	43,549	51,055	52,041	58,113	
50	2.50%	1.3	10,419	10,671	12,398	11,241	11,276	11,508	12,867	15,084	15,376	17,170	
50	5%	2.5	20,037	20,522	23,842	21,617	21,685	22,131	24,744	29,008	29,569	33,019	
50	7%	3.5	28,052	28,730	33,379	30,264	30,360	30,983	34,641	40,612	41,396	46,226	
50	10%	5.0	40,074	41,043	47,684	43,235	43,371	44,262	49,488	58,017	59,137	66,038	
50	11%	5.5	44,081	45,147	52,452	47,558	47,708	48,688	54,436	63,818	65,051	72,642	
60	2.50%	1.5	12,022	12,313	14,305	12,970	13,011	13,279	14,846	17,405	17,741	19,811	
60	5%	3.0	24,044	24,626	28,610	25,941	26,023	26,557	29,693	34,810	35,482	39,623	
60	7%	4.2	33,662	34,476	40,055	36,317	36,432	37,180	41,570	48,734	49,675	55,472	
60	10%	6.0	48,088	49,252	57,221	51,882	52,045	53,114	59,385	69,620	70,964	79,245	
60	11%	6.6	52,897	54,177	62,943	57,070	57,250	58,426	65,324	76,582	78,061	87,170	
70	2.50%	1.8	14,427	14,776	17,166	15,565	15,614	15,934	17,816	20,886	21,289	23,774	
70	5%	3.5	28,052	28,730	33,379	30,264	30,360	30,983	34,641	40,612	41,396	46,226	
70	7%	4.9	39,272	40,222	46,730	42,370	42,504	43,377	48,498	56,856	57,954	64,717	
70	10%	7.0	56,103	57,460	66,758	60,529	60,719	61,967	69,283	81,223	82,792	92,453	
70	11%	7.7	61,714	63,206	73,433	66,582	66,791	68,163	76,211	89,345	91,071	101,698	

**Table 175. Average scallop pounds per vessel for limited access qualifiers with scallop landings of 5000 lb. to 19,999 lb. from best year (or Tier 2)**

Total scallop harvest (Million lb.)	General category TAC as a % of total harvest	GC TAC (Mil. lb.)	11 Year period			5 year period				2 year period		
			100 lb. Criteria	1000 lb. Criteria	5000 lb. Criteria	Stand alone-ITQ	100 lb. criteria	1000 lb. Criteria	5000 lb. Criteria	100 lb. Criteria	1000 lb. Criteria	5000 lb. Criteria
			141 vessels	141 vessels	141 vessels	126 vessels	126 vessels	126 vessels	126 vessels	99 vessels	99 vessels	99 vessels
			% share=	% share=	% share=	% share=	% share=	% share=	% share=	% share=	% share=	% share=
			34.3%	35.2%	40.9%	33.8%	33.9%	34.6%	38.6%	36.8%	37.5%	41.9%
40	2.50%	1.0	2,436	2,495	2,898	2,679	2,687	2,742	3,066	3,717	3,789	4,231
40	5%	2.0	4,872	4,990	5,797	5,358	5,375	5,485	6,132	7,434	7,577	8,461
40	7%	2.8	6,820	6,985	8,116	7,501	7,524	7,679	8,585	10,407	10,608	11,846
40	10%	4.0	9,743	9,979	11,594	10,715	10,749	10,970	12,265	14,867	15,154	16,923
40	11%	4.4	10,718	10,977	12,753	11,787	11,824	12,067	13,491	16,354	16,670	18,615
50	2.50%	1.3	3,167	3,243	3,768	3,482	3,493	3,565	3,986	4,832	4,925	5,500
50	5%	2.5	6,090	6,237	7,246	6,697	6,718	6,856	7,666	9,292	9,471	10,577
50	7%	3.5	8,526	8,732	10,145	9,376	9,405	9,599	10,732	13,009	13,260	14,807
50	10%	5.0	12,179	12,474	14,492	13,394	13,436	13,712	15,331	18,584	18,943	21,153
50	11%	5.5	13,397	13,721	15,942	14,733	14,780	15,084	16,864	20,442	20,837	23,269
60	2.50%	1.5	3,654	3,742	4,348	4,018	4,031	4,114	4,599	5,575	5,683	6,346
60	5%	3.0	7,308	7,484	8,695	8,036	8,062	8,227	9,199	11,150	11,366	12,692
60	7%	4.2	10,231	10,478	12,174	11,251	11,287	11,518	12,878	15,611	15,912	17,769
60	10%	6.0	14,615	14,969	17,391	16,073	16,124	16,455	18,397	22,301	22,732	25,384
60	11%	6.6	16,077	16,466	19,130	17,680	17,736	18,100	20,237	24,531	25,005	27,923
70	2.50%	1.8	4,385	4,491	5,217	4,822	4,837	4,936	5,519	6,690	6,819	7,615
70	5%	3.5	8,526	8,732	10,145	9,376	9,405	9,599	10,732	13,009	13,260	14,807
70	7%	4.9	11,936	12,225	14,202	13,126	13,168	13,438	15,025	18,212	18,564	20,730
70	10%	7.0	17,051	17,464	20,289	18,752	18,811	19,197	21,464	26,018	26,520	29,615
70	11%	7.7	18,756	19,210	22,318	20,627	20,692	21,117	23,610	28,619	29,172	32,576

**Table 176. Average scallop pounds per vessel for limited access qualifiers with scallop landings of less than 5000 lb. from best year (or Tier 2)**

Total scallop harvest (Million lb.)	General category TAC as a % of total harvest	GC TAC (Mil. lb.)	11 Year period			5 year period				2 year period		
			100 lb. Criteria	1000 lb. Criteria	5000 lb. Criteria	Stand alone-ITQ	100 lb. criteria	1000 lb. Criteria	5000 lb. Criteria	100 lb. Criteria	1000 lb. Criteria	5000 lb. Criteria
			502 vessels	256 vessels	None qualify	489 vessels	360 vessels	181 vessels	None qualify	256 vessels	134 vessels	None qualify
			% share= 16.0%	% share= 13.9%	% share= 0.0%	% share= 12.6%	% share= 12.4%	% share= 10.6%	% share= 0.0%	% share= 12.2%	% share= 10.5%	% share= 0.0%
40	2.50%	1.0	318	544	No allo.	258	343	583	No allo.	475	780	No allo.
40	5%	2.0	636	1,088	No allo.	517	687	1,166	No allo.	950	1,560	No allo.
40	7%	2.8	890	1,524	No allo.	724	962	1,632	No allo.	1,329	2,184	No allo.
40	10%	4.0	1,272	2,177	No allo.	1,034	1,374	2,332	No allo.	1,899	3,121	No allo.
40	11%	4.4	1,399	2,394	No allo.	1,137	1,511	2,565	No allo.	2,089	3,433	No allo.
50	2.50%	1.3	413	707	No allo.	336	446	758	No allo.	617	1,014	No allo.
50	5%	2.5	795	1,360	No allo.	646	859	1,458	No allo.	1,187	1,950	No allo.
50	7%	3.5	1,113	1,905	No allo.	904	1,202	2,041	No allo.	1,662	2,731	No allo.
50	10%	5.0	1,590	2,721	No allo.	1,292	1,717	2,915	No allo.	2,374	3,901	No allo.
50	11%	5.5	1,749	2,993	No allo.	1,421	1,889	3,207	No allo.	2,611	4,291	No allo.
60	2.50%	1.5	477	816	No allo.	388	515	875	No allo.	712	1,170	No allo.
60	5%	3.0	954	1,633	No allo.	775	1,030	1,749	No allo.	1,424	2,340	No allo.
60	7%	4.2	1,336	2,286	No allo.	1,085	1,442	2,449	No allo.	1,994	3,277	No allo.
60	10%	6.0	1,908	3,265	No allo.	1,550	2,060	3,498	No allo.	2,849	4,681	No allo.
60	11%	6.6	2,099	3,592	No allo.	1,705	2,267	3,848	No allo.	3,134	5,149	No allo.
70	2.50%	1.8	572	980	No allo.	465	618	1,049	No allo.	855	1,404	No allo.
70	5%	3.5	1,113	1,905	No allo.	904	1,202	2,041	No allo.	1,662	2,731	No allo.
70	7%	4.9	1,558	2,667	No allo.	1,266	1,683	2,857	No allo.	2,326	3,823	No allo.
70	10%	7.0	2,226	3,809	No allo.	1,809	2,404	4,081	No allo.	3,324	5,461	No allo.
70	11%	7.7	2,449	4,190	No allo.	1,990	2,644	4,489	No allo.	3,656	6,007	No allo.

The impacts of percentage TAC alternatives on crew incomes, costs, and vessel shares will vary according to the vessel size and the dependence on scallop revenue as a source of income. The tables in Section 5.4.5.6 provide estimates of revenues, costs, and crew and boat shares corresponding to a range of individual allocation amounts and could be used in conjunction with this section to evaluate the impacts of TAC on the revenues, costs, and crew and boat shares for general category vessels. Table 177 shows crew incomes and boat shares for a typical vessel with a high dependence on general category fishery (93% of its total revenue) and a GRT of less than 50 GRT. All vessels in Tier 1 with scallop landings of more than 20,000 lb. are included in this group. This group of vessels landed an average of 35,000 lb. of scallops during 2005 fishing year (Table 109) as well as during their best year prior to the control date (Table 143). Therefore, 35,000 lb. of scallop landings could be considered as an average status quo level for these vessels. Assuming a scallop harvest of 50 million pounds, allocation for this group would be about 10,000 lb at a 2.5% TAC, about 20,000 lb. at 5% TAC, and about 30,000 lb. at 7% TAC (Table 174).

The economic impacts of these allocation pounds on crew income and boat shares are shown in Table 177 as compared to a status quo level of 35,000 lb. of scallops. For example, depending on the prices, an allocation of 10,000 lb. could reduce net boat shares by 98% to 114%, a 20,000 lb. allocation by 59% to 68 % to depending on the scallop prices compared to an allocation of 35,000 lb.

**Table 177. Estimated revenues and costs for an average vessel with less than 50 gross tonnage.**

Allocation pounds	Number of trips	Annual Scallop Revenue	Total trip costs	Net Revenue (net of trip costs)	Crew income (net of trip costs)	Boat Share (Annual)	% of scallop revenue	Boat share net of fixed costs	% Change in boat share net of fixed costs
<b>Scenario A: 50 million total scallop landings, price \$8.30 per lb.</b>									
10000	25	83,000	7,275	75,725	38,375	37,350	93%	2,034	-98%
20000	50	166,000	14,550	151,450	76,750	74,700	93%	39,384	-59%
30000	75	249,000	21,825	227,175	115,125	112,050	93%	76,734	-20%
35000	88	290,500	25,463	265,037	134,312	130,725	93%	95,409	0%
40000	100	332,000	29,100	302,900	153,500	149,400	93%	114,084	20%
50000	125	415,000	36,376	378,624	191,874	186,750	93%	148,776	56%
<b>Scenario A: 50 million total scallop landings, price \$6.00 per lb.</b>									
10000	25	60,000	7,275	52,725	25,725	27,000	93%	(8,316)	-114%
20000	50	120,000	14,550	105,450	51,450	54,000	93%	18,684	-68%
30000	75	180,000	21,825	158,175	77,175	81,000	93%	45,684	-23%
35000	88	210,000	25,463	184,537	90,037	94,500	93%	59,184	0%
40000	100	240,000	29,100	210,900	102,900	108,000	93%	72,684	23%
50000	125	300,000	36,376	263,624	128,624	135,000	93%	97,026	64%

Notes: Average trip costs per DA=\$291, average fixed costs per vessel=\$37,974 and 93% of the fixed costs are attributed to scallop fishing. Average revenue from other fisheries=\$ 45,452 (2005). Revenue from other species is not included. The number in parentheses shows that there is loss to the vessel.

#### 5.4.17.4 The impacts on limited access vessels

The section discusses the impacts of general category TAC on the landings, revenues, costs, and crew and boat shares for the limited access vessels. The analysis is conducted for an average full-

time vessel. These vessels depend on scallop fishing as the main source of their income, thus are most likely to be affected from the division of available scallop harvest between general category and limited access. The method and the assumptions of this analysis could be summarized as follows:

- It is assumed the number of limited access vessels that participate in the scallop fishery will equal to the number of permits obtained in 2005 fishing year. There were 321 vessels with full-time, 32 vessels with part-time and 6 vessels with occasional permits, totaling 359 vessels, the highest number limited access permits ever obtained since 1994 fishing year. According to the preliminary data, there were 351 vessels that received limited access permits in 2006 fishing year.
- In order to estimate scallop landings per full-time boat, the number of part-time and occasional boats are converted to full-time equivalents by applying their share in allocations with respect to a full-time boat, which are 40% and 8.33% respectively. With this calculation, the number of full-time equivalent boats is estimated to be 334 vessels. Total scallop landings per full-time vessels are estimated by dividing total scallop harvest available for limited access among 334 vessels.
- As explained in Section 5.4.17.2 above, ex-vessel prices are calculated for two different scenarios to provide a range of estimates with various values for these variables.
- Crew incomes are assumed to equal to 55% of the gross stock net of observer costs minus the trip costs. Vessel share is 45% of the gross stock net of observer costs. The lay system could vary from one vessel to another, however, and there could be other costs that are paid by crew or the vessel owner not accounted for in these estimates. Therefore, the absolute values for the estimated crew and vessel incomes should be interpreted with caution and should be used in comparing the results of one scenario versus another.
- The boat shares net of fixed costs are estimated by deducting fixed costs from vessel's share as a proxy for profits. According to the observer data, fixed costs averaged at \$164,151 for the 2002-05 fishing years. Adjusting this for the increase in PPI in 2006, bring this average up to about \$175,150 per full-time vessel. The fixed costs include those expenses that are not usually related to the level of fishing activity or output. These are expenses on insurance, maintenance, repairs and replacement of engine, electrical and processing equipment, gear and other equipment. There are other fixed costs a vessel owner pays, such as for office expenses, interest, accounting, utilities and dock fees. They are not included in fixed costs estimates because the data on these items are not collected by the observer program. Therefore, actual fixed costs could be higher and the vessel shares net of fixed costs could be lower than the estimates shown in Table 180 and Table 181. For these reasons, these numbers should be interpreted with caution and be mainly used for the comparative analyses of the percent TAC alternatives.

### **Summary of results:**

The estimated landings per full-time vessel, prices and revenues are shown in Table 178 for Scenario A and in Table 179 for Scenario B. Scenario A results in higher prices than Scenario B at each level of landings. For example, if overall scallop landings are 50 million lb., the scallop prices could reach \$8.30 if the import prices and exports do not fall below recent levels and the productivity of the scallop resource could increase to include larger scallops. On the other hand, a change in the world scallop markets toward lower prices, a reduction in US exports due to a reduction in competitiveness or a world recession, could bring prices \$6.00 per pound at the same level of domestic landings (50 million lb.). Scallop revenues per full-time vessel could vary from about \$800,000 (\$6.00) with lower prices to about \$1,105,000 with higher prices (\$8.30) if overall harvest was 50 million lb. and 89% of this was allocated to limited access fishery (11% to general category). A 2.5% TAC for general category is estimated to increase DAS-used per limited access vessel by 5 days compared to 11% TAC.

Although the level of revenue per full-time vessel varies with the level of available scallop harvest at the estimated prices as shown in these Tables, the relative impacts of percentage TAC levels on revenues stay the same. As the last column of each of these Tables show, if instead of 11%, 2.5% of the total available scallop harvest was allocated to general category and the remaining 97.5% to the limited access fishery, the estimated revenue per full-time vessel would increase by 10% regardless of the level of scallop harvest or prices.

The impacts of various TAC levels on costs, crew and vessels shares for limited access vessels are analyzed in Table 180 and Table 181 using the same scenario analyses with import, exports, prices, costs and productivity. These scenarios show scallop revenues per vessel will be sufficient to pay for trip costs, crew shares and provide a surplus for the vessel after paying for the fixed costs even with a scallop harvest of 40 million lb. and 11% TAC for general category. Boat shares net of fixed costs for Scenario A will be significantly higher than the levels estimated for the less optimistic Scenario B. Reducing general category share from a status quo of 10% to 11%, to 2.5%, however, will increase net boat shares by about 15% for Scenario A, and by as much as 20% for Scenario B depending on the level of total scallop harvest.

**Table 178. Scenario A: Impacts of general category TAC on limited access vessels (assuming 334 full-time vessels, import price of \$4.15, exports=25 million, LPUE=2300 lb.).**

Total Scallop TAC (mill.)	% TAC for general category	General category TAC (mill.)	Limited access landings (mill.)	Scallop pounds per full-time vessel	Estimated scallop price per lb.	Scallop revenue per full-time vessel	Percent change in revenue compared to 11% TAC for GC
40	2.50%	1.0	39.0	116,766	9.45	1,103,443	10%
40	5%	2.0	38.0	113,772	9.45	1,075,150	7%
40	7%	2.8	37.2	111,377	9.45	1,052,515	4%
40	10%	4.0	36.0	107,784	9.45	1,018,563	1%
40	11%	4.4	35.6	106,587	9.45	1,007,246	0%
50	2.50%	1.3	48.8	145,958	8.30	1,211,452	10%
50	5%	2.5	47.5	142,216	8.30	1,180,389	7%
50	7%	3.5	46.5	139,222	8.30	1,155,539	4%
50	10%	5.0	45.0	134,731	8.30	1,118,263	1%
50	11%	5.5	44.5	133,234	8.30	1,105,838	0%
60	2.50%	1.5	58.5	175,150	6.90	1,208,533	10%
60	5%	3.0	57.0	170,659	6.90	1,177,545	7%
60	7%	4.2	55.8	167,066	6.90	1,152,754	4%
60	10%	6.0	54.0	161,677	6.90	1,115,569	1%
60	11%	6.6	53.4	159,880	6.90	1,103,174	0%
70	2.50%	1.8	68.3	204,341	5.50	1,123,877	10%
70	5%	3.5	66.5	199,102	5.50	1,095,060	7%
70	7%	4.9	65.1	194,910	5.50	1,072,006	4%
70	10%	7.0	63.0	188,623	5.50	1,037,425	1%
70	11%	7.7	62.3	186,527	5.50	1,025,898	0%

**Table 179. Scenario B: Impacts of general category TAC on limited access vessels (assuming 334 full-time vessels, import price of \$3.50, exports=10 million, LPUE=1800 lb. ).**

Total Scallop TAC (mill.)	% TAC for general category	General category TAC (mill.)	Limited access landings (mill.)	Scallop pounds per full-time vessel	Estimated scallop price per lb.	Scallop revenue per full-time vessel	Percent change in revenue compared to 11% TAC for GC
40	2.50%	1.0	39.0	116,766	7.70	899,102	10%
40	5%	2.0	38.0	113,772	7.70	876,048	7%
40	7%	2.8	37.2	111,377	7.70	857,605	4%
40	10%	4.0	36.0	107,784	7.70	829,940	1%
40	11%	4.4	35.6	106,587	7.70	820,719	0%
50	2.50%	1.3	48.8	145,958	6.00	875,749	10%
50	5%	2.5	47.5	142,216	6.00	853,293	7%
50	7%	3.5	46.5	139,222	6.00	835,329	4%
50	10%	5.0	45.0	134,731	6.00	808,383	1%
50	11%	5.5	44.5	133,234	6.00	799,401	0%
60	2.50%	1.5	58.5	175,150	4.80	840,719	10%
60	5%	3.0	57.0	170,659	4.80	819,162	7%
60	7%	4.2	55.8	167,066	4.80	801,916	4%
60	10%	6.0	54.0	161,677	4.80	776,048	1%
60	11%	6.6	53.4	159,880	4.80	767,425	0%
70	2.50%	1.8	68.3	204,341	3.80	776,497	10%
70	5%	3.5	66.5	199,102	3.80	756,587	7%
70	7%	4.9	65.1	194,910	3.80	740,659	4%
70	10%	7.0	63.0	188,623	3.80	716,766	1%
70	11%	7.7	62.3	186,527	3.80	708,802	0%

**Table 180. Scenario A: Impacts of general category TAC on limited access vessels (assuming 334 full-time vessels, and higher prices)**

Total Scallop TAC (mill.)	% TAC for general category	General category TAC (mill.)	Limited access landings (mill.)	DAS-used per vessel	Trips costs per vessel (\$)	Crew income net of trip costs (\$)	Boat share (\$)	Boat share net of fixed costs (\$)	% change in net boat share (compare with 11% GC-TAC)
40	2.50%	1.0	39.0	51	59,399	547,495	496,549	321,399	16%
40	5%	2.0	38.0	49	57,876	533,457	483,817	308,667	11%
40	7%	2.8	37.2	48	56,657	522,226	473,632	298,482	7%
40	10%	4.0	36.0	47	54,829	505,380	458,353	283,203	2%
40	11%	4.4	35.6	46	54,220	499,765	453,260	278,110	0%
50	2.50%	1.3	48.8	63	74,248	592,050	545,153	370,003	15%
50	5%	2.5	47.5	62	72,344	576,870	531,175	356,025	10%
50	7%	3.5	46.5	61	70,821	564,725	519,993	344,843	7%
50	10%	5.0	45.0	59	68,537	546,508	503,219	328,069	2%
50	11%	5.5	44.5	58	67,775	540,436	497,627	322,477	0%
60	2.50%	1.5	58.5	76	89,098	575,595	543,840	368,690	15%
60	5%	3.0	57.0	74	86,813	560,836	529,895	354,745	10%
60	7%	4.2	55.8	73	84,986	549,029	518,740	343,590	7%
60	10%	6.0	54.0	70	82,244	531,319	502,006	326,856	2%
60	11%	6.6	53.4	70	81,330	525,415	496,428	321,278	0%
70	2.50%	1.8	68.3	89	103,948	514,185	505,745	330,595	15%
70	5%	3.5	66.5	87	101,282	501,001	492,777	317,627	11%
70	7%	4.9	65.1	85	99,150	490,453	482,403	307,253	7%
70	10%	7.0	63.0	82	95,952	474,632	466,841	291,691	2%
70	11%	7.7	62.3	81	94,885	469,359	461,654	286,504	0%

Assumptions about price: import price \$4.15, exports, 25 mill. or 45% of landings. LPUE=2300 assuming trip costs of \$1170 per day-at-sea.

**Table 181. Scenario B: Impacts of general category TAC on limited access vessels (assuming 334 full-time vessels and lower prices).**

Total Scallop TAC (mill.)	% TAC for general category	General category TAC (mill.)	Limited access landings (mill.)	DAS-used per vessel	Trips costs per vessel (\$)	Crew income net of trip costs (\$)	Boat share (\$)	Boat share net of fixed costs (\$)	% change in net boat share (compare with 11% GC-TAC)
40	2.50%	1.0	39.0	65	75,898	418,608	404,596	229,446	18%
40	5%	2.0	38.0	63	73,952	407,874	394,222	219,072	13%
40	7%	2.8	37.2	62	72,395	399,287	385,922	210,772	9%
40	10%	4.0	36.0	60	70,060	386,407	373,473	198,323	2%
40	11%	4.4	35.6	59	69,281	382,114	369,323	194,173	0%
50	2.50%	1.3	48.8	81	94,873	386,789	394,087	218,937	19%
50	5%	2.5	47.5	79	92,440	376,871	383,982	208,832	13%
50	7%	3.5	46.5	77	90,494	368,937	375,898	200,748	9%
50	10%	5.0	45.0	75	87,575	357,036	363,772	188,622	2%
50	11%	5.5	44.5	74	86,602	353,069	359,731	184,581	0%
60	2.50%	1.5	58.5	97	113,847	348,548	378,323	203,173	19%
60	5%	3.0	57.0	95	110,928	339,611	368,623	193,473	14%
60	7%	4.2	55.8	93	108,593	332,461	360,862	185,712	9%
60	10%	6.0	54.0	90	105,090	321,737	349,222	174,072	2%
60	11%	6.6	53.4	89	103,922	318,162	345,341	170,191	0%
70	2.50%	1.8	68.3	114	132,822	294,251	349,424	174,274	21%
70	5%	3.5	66.5	111	129,416	286,707	340,464	165,314	15%
70	7%	4.9	65.1	108	126,692	280,671	333,296	158,146	10%
70	10%	7.0	63.0	105	122,605	271,617	322,545	147,395	2%
70	11%	7.7	62.3	104	121,243	268,599	318,961	143,811	0%

Assumptions about price: import price \$4.15, exports, 25 mill. or 45% of landings. LPUE=1800 assuming trip costs of \$1170 per day-at-sea.

#### 5.4.17.5 Allocation of yellowtail flounder bycatch TAC in access areas (3.1.7.3)

The Council is considering allocating a specific portion of the yellowtail flounder bycatch TAC to each fishery (limited access and general category). Currently 10% of the yellowtail flounder TAC (Georges Bank and SNE) is set aside as bycatch for the scallop fishery in access areas (limited access and general category together). Only limited access vessels are permitted to land yellowtail as a bycatch. Continuing with no action (3.1.7.3.1) would negatively impact those vessels that are less likely to fish in the early winter months (which are mainly small vessels in the general category fleet), if the larger limited access fleet quickly reaches the overall 10% TAC for the scallop fishery as a whole. Therefore, allocating a percentage of the bycatch TAC to the general category fishery (3.1.7.3.2) will have positive economic impacts on these vessels since they will be able to continue to fish in access areas until general category yellowtail TAC is reached. It will also benefit limited access vessels since it is possible for yellowtail TAC to be reached due to derby fishing by general category vessels before limited access vessels take their allocated trips to the access areas.

## **5.4.18 Incidental Catch (3.1.8)**

### **5.4.18.1 No Action (3.1.8.1)**

This measure continues the allowance of incidental bycatch of scallops up to 40 lbs (3.1.8.1.); therefore, it will have no impact on vessels with incidental scallop catch. It also would not have any negative impacts the general category and limited access scallop fleets since incidental bycatch is not expected have a significant impact on the scallop fishing mortality. The vessels are not allowed to sell their catch under this measure, however, making it difficult to estimate total scallop landings from incidental catch fishery.

### **5.4.18.2 Incidental catch permit (3.1.8.2)**

This alternative would create an incidental catch permit for vessels to retain and sell 40 lbs. of scallop meat per trip if they meet the qualification criteria for having been issued a permit but not the landing criteria necessary for limited access general category permit. PDT will develop an estimate of landings expected from this incidental catch fishery and this estimate will be taken off the top before allocation to the limited access and general category fisheries. A general category vessel could apply for incidental catch permit instead of limited access general category permit if they choose to do so.

The economic impacts of this alternative will be positive on vessels that do not qualify for limited access because it will allow them to still earn some income from scallops under the incidental catch permit. Table 78 shows the number of vessels that were active during the qualification time periods but would not qualify for limited access due to the poundage criteria. For example, with the preferred alternative (11 year period and 1000 lb. criteria), 465 out of 924 active vessels during this period would not qualify for limited access, thus could apply for incidental catch permit. As Table 92 indicates, 130 of these vessels landed 40 lb. or less scallops from their trips. With the incidental catch permit, these vessels can continue to fish as they were before without being significantly affected from the limited access program. The remaining 202 vessels that landed between 41-200 lb. and 133 vessels that landed more than 200 lb. from their best trip could also continue to fish with the incidental catch permit although they would have to reduce their scallop landings per trip and have loss in revenue from scallops. Some vessels in this group may be able increase the number of trips they take in order to land scallops in amounts similar to what they landed in the past. If all the vessels that do not qualify for limited access were able to land the same amounts (from best year) of scallops by fishing under the incidental catch rules, the landings could increase by total landings shown for this group. For example, 130,428 pounds of scallops could be landed under these assumptions and with preferred alternative, generating about \$1 million in scallop revenue for these vessels assuming a price of \$7.60 per pound. This level would constitute about 3% of total best year general category scallop landings of 4.2 million pounds for the 11 year period, or less than 0.3% of a total scallop harvest of 50 million pounds. The actual amounts could be less than these estimates if not all vessels could increase their number of trips to catch 40 lb. scallops from each trip to compensate for the reduced possession per trip.

The scallop landings recorded in the dealer data for incidental catch was a negligible proportion of the total scallop landings in the past. For example, the trips with 40 lb. or less scallops

constituted only 0.02% of total landings in 2005 fishing year, and about 0.06% of total scallop landings in 2005 (Table 182).

**Table 182. Composition of scallop landings by trip landing**

FISHYEAR	Data	<=40 lb.	41-100 lb.	101-200 lb.	>200 lb.	Grand Total
2004	Total scallop landings	9,352	54,730	135,852	61,967,122	62,167,056
	% of total	0.02%	0.09%	0.22%	99.68%	100.00%
2005	Total scallop landings	29,374	83,877	264,270	52,964,848	53,342,369
	% of total	0.06%	0.16%	0.50%	99.29%	100.00%

Total scallop landings from incidental catch could be higher than these amounts, however, if the new regulations proposed in this Amendment provide incentive to more vessels fish under the incidental catch permit. This is a possibility given that any vessel that had a general category permit before the control date during the selected qualification period could qualify for an incidental catch permit. For example, an additional 3853 permit holders would be eligible to fish under the incidental catch permit under the preferred 11 year time period if they submit an application. If 500 of these vessels applied and took 10 trips with 40 lb. bycatch of scallops from each trip, total catch from this permit category could increase by 200,000 lb. It is also possible for some vessels that qualify for limited access general category permit to apply instead for incidental catch permit. For example, some vessels that landed 1000 lb. from their best year and qualify for limited access under this criterion would be allocated 2.5 trips with the preferred alternative assuming that they land 400 lb. per trip and a total general category TAC of 4 million pounds. If these vessels do not normally land more than 50 lb. per trip (and take only 20 trips) their total scallop landings will decline 250 pounds. Choosing to fish under the incidental catch permit could benefit these vessels since by taking 20 trips at 40lb. each they could land 800 pounds, and more if they increase their trips. But given that it is usually not profitable to target scallops on a full-time with 40 lb. trip limit, the increase in incidental catch may not be significant. This alternative would, in general, benefit those vessels in some fisheries where it may be more advantageous to land a smaller incidental level of scallops on more trips, than a higher level of scallops on fewer trips.

In order to prevent scallop fishing mortality to increase above the target levels, this alternative includes a provision to remove the estimated landings from incidental catch from the total scallop harvest before the allocations are made to the general category and limited access fisheries. This value would be defined in future biennial actions and could be adjusted over time to incorporate recent landings from this permit category. The economic impacts of this measure would be positive for the sea scallop fishery as whole since it would reduce the risks of overfishing of scallop resource from an increase in incidental catch.

#### **5.4.19 More Timely Integration of Data (3.2)**

Changing the start of the fishing year to either May 1 (Alternative 3.2.3) or to August 1 (Alternative 3.2.4) will reduce the time lag between the fishing year and the time when the survey data becomes available. The benefits of streamlining annual adjustment to take into account the recent scallop survey are discussed thoroughly in Section 5.18 (Impacts on the Scallop Resource). A more accurate estimation of TACs for the access areas will reduce

uncertainty associated with the rotational area management, and an implementation time that coincides better with the fishing year will benefit the scallop fishery and have positive economic impacts on the participants. On the other hand, there will be some business risks associated when the fishing year starts at a later date as discussed below. Under the no action alternative (3.2.1) there will be no change in the scallop fishing year and the issuance date for general category permits. Since overfishing of the scallop resource due to mis-estimation of TACs and DAS allocations needs to be corrected by the framework, the no action alternative (3.2.1) will result in more stringent regulations and a decline in scallop landings in future years, which will have negative impacts both on the scallop fishermen and on seafood consumers.

The change in the fishing year will, however, require a change in the business plans of the scallop fishermen and create some risks if plans do not materialize due to unforeseen conditions. Presently, the fishing year begins at a time when meat-weight of scallops begins to increase and a higher yield per unit effort could be obtained from scallop fishing. As a result, the vessels start using their day-at-sea based on the current resource and market conditions and fishing costs (such as fuel prices). If the fishing year starts in May, the vessel owners may need to postpone part of their day-at-sea allocations until the following March, since 15% to 18% of scallops are usually landed during the months of March and April. If the fishing year starts in August, they will need to reserve about half-of-their day-at-sea allocations until August of the next year, since they generally land more than half of the scallops during these five months from March to August (Table 1 and Table 2). If during these months, the resource and market conditions turn out to be less favorable than they expected a year ago, for example, if scallop prices or catch per unit effort decline due external factors, they will incur a loss from not using them in earlier months. Also unforeseen conditions, such as a vessel breakdown, illness, or unfavorable weather could affect how many of the day-at-sea allocations could be used at the end of the fishing year. Present regulations allow a vessel to carry over 10 days-at-sea to the next fishing year. Therefore, if a vessel could not use more than 10 days of its day-at-sea allocation at the end of the fishing year due to unforeseen conditions, it will face a decline in revenue unless there is a change in regulations to take into account such conditions. In other words, starting the fishing year at a later date will require longer term planning and will create some risks due to reduced predictability of the resource and market conditions over a longer horizon. Negative impacts associated this change could decline over time, however, as the vessel-owners gain experience with the new fishing year and learn to adjust their business plans more efficiently to the new conditions. Certainly, changing the fishing year to May 1, rather than to August 1, will reduce these risks, even though the later date will allow more time for recent survey results to become available to management. Even though there could be some short-term decline in producer benefits if landings do not occur under the most optimal conditions due to the reasons discussed above, there is no question that more accurate estimation of area TACs and day-at-sea allocations will improve scallop yield over the long-term, increase revenues, and reduce the business costs associated with constantly changing regulations. Therefore, the positive economic impacts of changing the fishing year are expected to outweigh the negative impacts in some circumstances when the scallop resource and market conditions turn out to be less favorable than expected.

Changing the general category permit to March 1 to be in line with the limited access fishery (3.2.1.1) would allow better estimation of the number of participants and the level of effort in the

fishery, and allocation of TAC. It would create complications for the general category fleet, however, many of whom participate in other fisheries which have the May 1 start date. Changing the fishing year to May 1 (3.2.2) would create consistency without any costs to the general category fishermen.

**Table 183. Distribution of scallop landing by limited access vessels by month and calendar year**

MONTH	2000	2001	2002	2003	2004	2005
1	6%	4%	3%	3%	2%	5%
2	5%	5%	4%	5%	5%	4%
3	6%	6%	6%	7%	8%	7%
4	9%	10%	10%	8%	10%	11%
5	14%	13%	12%	13%	12%	14%
6	12%	11%	13%	14%	13%	13%
7	11%	13%	12%	13%	10%	13%
8	11%	9%	12%	10%	9%	10%
9	8%	8%	9%	7%	7%	8%
10	8%	8%	7%	10%	6%	5%
11	5%	6%	6%	7%	9%	5%
12	5%	6%	5%	4%	6%	4%
Grand Total	100%	100%	100%	100%	100%	100%

**Table 184. Distribution of scallop landing by limited access vessels by period**

Period	2000	2001	2002	2003	2004	2005
March-Apr.	15%	16%	16%	15%	18%	18%
March-July	52%	53%	53%	55%	53%	58%
Aug.-Feb.	48%	47%	47%	45%	47%	42%
Grand Total	100%	100%	100%	100%	100%	100%

#### **5.4.20 Trawl gear restriction (3.3.1)**

Clarification of trawl gear restriction for vessels fishing under a multispecies or monkfish DAS will have positive economic impacts on those general category vessels that catch scallops only incidentally compared to no action. Since vessels targeting scallops with a net are still restricted to a 144 ft. net sweep, this alternative will not have negative impacts on scallop resource or negative economic impacts on the general category fishery.

#### **5.4.21 Possession limit of 50 bushels (3.3.2)**

Setting the possession limit to 100 bushels east of the demarcation line will have positive economic impacts on the general category vessels that are able to shuck before they reach the demarcation line. Since 50 bushels is usually less than 400 pounds of scallop meat, under no action alternative the vessels will be either in violation if they have more than 50 bushels on board or will risk the risk of landings less than 400 lb. scallops per trip. While this alternative could allow a vessel to catch more than 50 bushels or 400 pounds, the vessel would have to discard any additional catch before crossing the demarcation line. This could reduce non-harvest mortality and have additional positive impacts on scallop biomass and on net economic benefits from the scallop resource.

## 5.4.22 Appendix for economic analyses: Data and methods

### 5.4.22.1 Estimation of ex-vessel prices

Fish prices constitute one of the important channels through which fishery management actions affect fishing revenues, vessel profits, consumer surplus, and net economic benefits for the nation. The degree of change in ex-vessel price in response to a change in variables affected by management, i.e., scallop landings and meat count, is estimated by a price model, which also takes into account other important determinants of price, such as disposable income of consumers and price of imports. This report develops a new scallop price model that estimates price by major meat count categories in order to capture the impacts of changes in the size composition of scallops, especially since 1999. In addition, this new model takes into account the impact of scallop exports, which is on the rise in recent years, on the domestic price of scallops. Given that there could be many variables that could affect the price of scallops, it is important to identify the objectives in price model selection: These objectives are as follows:

- To develop a price model that uses inputs of the biological model and available data. For example, using an annual model based on annual landings and prices, rather than a model based on monthly landings and prices since the biological model usually does not predict monthly landings.
- To select a price model that will predict prices within a reasonable range without depending on too many assumptions about the exogenous variables. For example, the import price of scallops from Japan could impact domestic prices differently than the price of Chinese imports, but making this separation in a price model would require prediction about the future import prices from these countries. This in turn would complicate the model and increase the uncertainty regarding the future estimates of domestic scallop prices. For these reasons, it is important to minimize the number of variables that require speculations about their likely future values.

In the previous SAFE reports and Scallop Amendment and Frameworks, the average ex-vessel price for scallops was estimated from an annual price model as a function of total landings, average meat count of scallops landed, disposable income of consumers, and average import prices. In general, the price of scallops is expected to be inversely related to the landings, and to the meat count, but to vary in the same direction with the price of its substitutes, i.e., import prices in this case. An increase in disposable income, however, is expected to increase the demand, therefore the price of scallops. Historical observation presented above for the period 1982-2004 indicated that annual ex-vessel prices in fact varied in response to changes in domestic landings, import prices, and the size of scallops (meat count).

Collection of price data by market category of scallops since 1998, however, made it possible to improve the price model to better capture the changes in the size composition of scallops, especially in recent years as discussed above. It is expected that this trend will continue in the future with 10-20 count and under 10 count (U10) scallops dominating the landings. For these reasons, it is important to explore possible changes in scallop prices by size category in response to an increase in the supply of larger scallops relative to smaller ones.

In addition to the changes in size composition and landings of scallops, other determinants of ex-vessel price include level of imports, import price of scallops, disposable income of seafood consumers, and the demand for U.S. scallops by other countries. The main substitutes of sea scallops are the imports from Canada, which are almost identical to the domestic product, and imports from other countries, which are generally smaller in size and less expensive than the domestic scallops. An exception is the Japanese imports, which have a price close to the Canadian imports and could be a close substitute for the domestic scallops as well.

The ex-vessel price model estimated below includes the price, rather than the quantity of imports as an explanatory variable, based on the assumption that the prices of imports are, in general, determined exogenously to the changes in domestic supply. This is equivalent to assuming that the U.S. market conditions have little impact on the import prices. An alternative model would include estimating the price of imports according to world supply and demand for scallops, separating the impacts of Canadian and Japanese imports from other imports since U.S. and Canadian markets for scallops, being in proximity, are highly connected and Japanese scallops tend to be larger and closer in quality to the domestic scallops. The usefulness of such a simultaneous equation model is limited for our present purposes, however, since it would be almost impossible to predict how the landings, market demand, and other factors such as fishing costs or regulations in Canada or Japan and in other exporting countries to the U.S. would change in future years.

Since the average import price is equivalent to a weighted average of import prices from all countries weighted by their respective quantities, the import price variable takes into account the change in composition of imports from Canadian scallops to less expensive smaller scallops imported from other countries. This specification also prevents the problem of multi-collinearity among the explanatory variables, i.e., prices of imports from individual countries and domestic landings. In terms of prediction of future ex-vessel prices, this model only requires assignment of a value for the average price of imports, without assuming anything about the composition of imports, or the prices and the level of imports from individual countries. The economic impact analyses of the fishery management actions usually evaluate the impact on ex-vessel prices by holding the average price of imports constant. The sensitivity of the results affected by declining or increasing import prices could also be examined, however, using the price model presented in this section.

The price model presented below estimates annual average scallop ex-vessel price by market category (PEXMRKT) as a function of:

- Meat count (MCOUNT)
- Average price of all scallop imports (PIMPORT)
- Per capita personal disposable income (PCDPI)
- Total annual landings of scallop minus exports (SCLAND-SCEXP)
- Percent share of landings by market category in total landings (PCTLAND)
- A dummy variable as a proxy for price premium for Under 10 count scallops (DU10).
- A dummy variable for 2004 to reflect the exogenous changes, such as the changes in the supply of Japanese and Canadian imports due to unexpected factors.

Because the data on scallop landings and revenue by meat count categories were mainly collected since 1998 through the dealers' database, this analysis includes the 1998-2004 period and five meat categories. All the price variables are corrected for inflation and expressed in 2004 prices by deflating current levels by the consumer price index (CPI) for food. Personal disposable income is adjusted for inflation by deflating the nominal values with implicit price deflator for consumer expenditures. The ex-vessel prices are estimated in semi-log form to restrict the estimated price to positive values only as follows:

$$\text{Log (PEXMRKT)} = f(\text{MCOUNT, PIMPORT, PCDPI, SCLAND-SCEXP, PCTLAND, DU10})$$

The coefficients of this model are shown in Table 186. The estimated model provides a good fit to the actual data for annual ex-vessel prices as

Table 185 indicates. The F-test shows that the overall relation is statistically significant ( $P < 0.0001$ ), meaning that the explanatory variables as a whole have a significant influence on ex-vessel price. Adjusted R<sup>2</sup> indicates that changes in meat count, composition of landings by size of scallops, domestic landings net of exports, average price of all imports, disposable income, and price premium on under 10 count scallops explain 87 percent of the variation in ex-vessel prices by market category. Figure 48 and Table 187 also verify that the estimated values of ex-vessel prices closely track the actual values.

**Table 185. Regression results for price model**

Regression Statistics			
Multiple R		0.94	
R Square		0.89	
Adjusted R Square		0.86	
Standard Error		0.08	
Observations		35.00	
ANOVA			
	Degrees of Freedom	Sum of Squares	Significance F
Regression	7	1.54	P<0.0001
Residual	27	0.19	
Total	34	1.73	

**Table 186. Coefficients of the Price Model**

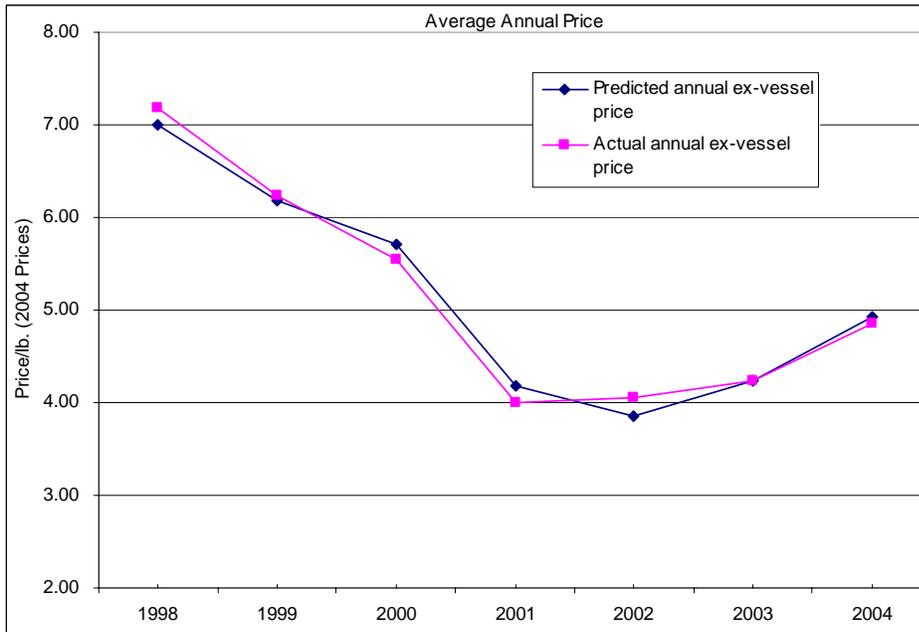
Variables	Coefficients	Standard Error	t Stat
INTERCEPT	-1.534	1.847	-0.831
MCOUNT	-0.005	0.001	-3.369
PIMPORT	0.017	0.071	0.241
PCDPI	0.043	0.020	2.093
SCLAND-SCEXP	-0.024	0.006	-3.943
DU10	0.061	0.054	1.127
PCTLAND	-0.311	0.086	-3.627
D2004	0.140	0.070	2.010

All of coefficients of the explanatory variables have the expected sign, and they are statistically significant at least at the 5% level of significance, except for price of imports, and dummy variable for under-10 count scallops, which were kept in the model for theoretical reasons. There has been little change in import prices during the period of analysis (1998-2005) compared to other variables explaining price, which explains the low t-statistics for this variable. When the scallop price model included a longer time-series (1982 on) as presented in SAFE 2000 report and later in Amendment 10, FEIS, the coefficient for the import price was statistically significant. The dummy variable reflecting the price premium on under 10 count scallops is statistically significant at the 22% level, however.

In summary, these empirical results verify that the ex-vessel price of scallops is related inversely to the domestic supply, net of exports, and increase as landings decrease or decrease as landings increase. The price per pound of scallops is expected to increase as the meats per pound decrease. Negative sign for the meat count variable (MCOUNT), indicates that when other factors held constant, the price in fact increased with the size of scallops. On the other hand, scallop price by market category is affected by the relative abundance or supply of that size category relative to total scallop landings. The negative sign for PCTLAND indicates that it is possible for smaller scallops to command a similar or even higher price in some circumstances if their supply declines to the scarcity levels in domestic markets. Positive sign and relatively high t-statistics for per capita income imply that an increase in the income of consumers will have a positive impact on the price of scallops for all market categories.

Overall, the model is successful in estimating average prices by market category during the 1998-2004 period, with a 3% difference at most from the actual price (Table 187). Similarly, predicted scallop price as an average of all market categories track very closely the actual annual price for scallops, with negligible differences from actual values in any single year. These numerical results should be interpreted with caution, however, since the analysis covers only 7 years of annual data from a period during which the scallop fishery underwent major changes in management policy including area closures, controlled access, and rotational area management.

**Figure 48. Actual and predicted annual ex-vessel price**



**Table 187. Average predicted and actual ex-vessel price during 1998-2004**

Market Size Category	Actual Price	Predicted Price	Percent Difference
Under 10 count	6.47	6.37	-1.6%
11-20 count	5.40	5.55	2.9%
21-30 count	5.08	4.93	-3.0%
31-40 count	5.17	5.21	0.8%
41 plus count	5.05	5.04	-0.3%

## **5.5 SOCIAL IMPACTS**

Social impacts consider changes made to how people—as individuals and as members of households and communities—live and work, and impacts on their values and norms. This can include their overall quality of life, safety, community sustainability, and distribution of and access to resources. The following analyses concentrate on an identified 41 ports or communities that could be most affected by Amendment 11, given the level of landings at port and county levels, but also speak to social impacts more broadly as they affect all participants in the fishery. A fishery management plan that proposes limited access system as an option, moreover, must consider not only the cultural and social framework relevant to the fishery and any affected fishing communities, but also present and historic participation in and dependence on the fishery, and the economics of the fishery [MSA Section 303(b)(6)]. This is complicated for general category scallop fishery, given that it is a heterogeneous fishery that has seen marked changes since the category was first created in 1994 by Amendment 4. As the social impact section in Amendment 4 noted then, many of the smaller-scale fishing operations that did not qualify for limited access were concerned about the lack of accurate records for small or seasonal vessels. This document also noted the tendency to include scallop fishing in the annual rounds of many small-scale fishing operations, particularly in Maine and New England (NEFMC, 1994: pages 162-63). Thus the fishery is part of fishermen’s harvesting flexibility, or what could be called cyclical rounds of fishermen, with switching between fisheries depending on the cyclicity of resources. In other words, many different kinds of fishing operations depend on the scallop resource, in different ways.

### **5.5.1 Limited Entry (3.1.1 and 3.1.2)**

The open access nature of the general category fishery has been discussed at length at the Council level, with many limited access and/or established fishermen concerned about an influx of new effort into scalloping; if such unlimited access does negatively impact the biomass then negative social and community impacts in the long-term would ensue on both fleets. Yet an open access fishery also represents the opportunity for established captains or crew from the limited access fishery to branch out into their own operations. That is to say, new boats may represent new capital but not necessarily new labor into the fishery; an open access fishery may be the only avenue for such new entrants into fishing and thus the sustainability of fishing communities, all else being the same. The cultural and social framework of the fishery is marked by concerns about equity, and community and generational stability, which are integral to the understandings and motivations of many fishermen in the affected regions (see for example Clay 1996, Olson 2006). Additionally, many other participants are concerned to preserve the historical characteristics of the fishery as composed primarily of small, owner-operated day boats. Thus limited access can challenge the cultural values of many fishermen, if it is seen as inequitably based, or if it is seen as threatening the sustainability of fishing families and communities.

#### **5.5.1.1 Qualifications (3.1.2.1, 3.1.2.2, and 3.1.2.3)**

The different qualification criteria and time periods will be discussed together and weighted by the different potential qualification amounts, in the discussion of allocation access (3.1.2.4) below. This section discusses the methodology used to understand potential impacts at the port level. The initial list of potential vessel qualifiers was assigned to different homeports according

to the homeport listed on the vessel's most recent permit application in order to approximate where the impacts from the different qualification scenarios might be concentrated. This should be considered an approximation at best, for vessels can and do change their homeport locations; moreover, over ¼ of qualifying vessels did not have an active permit for any fishery during 2006 so their actual homeport location may be likely to change, should they be sold or transferred. To gauge impacts at the homeport level, it was not possible to look just at potential allocations in absolute terms, since these would be scaled according to resource conditions, TAC, and total share to the general category fishery. Instead, the analysis considers a homeport's share of allocation to the total allocation to the entire fishery (i.e. the total allocation to vessels in the same homeport, divided by the total allocation), relative to its share of homeport revenue (i.e. landed value accruing to the vessels who homeport there, divided by all general category landed value in 2005). So a homeport that received the same share of allocation as its share of landed value would have a score of 0, meaning that the regulation had no impact on its relative share, all else being equal. This is then further weighted by the homeport's dependency on the general category scallop fishery, so that a port that has little dependence on this fishery would receive a low score, regardless of the change in relative share from the regulation. In sum, the weighted scores should show possible relative change from the regulations, weighted by dependency ( Table 188 and Table 189).

#### **5.5.1.2 Allocation (3.1.2.4)**

An individual allocation (3.1.2.4.1) could positively impact flexibility for fishermen to fish when they wanted without fear of derby fishing, particularly for those fishermen who concentrate or more consistently rely on scallop fishery. It could negatively impact those fishermen who use scallop fishing as part of annual rounds, where landings from the fishery may vary considerably from year to year. An individual allocation also negatively impacts the cultural values placed on individual fishing success to the extent that it caps landings, and to the extent that it lays the groundwork for transferability, as such a measure goes against the grain for many fishermen in the Northeast (see introduction to Social Impacts Section). Additionally, allocation of quota in trips rather than in pounds further favors those fishermen who focus on scallop fishing and who tend to land the maximum trip limit, but negatively affects those who catch scallops as bycatch or do not typically land the maximum pounds per directed trip. The modification of the trip limit to 2000 lbs (3.1.2.4.1.1) would enable qualifying general category vessels to minimize the number of trips and hence trip expenses such as fuel, but it would be biased towards larger hulled vessels and larger crews and it could alter the day-boat and small-scale nature of the fishery.

Table 188 looks at changes in the relative share of scallops landed by general category vessels, comparing the homeports share of total allocated scallop pounds (by the 'best year, capped' contribution factor) to the homeports share of general category scallop revenues in 2005. Ports are in order of general category scallop landings, first by county and then by port. A positive number then implies that homeport would see a relative increase in allocated scallop pounds, compared to the most recent fishing year and weighted by the port's dependency on general category scallop landings. Again, this is an approximation at best, for the pounds allocated are not guaranteed and the vessels assigned to a given homeport may no longer actively fish in that port any longer. At best it may give an indication of the directionality and proportionality of possible changes.

Eleven ports see only relatively small (positive or negative) proportional changes. This includes ports with high landed value in absolute terms but low relative port dependency on general category scallop landings, like New Bedford and Cape May; or ports such as Point Pleasant with a fairly high dependency on general category scallop landings, but with current fishermen who have generally been active during the different qualification periods. Eight homeports could see possible positive impacts, in terms of proportionally higher allocations than their share of landings in 2005. For example, Barnegat Light would fare better with the two-year qualification period, implying more of its current fishing vessels have been fishing in only the past two years, and it also fares better with the annual 5000lb qualification, possibly implying that its general scallop fishermen are more dependent on or concentrate more on scallops. For ports such as Barnegat Light, they would see slightly reduced but still positive changes overall if the allocations are weighted by years in the fishery. It is important to keep in mind that these relative impacts are based on a fishing year that was not typical for general category landings, and impacts by port will vary depending on what years are used in this type of analyses.

Fourteen ports show negative proportional changes; of these, those homeports most significant in terms of absolute and relative general category scallop landings, are Atlantic City NJ, Beaufort NC, Ocean City MD, Sneads Ferry NC, New Bern NC, Swan Quarter NC, Tilghman MD. In all cases, general category vessels homeported in these ports either saw zero or very low scallop landings before the control date, hence their proportionally negative impact. Most of these show further negative changes if the allocations are also weighted by years in the fishery (see Table 2). Finally, eight homeports show varied impacts depending on the qualification time period and amount chosen. Some (such as Sandwich MA, Shinnecock NY, Gloucester MA, and Jonesport ME) would be positively impacted by the 11 and 5-yr qualification periods but negatively impacted by the 2-yr qualification period, implying that fishermen homeported in these ports have not fished as much during the past two years as they have in the past. They are more positively impacted when allocations are weighted by years in the fishery. Ports like South Bristol ME would be negatively impacted only by the 5000lb option, implying that their general category fishermen have been active more as seasonal scallop fishermen. Others, like Belhaven and Bayboro NC would be positively impacted by the 2-year period but negatively impacted by the 11 and 5-yr period, implying their fishermen are overall fairly recent, as also shown in Table 189 showing allocations weighted by years in the fishery.

These results would be generally similar for the allocation contribution factor based on best year but not capped to 50,000 (Alternative 3.1.2.3.3). The cap affects only three vessels from three different ports, and only one vessel is significantly affected (for the 11 and 5-yr periods but not the 2-yr period). Removing the cap could result in slightly more positive impacts on Shinnecock, NY if the 11 or 5-yr qualification periods are chosen, but otherwise would have little impact. This alternative is intended to reduce negative impacts on individual vessels due to inaccuracies in the landings data.

**Table 188 - Relative changes in general category scallop landings weighted by homeport dependency, for individual fishing quota (3.1.2.4.1)**

County, ST (GC scallop landings)	Home Port	Relative and Proportional Impact at Home Port Level									Depend- ency*	General category scallop landings, 2005
		11-year qualification			5-year qualification			2-year qualification				
		100	1000	5000	100	1000	5000	100	1000	5000		
Ocean NJ (9,763,422)	Barnegat Light	5	6	12	8	9	14	21	23	29	36	6,651,129
	Point Pleasant	-1	-1	2	0	0	2	6	6	10	23	2,532,974
	Pt. Pleasant Beach	-1	-1	-1	-4	-4	-8	-5	-5	-8	8	149,251
Barnstable MA (4,161,766)	Provincetown	62	65	79	72	75	84	42	43	41	58	1,485,382
	Chatham	25	27	34	31	32	37	7	7	13	38	813,673
	Wellfleet	31	33	43	36	39	44	42	45	47	90	564,263
	Barnstable	5	6	8	7	7	9	-1	-1	-3	18	500,550
	Sandwich	71	71	55	70	72	60	-41	-49	-46	79	259,839
Cape May NJ (3,930,850)	Cape May	-3	-3	-3	-3	-3	-3	-2	-2	-2	5	3,089,329
	Wildwood	-2	-2	-1	-1	-1	0	6	6	7	21	678,469
Atlantic NJ (3,594,082)	Atlantic City	-12	-12	-12	-12	-12	-12	-12	-12	-12	12	2,525,543
Bristol MA (3,057,259)	New Bedford	1	1	1	1	1	1	1	1	1	1	2,731,576
	Westport	-31	-31	-48	-30	-29	-48	-36	-35	-48	48	287,339
Suffolk NY (2,783,760)	Shinnecock	20	21	20	22	22	22	-14	-15	-22	34	980,187
	Montauk	4	4	5	5	5	5	5	4	5	7	507,524
	Greenport	-7	-9	-12	-7	-8	-12	-11	-12	-12	12	115,353
Carteret NC (2,782,220)	Beaufort	-36	-36	-33	-34	-34	-32	-28	-28	-26	63	1,903,030
Hyde NC (1,871,928)	Swan Quarter	-14	-14	-12	-13	-13	-11	-8	-8	-6	28	866,632
Worcester MD (1,790,261)	Ocean City	-41	-40	-39	-39	-39	-38	-42	-42	-43	59	1,790,261
Beaufort NC (1,745,278)	Belhaven	-9	-8	-2	-5	-4	0	10	11	16	59	1,661,893
Essex MA (1,552,064)	Gloucester	14	12	8	4	2	1	-1	-3	-10	39	1,282,849
	Rockport	60	63	36	69	71	38	94	97	64	41	127,604
Newport News VA (1,505,236)	Newport News	-6	-6	-6	-6	-6	-6	-6	-6	-6	6	1,505,236
Washington ME (1,501,709)	Lubec	53	57	59	66	69	65	72	76	70	96	646,565
	Jonesport	66	77	44	43	46	48	-54	-54	-54	54	282,964
Brevard FL (1,452,124)	Cape Canaveral	-11	-11	-7	-10	-9	-5	0	1	6	41	1,452,124
Pamlico NC (1,383,571)	Bayboro	-3	-2	4	0	1	6	12	13	19	38	372,854
	Oriental	-4	-5	-5	-4	-5	-5	-3	-4	-3	9	275,863
Hancock ME (1,192,508)	Stonington	20	21	27	-14	-14	-15	5	5	12	99	791,381
Onslow NC (1,101,916)	Sneads Ferry	-46	-45	-36	-41	-40	-33	-23	-21	-12	100	1,101,916
Craven NC (960,993)	New Bern	-12	-12	-12	-12	-12	-12	-12	-12	-12	12	960,993
Norfolk (City) VA (668,751)	Norfolk	2	2	3	3	3	3	5	5	6	4	668,751
Dare NC (605,119)	Wanchese	0	-1	-1	0	0	-1	2	2	1	6	595,562
Talbot MD (590,418)	Tilghman	-100	-100	-100	-100	-100	-100	-100	-100	-100	100	590,418
York ME (530,157)	Kittery	-93	-92	-98	-98	-98	-98	-98	-98	-98	98	414,110
Rockingham NH (491,455)	Portsmouth	-10	-9	-12	-9	-8	-12	-15	-15	-18	25	437,550
Glynn GA (476,036)	Brunswick	60	63	89	73	76	96	129	132	159	100	476,036
Monmouth NJ	Belmar	121	126	160	138	143	169	208	213	247	78	187,471

(439,728)	Lincoln ME												
(411,719)	South Bristol	1	3	-19	-2	0	-18	19	21	-2	66	313,464	
(313,041)	Washington RI												
(260,648)	Point Judith	3	3	1	3	2	2	1	0	0	2	254,479	
(260,648)	Newport RI												
(260,648)	Newport	-8	-11	-13	-11	-13	-13	-11	-13	-13	13	209,946	

Years are fishing years. Only includes homeport counties that in 2005 had at least 250,000 in general category scallop landings, and homeports with at least 100,000 in general category scallop landings and at least three general category vessels. Dependency means % of general category scallop landings to total homeport, 2005 (i.e. the landed value of those vessels who homeport in that community).

**Table 189 - Best Years Indexed by years active, additional impact on 11-yr period.**

Home Port (County, ST)	q11_100		q11_1000		q11_5000	
	chgindexa	chgindexb	chgindexa	chgindexb	chgindexa	chgindexb
Atlantic City (Atlantic NJ)	-0.08	-0.21	-0.08	-0.21	*	*
Barnegat Light (Ocean NJ)	-0.01	-0.02	-0.01	-0.02	-0.01	-0.01
Barnstable (Barnstable MA)	0.07	0.18	0.07	0.19	0.08	0.20
Bayboro (Pamlico NC)	-0.03	-0.08	-0.03	-0.08	-0.03	-0.08
Beaufort (Carteret NC)	-0.01	-0.03	-0.01	-0.03	-0.01	-0.02
Belhaven (Beaufort NC)	-0.08	-0.19	-0.08	-0.19	-0.08	-0.20
Belmar (Monmouth NJ)	0.00	0.00	0.00	0.00	0.00	0.00
Brunswick (Glynn GA)	-0.02	-0.06	-0.02	-0.05	-0.02	-0.05
Cape Canaveral (Brevard FL)	-0.07	-0.18	-0.07	-0.18	-0.07	-0.17
Cape May (Cape May NJ)	-0.01	-0.03	-0.01	-0.03	-0.01	-0.03
Chatham (Barnstable MA)	-0.01	-0.03	-0.01	-0.03	-0.01	-0.02
Gloucester (Essex MA)	0.03	0.07	0.03	0.08	0.04	0.10
Greenport (Suffolk NY)	-0.07	-0.17	-0.10	-0.25	*	*
Jonesport (Washington ME)	0.02	0.05	0.03	0.07	0.05	0.13
Kittery (York ME)	0.05	0.12	0.05	0.12	*	*
Lubec (Washington ME)	-0.06	-0.16	-0.06	-0.16	-0.06	-0.15
Montauk (Suffolk NY)	0.01	0.04	0.02	0.04	0.03	0.06
New Bedford (Bristol MA)	0.04	0.09	0.04	0.09	0.04	0.09
New Bern (Craven NC)	0.00	0.00	0.00	0.00	*	*
Newport News (VA)	-0.03	-0.08	-0.05	-0.12	-0.05	-0.12
Newport (Newport RI)	0.06	0.15	0.10	0.25	*	*
Norfolk (VA)	0.00	0.01	0.00	0.01	0.00	0.01
Ocean City (Worcester MD)	-0.06	-0.14	-0.06	-0.15	-0.07	-0.18
Oriental (Pamlico NC)	-0.02	-0.05	-0.05	-0.13	-0.05	-0.13
Point Judith (Washington RI)	0.03	0.07	0.04	0.10	0.06	0.15
Point Pleasant Beach (Ocean NJ)	0.08	0.19	0.08	0.19	0.10	0.25
Point Pleasant (Ocean NJ)	0.02	0.05	0.02	0.05	0.02	0.06
Portsmouth (Rockingham NH)	0.04	0.10	0.04	0.10	0.06	0.14
Provincetown (Barnstable MA)	0.08	0.19	0.08	0.19	0.08	0.20
Rockport (Essex MA)	0.01	0.01	0.01	0.01	0.04	0.09
Sandwich (Barnstable MA)	0.10	0.25	0.10	0.25	0.10	0.25
Shinnecock (Suffolk NY)	0.07	0.17	0.07	0.18	0.07	0.18
Sneads Ferry (Onslow NC)	0.01	0.03	0.01	0.03	0.01	0.03
South Bristol (Lincoln ME)	-0.05	-0.13	-0.05	-0.13	-0.05	-0.13
Stonington (Hancock ME)	0.01	0.04	0.02	0.04	0.02	0.06
Swan Quarter (Hyde NC)	-0.04	-0.09	-0.04	-0.09	-0.04	-0.09
Tilghman (Talbot MD)	*	*	*	*	*	*
Wanchese (Dare NC)	-0.03	-0.08	-0.03	-0.08	-0.05	-0.12
Wellfleet (Barnstable MA)	0.05	0.13	0.05	0.13	0.06	0.14
Westport (Bristol MA)	0.00	-0.01	0.00	-0.01	*	*
Wildwood (Cape May NJ)	0.00	-0.01	0.00	-0.01	0.00	-0.01

Scaling this individual allocation into two tiers (3.1.2.4.2) would not impact the vessels that qualify for full-time status, since their trip limit would remain the same (and if the 5000 lb qualification option is chosen, then there will only be full-time vessels). It could however negatively impact those vessels that qualify only for part-time status, since they would be limited to 200 lb trips. As Table 190 shows for vessels qualifying with the 11-yr qualification period, such part-time vessels land the majority of their scallops on trips where scallops are in excess of

200 lbs. Moreover, the distribution of part-time and full-time permits is uneven. With the allocation of pounds being approximately 84-86% for full-time vessels, (depending on whether the 100 or 1000 lb option is chosen), the following ports have more vessels that would qualify for the part-time permit than on average for the east coast. The ports include: Atlantic City NJ, Gloucester MA, Greenport NY, Jonesport ME, Kittery ME, New Bedford MA, New Bern NC, Newport RI, Point Judith RI, Point Pleasant Beach NJ, Portsmouth NH, Rockport MA, Sandwich MA, Shinnecock NY, South Bristol ME, Wanchese NC, and Westport MA (see Table 191). If the vessels from these ports were limited to 200 pounds there could be negative impacts associated with that restriction. For the 100 lb option, Oriental NC also has higher than the norm of part-time allocated lbs (though not for the 1000 lb option). Scaling the individual allocation alternative into three tiers would be roughly similar at the port level as well, but some ports do see some differences (see Table 192). For example, Barnegat Light would see positive impacts, but not as positive as the individual allocation alternative (Alternative 3.1.2.4.1) without tiering, implying that the fishermen homeported there tend to land at the higher end of the tier, but would see their allocation reduced by the average allocation/tier.

**Table 190 - Percentage of scallop trips with greater than 200 lbs of scallops landed, fishing years 1995-2004 (for vessels qualifying under the 11-yr qualification period).**

	Number of vessels	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Full-time tier vessels											
	203	88	78	67	67	67	92	91	89	91	95
Part-time tier (with 100lb criteria chosen)	502	90	59	63	42	67	76	65	63	72	86
Part-time tier (with 1000lb criteria chosen)	256	92	62	62	42	67	78	70	65	68	89

**Table 191 - Homeports with percentage of allocated lbs to full-time permit tier (Alternative 3.1.2.4.2) (11-yr qualification period, 100 and 1000 lb options respectively)**

Atlantic City, NJ	0	0	Chatham, MA	9	96	Newport, RI	0	0	Sandwich, MA	75	77
Barnegat Light, NJ	99	99	Gloucester, MA	5	80	Norfolk, VA	9	98	Shinnecock, NY	84	84
Barnstable, MA	93	94	Greenport, NY	5	0	Ocean City, MD	8	93	Sneads Ferry, NC	10	10
Bayboro, NC	10	10	Jonesport, ME	0	65	Oriental, NC	9	10	South Bristol, ME	0	0
Beaufort, NC	0	0	Kittery, ME	4	0	Point Judith, RI	7	0	Stonington, ME	58	58
Belhaven, NC	94	95	Lubec, ME	0	0	Point Pleasant Beach, NJ	5	65	Swan Quarter, NC	88	90
Belmar, NJ	95	96	Montauk, NY	8	87	Point Pleasant, NJ	3	84	Wanchese, NC	98	10
Brunswick, GA	10	10	New Bedford, MA	7	91	Portsmouth, NH	4	96	Wellfleet, MA	0	0
Cape Canaveral, FL	0	0	New Bern, NC	7	77	Provincetown, MA	5	71	Westport, MA	92	93
Cape May, NJ	99	10	Newport News, VA	3	0	Rockport, MA	1	95	Wildwood, NJ	0	0
	87	87		5	10		5	63		91	93
				5	0		3				

**Table 192 - Relative changes in general category scallop landings weighted by homeport dependency, for individual allocation alternative with three permit types (3.1.2.4.3)**

County, ST (GC scallop landings)	Home Port	Relative and Proportional Impact at Home Port Level									Depend-ency*	General category scallop landings, 2005
		11-year qualification			5-year qualification			2-year qualification				
		100	1000	5000	100	1000	5000	100	1000	5000		
Ocean NJ (9,763,422)	Barnegat Light	-1	0	5	2	3	7	15	16	21	36	6,651,129
	Point Pleasant	-3	-3	-1	-3	-3	-1	4	3	6	23	2,532,974
	Pt. Pleasant Beach	0	1	1	-6	-5	-8	-7	-6	-8	8	149,251
Barnstable MA (4,161,766)	Provincetown	48	52	64	57	61	69	31	33	36	58	1,485,382
	Chatham	11	11	17	16	16	20	3	3	8	38	813,673
	Wellfleet	31	33	47	39	43	53	51	56	66	90	564,263
	Barnstable	5	6	7	7	8	8	-8	-7	-9	18	500,550
	Sandwich	85	89	84	92	102	90	9	-14	-7	79	259,839
Cape May NJ (3,930,850)	Cape May	-3	-3	-3	-3	-3	-3	-2	-2	-2	5	3,089,329
	Wildwood	2	3	6	5	5	7	13	14	16	21	678,469
Atlantic NJ (3,594,082)	Atlantic City	-12	-12	-12	-12	-12	-12	-12	-12	-12	12	2,525,543
Bristol MA (3,057,259)	New Bedford	1	1	1	1	1	1	1	1	1	1	2,731,576
	Westport	-42	-38	-48	-41	-37	-48	-43	-40	-48	48	287,339
Suffolk NY (2,783,760)	Shinnecock	13	16	14	16	17	16	-18	-17	-26	34	980,187
	Montauk	7	6	7	8	7	7	6	5	6	7	507,524
	Greenport	-5	-9	-12	-4	-9	-12	-9	-12	-12	12	115,353
Carteret NC (2,782,220)	Beaufort	-43	-42	-41	-41	-40	-40	-39	-39	-39	63	1,903,030
Hyde NC (1,871,928)	Swan Quarter	-13	-13	-11	-12	-12	-10	-6	-7	-4	28	866,632
Worcester MD (1,790,261)	Ocean City	-40	-39	-37	-38	-38	-36	-43	-42	-43	59	1,790,261
Beaufort NC (1,745,278)	Belhaven	-4	-3	4	1	2	6	21	22	28	59	1,661,893
Essex MA (1,552,064)	Gloucester	15	12	7	8	5	4	-10	-12	-18	39	1,282,849
	Rockport	58	68	63	68	79	69	110	123	111	41	127,604
Newport News VA (1,505,236)	Newport News	-5	-6	-5	-6	-6	-6	-6	-6	-6	6	1,505,236
Washington ME (1,501,709)	Lubec	83	94	104	99	111	114	105	116	119	96	646,565
	Jonesport	93	120	80	75	83	85	-49	-54	-54	54	282,964
Brevard FL (1,452,124)	Cape Canaveral	-15	-14	-11	-13	-13	-10	-4	-4	1	41	1,452,124
Pamlico NC (1,383,571)	Bayboro	-8	-9	-5	-5	-7	-3	4	5	10	38	372,854
	Oriental	-2	-4	-4	-2	-4	-3	0	-2	-1	9	275,863
Hancock ME (1,192,508)	Stonington	36	35	43	2	5	9	38	39	49	99	791,381
Onslow NC (1,101,916)	Sneads Ferry	-47	-45	-37	-42	-41	-34	-22	-20	-11	100	1,101,916
Craven NC (960,993)	New Bern	-12	-12	-12	-12	-12	-12	-12	-12	-12	12	960,993
Norfolk (City) VA (668,751)	Norfolk	3	3	4	3	3	4	6	6	7	4	668,751
Dare NC (605,119)	Wanchese	-2	-2	-3	-1	-2	-3	0	0	-1	6	595,562
Talbot MD (590,418)	Tilghman	-100	-100	-100	-100	-100	-100	100	-100	-100	100	590,418
York ME (530,157)	Kittery	-94	-91	-98	-98	-98	-98	-98	-98	-98	98	414,110
Rockingham NH (491,455)	Portsmouth	-7	-6	-6	-6	-4	-5	-9	-10	-11	25	437,550
Glynn GA (476,036)	Brunswick	92	93	124	108	108	132	178	178	210	100	476,036
Monmouth NJ (439,728)	Belmar	109	114	145	125	129	154	194	199	231	78	187,471
Lincoln ME	South Bristol	-26	-17	-32	-26	-20	-30	-11	-3	-16	66	313,464

(411,719)													
Washington RI (313,041)	Point Judith	4	2	0	4	1	1	3	0	0	2	254,479	
Newport RI (260,648)	Newport	-2	-11	-13	-6	-13	-13	-8	-13	-13	13	209,946	

Years are fishing years. Only includes homeport counties that in 2005 had at least 250,000 in general category scallop landings, and homeports with at least 100,000 in general category scallop landings and at least three general category vessels. Dependency means % of general category scallop landings to total homeport, 2005 (i.e. the landed value of those vessels who homeport in that community).

The stand alone alternative for the individual transferable quota (3.1.2.4.4), which would allow purchasing and trading of quotas from vessels that have historical landings, would create flexibility for those fishermen not receiving any or too little quota. However, a tradable quota system also could result in negative social impacts that have been identified with traditional ITQs, such as industry consolidation (despite the cap) with its potentially negative impacts on community sustainability and values.

The stand alone alternative with a quarterly hard TAC (3.1.2.4.5) could lessen the impacts on those fishermen that have moved cyclically in and out of the scallop fishery, albeit the two permit system would have the same impacts as noted above for 3.1.2.4.2. Additionally, the hard TAC could create conditions for derby fishing, though the quarterly accounting could lessen that tendency. However, while the fleet wide TAC (3.1.2.4.6) would not impact full and part time scallop fishermen differently, it has none of the controls of the previous measures and could result in derby fishing that has long-term negative consequences for the fishery as a whole, and additional negative impacts on small or less mobile vessels who do not fish in all bottoms or in all weather. The TAC with quarterly accounting (3.1.2.4.7), again, could lessen that tendency towards derby fishing somewhat.

### 5.5.1.3 Permit Provisions (3.1.2.5)

Fishing History and Permit Transfers (3.1.2.5.1) are designed to follow the Consistency Amendment. Given however that the general category fishery has been dominated by many small vessels, the initial qualification based on dealer reports may be more difficult for these smaller vessels unless VTR reports are given some consideration, given dealer records are not always specified at the vessel level for smaller vessels. The qualification and retention of permits specified in the sale of vessels (3.1.2.5.1.2) would enable flexibility for fishing participants in line with already negotiated sales, but without creating conditions of overcapacity, while under No Action (3.1.2.5.1.1), the history of a vessel is presumed to stay with the vessel regardless of pre-sale retention agreements, which would negatively affect the participants in these agreements.

Vessel Upgrades (3.1.2.5.2) and Vessel Replacements (3.1.2.5.3) have the potential to help sustain the small, day-boat, owner-operated character of the fishery and the communities that participate in it. The no-upgrade restriction (3.1.2.5.2.1), while positively impacting participants at the vessel level in the short-term, could have negative social consequences if it leads to overfishing or if it changes the small, day-boat character that is still preferred by participants overall, although if trip limits of 400 lbs continue this may be unlikely. The 10:10:20 upgrade restriction (3.1.2.5.2.2) would allow some restricted upgrading, which again could positively impact fishermen, especially given many general category fishermen participate in other fisheries as well throughout the year, while still preserving the day-boat fishery.

Provisions concerning the Stacking of Permits (3.1.2.5.4) address questions of vessel and fishery sustainability. Given the lack of data concerning the prevalence of owner-operations or fleet boats in the fishery, it is difficult to predict impacts with any precision. If many vessels qualify and allocations are therefore low, it may be difficult for vessels that depend on the fishery to make a living from it, or sustain their business. Particularly if leasing is allowed, stacking of permits would help the viability of participants, in particular those who depend primarily on the fishery (3.1.2.5.4.3). However, stacking could lead to pressures for consolidation with possible negative impacts at the community level and negative impacts on cultural values emphasizing the small, day-boat character of the fishery, which No Action (3.1.2.5.4.1) would address. Both Voluntary Relinquishment of Eligibility (3.1.2.5.5) and Permit Splitting (3.1.2.5.6) measures would be in line with the Consistency Amendment, and would not have any foreseeable major social impacts, albeit any positive ones associated with reducing capacity, and negative ones associated with the difficulties for young community members to gain access to the fishery, and ensuing issues for community sustainability. Likewise, Permit Renewals and Confirmation of Permit History (3.1.2.5.7) would enable fishermen to retain fishing history privileges, positively impacting their fishing businesses and the communities that depend on them. The Percentage Ownership Restriction (3.1.2.5.8) would stem some of the pressures towards consolidation, with positive implications for community sustainability and for those who value the small day-boat nature of the fishery; again, it is difficult to ascertain that with precision, given the lack of data concerning the prevalence of owner-operations or fleet boats in the fishery.

#### **5.5.1.4 Measures to reduce incentive to use trawl gear (3.1.2.6)**

Almost  $\frac{3}{4}$  of all general category scallop trips in 2005 involved the use of the scallop dredge (Table 193). Using the longest time period for qualification (11 years) and the most inclusive qualification criteria (one trip of 100 lbs or more), most vessels would not be negatively affected by the option to prohibit a vessel from switching to trawl if it qualified using dredge gear (3.1.2.6.2), compared to the No Action measure (3.1.2.6.1). Moreover, if trawl gear does in fact favor small scallops with negative consequences for biomass and the health of the fishery, then ensuring that the trawl fishery does not increase in the future, could have positive social impacts in the long-term. Of the 452 general category vessels whose landings are recorded in logbook records and appear to qualify via at least one of the qualification criteria, over half (185) used only scallop or other dredge to land scallops, and 195 vessels used trawl gear only. This leaves 72 vessels that used a combination of dredge and trawl during the 11-year qualification period to catch scallops. Of these vessels, most do not catch the majority of their scallops with trawl gear, so the rule would result in some loss of income and some inconvenience to fishermen on mixed trips. Five vessels saw the majority of their landings with trawl but also did use dredge during the qualification period as well. These vessels would be required to use dredge only so would be negatively affected by the ruling. However, in 2006 one of these vessels was using only dredge so may have already made the adjustments to this rule, and only one was fishing still with trawl (the other 3 showed no logbook landings of scallops in 2006). Impacts at the port level therefore would presumably be minimal, but some impacts are expected on an individual basis.

**Table 193 - 2005 General category scallop trips by gear used (for all vessels)**

Gear type	No. of Trips	Scallop lbs, total	Percent of scallop lbs
Dredge, Scallop	13,928	4,537,769	72.3
Dredge, Other	950	199,673	3.2
Scallop Trawl	2,153	769,739	12.3
Other Trawl	2,571	768,531	12.2
Misc. gear	1	863	0.0
		6,276,575	100.0

The lower possession limit for trawl vessels (3.1.2.6.3), or the measure to limit scallop trips to 5% of regulated species (3.1.2.6.4), could have less negative impact on trawl fishermen compared to 3.1.2.6.2, in that they could continue to use trawl on mixed trips without having to throw out all scallops, or haul out for new gear. At the port level, impacts are minimal (using the most inclusive, 11 year, 100lb qualification criteria), based on logbook records for fishing year 2005. Table 194 below shows the percentage loss for these different measures (3.1.2.6.3.1, a 250lb possession limit, 3.1.2.6.3.2, a 300lb possession limit, and the 5% regulation) compared to the value of general category in fishing year 2005. No measure had an impact of 10%, and only the 5% rule had a greater than 5% impact, yet on a port that had only 9% dependency on general category scallop landings. (Not all vessels that would qualify for a limited access general category permit showed landings during fishing year 2005, so it is unknown the degree to which this might over or understate port level impacts.)

**Table 194 - Homeport level impacts from trawl measures**

Homeport	General category scallop landings, 2005	Dependency	% impact from 3.1.2.6.3.1	% impact from 3.1.2.6.3.2	% impact from 3.1.2.6.4
Bayboro, NC	372,854	37.8	0	0	1
Beaufort, NC	1,903,030	62.8	3	2	1
Belhaven, NC	1,661,893	59.2	3	2	1
Cape Canaveral, FL	1,452,124	40.7	2	1	0
Montauk, NY	507,524	6.6	3	3	3
New Bedford, MA	2,731,576	1.4	1	0	0
Norfolk, VA	668,751	4.4	2	2	1
Oriental, NC	275,863	8.9	4	2	7
Point Pleasant Beach, NJ	149,251	8.1	3	2	0
Swan Quarter, NC	866,632	28.0	2	1	4
Wanchese, NC	595,562	5.9	1	1	0

2005 fishing year only; based on raw uncorrected data. Only includes homeport counties that in 2005 had at least 250,000 in general category scallop landings, and homeports with at least 100,000 in general category scallop landings and at least three general category vessels. Dependency means % of general category scallop landings to total homeport, 2005 (i.e. the landed value of those vessels who homeport in that community).

### 5.5.1.5 Sectors and Harvesting Cooperatives (3.1.2.7)

Cooperatives and sectors have the potential to provide flexible opportunities for participants to remain in the fishery under various biomass conditions, to create more participatory governance that can address such questions as capacity and other social issues in culturally appropriate ways. Thus there is the potential for positive social, economic, and ecological impacts to the degree that sectors/cooperatives are successfully run. As many scoping comments noted though, the fishery will be in some flux if a limited access measure is implemented, so the measure may be somewhat premature, but does allow the flexibility to pursue alternative management regimes in the future. However, as one scoping comment noted, depending on the amount and internal allocations within a sector, the historic characteristic of a day-boat fleet could be changed if the sectors members are able to fish like offshore boats on multiple day trips.

#### **5.5.1.6 Interim measures for transition to limited entry (3.1.2.8)**

Overall both these alternatives are not expected to have substantially different impacts from the No Action/ Status Quo alternative for allocation. Section 5.4.12 summarizes the expected economic impacts from these measures.

#### **5.5.2 Hard Total Allowable Catch (3.1.3)**

Although scooping comments revealed general support for different kinds of hard TAC, a fleet-wide TAC has the potential to create derby-fishing conditions, with all the negative social impacts that can ensue from unsafe fishing practices, oversupply of product and consequences for shore-side industries and consumers, and overcapitalization in the fishery. Moreover, a fleet-wide TAC that leads to derby fishing tends to favor large boats over small ones, with negative consequences for the historical character of the general category fishery.

#### **5.5.3 Northern Gulf of Maine Scallop Management Area (3.1.4)**

The application of Amendment 11 measures without special provisions for geographical differences (3.1.4.1) could unevenly affect those participants, namely in Northern Maine, who may have pursued the fishery differently than other participants, i.e. a longer history of involvement but not in recent years due to resource conditions, use of scallop fishery in flexible annual rounds that may vary seasonally and annually, and so on. The creation of a Northern Gulf of Maine scallop area (NGOM) in which Amendment 11 does not apply (3.1.4.2) could positively impact these general category fishermen who have traditionally fished only in the NGOM as part of flexible annual rounds, but who may not qualify under Amendment 11 measures that, depending on which measures are chosen, may not incorporate such fishing into qualification criteria. Although the total amount of scallops caught in the NGOM over the 11-year period of 1994 – 2004 (using option A) by general category scallop fishermen who would not qualify (under the 11-yr, 100lb criteria) is only 13%, such impact is not evenly distributed. Over half of these landings (54%) come from just five ports, most of which are in Downeast Maine and whose landings come from closely surrounding waters: Bucks Harbor ME, Jonesport ME, Gloucester MA, Brooklin ME, and Sorrento ME. Of these, while only about 4% of Gloucester's general category scallop landings came from the NGOM (option A) by vessels who would not qualify (under the 11-yr, 100lb criteria), over 57% of Bucks Harbor's and Jonesport's came from such fishermen, and all of Brooklin's and Sorrento's landings came from these non-qualifiers. Hence, the impact of a NGOM management area (3.1.4.2) could potentially impact only a small number of ports, but ports where the positive impacts are substantial, in that they are places often heavily dependent on fishing.

It should be noted that vessel fishing location data is based on logbook data, and not all vessels who appear to have landings in logbooks have qualified for a limited access general category permit on dealer data alone. If these vessels then do qualify for such a permit in an appeals process, then this analysis might be overstating the positive impacts of this measure. On the other hand, because this measure is open to any vessel with a VMS-1B general category permit, access to the area would not be restricted to those who may have traditionally fished there and the measure would not reap the social and ecological benefits associated with locally-controlled or community-based management, and could—if resource conditions improve—create an influx of effort and potentially derby fishing conditions with a hard TAC.

A NGOM limited entry program (3.1.4.3) would share a number of the possibly negative impacts from 3.1.4.2: a hard TAC could potentially lead to derby fishing; and the non-exclusivity of the area (a vessel that qualifies for a limited entry general category permit could fish there, whether or not they have a NGOM-only permit) would not enhance locally-controlled or community-based management or participatory governance. As well, the NGOM limited entry measure would be available only to those vessels who qualify under the 11-yr, 100lb criteria, potentially excluding those participants who have fished traditionally as part of a regional flexible annual round (unless logbook records qualify these vessels who do not appear in the dealer records). The restriction of the NGOM permit to fish only in the NGOM would further impact vessels negatively, for while some vessels do fish exclusively in the NGOM (particularly non-qualifiers), they do not always, and many Maine fishermen have relied on other areas such as Cape Cod waters, when the resource conditions in Maine are poor. The restriction of vessels to a particular area has more merit in social and ecological terms when it is coupled with the ability to restrict access (i.e. locally-based or community-based management), which this measure does not institute.

#### **5.5.4 Monitoring Provisions (3.1.5)**

Requiring some form of monitoring in addition to VTR's would enable NMFS to better monitor either quotas or TACs, which would provide long-term benefits to the industry by ensuring overall compliance and helping to stabilize resource conditions compared to No Action (3.1.5.1). Additional monitoring does incur negative burdens on fishing participants in terms of increased time and general hassle, but given that active vessels already have in place VMS, measure 3.1.5.2 would presumably not create major negative impacts. Alternative 3.1.5.3 that requires reporting through IVR is not expected to have social impacts either.

#### **5.5.5 Limited access fishing under general category rules (3.1.6)**

Continuing to allow limited access vessels to fish under general category rules (3.1.6.1.1) or continuing to allow only those who would qualify under the same criteria proposed for general category vessels (3.1.6.1.2), could negatively impact general category vessels (particularly if these limited access landings are deducted from the general category TAC as in 3.1.6.2.1), and contribute to a sense of unfair treatment between the two fleets (though to a lesser extent if limited access vessels are separated by their own TAC as in 3.1.6.2.2). Such measures would of course be a positive impact for those limited access vessels that fish off their DAS, who would be negatively affected by the complete prohibition of this practice (3.1.6.1.4). However, to what extent this occurs is difficult to parse from the data, given difficulties merging call-in data with weighout data by date. An initial list of potential limited access vessels who may be fishing off DAS as general category vessels (which would include trips that should merge with call in data but which do not because dates are not consistent) appears to show that up to 87 vessels in 2004 might be engaging in the general category fishery, most of which are full-time vessels, with over half of these landings by part-time limited access vessels. Thus restricting general category fishing by limited access to only part-time or occasional (3.1.6.1.3) would have less negative impact on general category fishermen, but a positive impact centered on those fishermen who have less allocation to begin with.

### **5.5.6 Allocation between limited access and general category fisheries (3.1.7)**

Continuing to set a non-binding TAC (No Action, 3.1.7.1) would avoid the negative social impacts associated with a hard TAC and derby fishing; however the possibility of exceeding soft TAC limits has long-term social and ecological impacts from the health of the fishery. Setting a fixed allocation of the total available scallop harvest to the general category fleet (3.1.7.2) would preclude such problems, though depending on how the fishery is regulated when the TAC is reached, negative social impacts could ensue from, for example, derby fishing.

For the yellowtail flounder bycatch TAC in access areas, continuing with No Action (3.1.7.3.1) would negatively impact those vessels that are less likely to fish in the early winter months (i.e. small vessels, so predominantly the general category fleet) if the larger limited access fleet quickly reaches the overall 10% TAC for the scallop fishery as a whole. Allocating a percentage of the bycatch TAC to the general category fishery (3.1.7.3.2) would mitigate that issue, for inter-fleet differences (though not for intra-fleet differences in capability). However, the measure does continue to allow only the limited access vessels to land yellowtail, while the general category fleet cannot, which undoubtedly will cause the persistence of general displeasure from throwing catch overboard.

### **5.5.7 Incidental Catch (3.1.8)**

This measure continues the allowance of incidental bycatch of scallops up to 40 lbs (3.1.8.1.). Given that only low mortality from incidental catch is expected, the impacts to the scallop fleet should be low. The impacts of the incidental catch permit alternative (allow a vessel to possess/land and sell up to 40 pounds per trip) will have positive impacts on vessels that do not qualify for a limited access general category permit because it will allow them to still earn some income from scallops under the incidental catch permit. Furthermore, this alternative may provide more flexibility for vessels that do qualify for the limited access general category permit but opt for this permit instead, if fishing for more trips under 40 pounds is more advantageous than fishing for scallops under the 400 pound permit.

### **5.5.8 More Timely Integration of Data (3.2)**

Keeping the scallop fishing year at March 1 (No Action, 3.2.1) would create no negative impacts in the short-term on the fleet associated with changes in business or fishing practices. It would however, continue problems resulting from mis-estimation of TACs and the need for compensatory regulatory action, and the fact that actions are not implemented at the start of the fishing year. These problems indirectly cause problems for fishermen from the constant barrage of regulatory action, which itself can unsettle business and fishing practices. Changing the general category permit to March 1 to be in line with the limited access fishery (3.2.1.1) would create consistency in the fishery, but would not address the problems above. Moreover, it would create complications for the general category fleet, many of whom do participate in other fisheries which have the more common May 1 start date. If the start of the fishing year is changed to May 1 (3.2.2), then consistency would be created across most fisheries and regulatory action might be more consistently applied depending on timing of research surveys, with positive benefits for the fishery, though there would be the cost associated if fishermen had to change their fishing practices in any way. This would also be the case if the fishing year were changed to August 1 (3.2.3), and though this would more likely insure timely integration of data given the current survey schedule, it would not have any of the possible benefits associated with creating

consistency across all fisheries, which might be positive for those fishermen who participate in more than one fishery.

## **5.5.9 Other measures**

### **5.5.9.1 Trawl gear restrictions (3.3.1)**

Clarification of trawl gear restriction for vessels fishing under a multispecies or monkfish DAS (3.3.1.2) would positively impact those general category vessels that have been restricted by the trawl net sweep regulation, even when catching scallops only incidentally, as in No Action (3.3.1.1). Given its application to a fishery with only incidental catch, it is not expected to have negative impacts on the scallop fishery overall.

### **5.5.9.2 Possession limit of 50 bushels (3.3.2)**

Setting the possession limit of 50 bushels to apply only shoreward of VMS demarcation line (3.3.2.2) would more fairly allow general category fishermen who retain unshucked scallops to reach the 400lb limit of scallop meat, compared to No Action (3.3.2.1) which would limit possession to 50 bushels at all times. This new measure would only be of positive benefit to those fishermen who are able to shuck before they reach the demarcation line though, and given the lack of data on how many fishermen land in shell, it is difficult to predict the magnitude of impact.

## **5.6 OTHER IMPACTS**

### **5.6.1 Other fisheries**

This section summarizes the impacts of the alternatives under consideration on other fisheries that general category vessels may be involved in, or other fisheries that could be impacted by the measures under consideration.

#### **5.6.1.1 Measures to control capacity and mortality in the general category scallop fishery**

##### **5.6.1.1.1 No Action**

Based on recent trends in the general category fishery, this alternative makes it difficult for the Scallop FMP to prevent overfishing (Section 5.1.1.1). The general category fishery is open access and if conditions are right in terms of scallop price and availability of resource relatively close to shore, the only limit on general category effort is a possession limit. The No Action alternative could have positive impacts on other fisheries by relieving pressure on other fisheries if vessels continue to fish under general category. However, the true impact of the No Action alternative on other fisheries is difficult to predict because the overall nature of the general category fishery is opportunistic. While some vessels have historically participated in the general category fishery consistently, it is not usually a year round directed fishery. In recent years some vessels have become more dependent on scallops (See ) but many vessels still fish in other fisheries and fish for scallops under general category. Furthermore, if conditions decline in the general category fishery, these vessels could return to other fisheries they have permits for, so the overall impacts on other fisheries is uncertain.

##### **5.6.1.1.2 Limited Entry**

In order to fish under general category rules a vessel would have to qualify for a limited access general category permit. Limited entry in and of itself could have negative impacts on other fisheries because vessels that do not qualify may increase effort in other fisheries to make up for revenue losses. However, many of the vessels that may not qualify have not had a large dependence on scallops, so their fishing activity in other fisheries may not change much. However, there are some vessels particularly those that got a permit after the control date that have developed a high dependence on scallops in recent years. Table 195 shows that about 20 vessels from New England that got their permit after the control date have landed scallops in 2005 and 2006. The percent of total revenue from scallops for these vessels was about 85% in 2005 and 78% in 2006. And for the Mid Atlantic region, over 60 vessels have become active in the general category fishery with permits after the control date and their landings and percent revenue from scallops is about 88% and 95% for 2005 and 2006. It is likely that the other fisheries these vessels were involved in before 2005 may be subject to more fishing pressure compared to recent years if these vessels plan to maintain the same total revenue as they did in 2005 and 2006.

As for vessels with a permit before the control date, their dependence on scallops in recent years is lower overall. The average scallop pounds and revenue per vessel is similar to vessels with a permit after the control date by region, but the percent of total revenue from scallops is much

lower for the qualifying vessels. In general, vessels in the Mid-Atlantic seem more dependent on scallop revenue in recent years, compared to vessels from New England.

**Table 195. Landings and Revenues by general category vessels by permit date and primary region of landing**

Permit Before the control date	REGION	Data	2005 Fishyear	2006 Fishyear <sup>(1)</sup>
NO	New England	Number of active vessels	20	21
		Scallop lb. per vessel (\$)	5,080	6,322
		Scallop revenue per vessel (\$)	40,103	43,716
		Total revenue per vessel (\$)	49,330	58,268
		Total scallop landings	101,598	132,772
		% of revenue from scallops	84.80%	77.88%
		Total scallop revenue (\$)	802,061	918,041
		Total revenue (\$)	986,604	1,223,635
	Mid Atlantic	Number of active vessels	61	67
		Scallop lb. per vessel (\$)	21,987	13,905
		Scallop revenue per vessel (\$)	171,512	86,899
		Total revenue per vessel (\$)	186,774	93,324
		Total scallop landings	1,341,179	931,617
		% of revenue from scallops	88.06%	95.10%
Total scallop revenue (\$)		10,462,252	5,822,243	
Total revenue (\$)		11,393,234	6,252,721	
YES	New England	Number of active vessels	266	249
		Scallop lb. per vessel (\$)	6,094	7,825
		Scallop revenue per vessel (\$)	48,739	51,702
		Total revenue per vessel (\$)	257,071	180,653
		Total scallop landings	1,620,977	1,948,380
		% of revenue from scallops	41.82%	47.90%
		Total scallop revenue (\$)	12,964,619	12,873,773
		Total revenue (\$)	68,380,810	44,982,641
	Mid Atlantic	Number of active vessels	250	195
		Scallop lb. per vessel (\$)	16,751	11,907
		Scallop revenue per vessel (\$)	124,320	70,359
		Total revenue per vessel (\$)	312,063	133,002
		Total scallop landings	4,187,718	2,321,836
		% of revenue from scallops	61.69%	70.06%
Total scallop revenue (\$)		31,080,079	13,719,921	
Total revenue (\$)		78,015,805	25,935,420	
Total Number of vessels			597	532 <sup>(2)</sup>

(3) The data for 2006 fishyear is preliminary and includes data up to Jan.18, 2007. This data may not yet include all the revenues from other species, thus could underestimate total revenue and/or overestimate percentage of scallop revenue in total revenue.

(4) There 543 vessels that landed scallops in 2006, but some of these vessels did not have complete revenue information, thus not included in the Table.

Table 196 is the composition of total revenue by qualification landing and time period alternatives based on landing criteria from the 2005 fishing year. The number of vessels per alternative, and their average scallop revenue for 2005 compared to revenue from other fisheries is described. Fishing year 2005 is the most recent fishing year with complete landings

information to compare scallop and other fishery revenues. General category scallop landings and revenues were high for this particular fishing year compared to other years so these dependence percentages are probably an overestimate compared to earlier years. Overall, the percent of total revenue from scallops is higher for vessels that had a permit before the control date and are going to qualify under the different qualification alternatives, as compared to vessels that had a permit before the control date and will not qualify. For example, for the 11 year period alternative and 100 pound landings criteria 318 vessels that fished in 2005 will qualify and these vessels had an average of 50% dependence scallop revenue, compared to the 46 vessels that fished that year and will not qualify. These vessels had an average of 22% of total revenue from scallops. Note that for this same alternative there are 152 vessels that had a permit before the control date and fished in 2005 but will not qualify for the 100 pound criteria. These vessels on average had 62% of total revenue from scallops for 2005. The vessels that are not going to qualify will likely participate in other fisheries to gain revenue lost, but effort in those fisheries may not increase because many of the other fisheries in this region have individual or total limits on effort. For example, if a vessel with a multispecies permit does not qualify for a limited access general category permit, overall fishing pressure in the multispecies fishery may not increase as a result of limited entry in the general category fishery because that vessel is only permitted to fish up to a certain amount under the Multispecies FMP as it is.

**Table 196 - Composition of total revenue by qualification criteria and time period alternatives in 2005 fishing year.**

Time Period	Qualification lb. Criteria	Qualify	Number of active vessels	Scallop Revenue as a % of Total Revenue	Average scallop revenue per vessel (\$)	Average Revenue from other species per vessel	Average scallop revenue per vessel (\$)	Total scallop revenue (\$)	Total revenue (\$)
<b>General category vessels that had a permit before the control date</b>									
11 Years	Not active	NO	152	62%	86,069	133,974	220,043	13,082,434	33,446,503
	100	NO	46	22%	38,431	336,142	374,573	1,767,825	17,230,372
		YES	318	50%	91,806	209,199	301,005	29,194,439	95,719,740
	1000	NO	130	24%	41,490	347,717	389,207	5,393,692	50,596,884
		YES	234	60%	109,267	157,199	266,467	25,568,572	62,353,228
	5000	NO	233	28%	42,152	312,814	354,966	9,821,372	82,707,035
		YES	131	80%	161,381	69,482	230,863	21,140,892	30,243,077
	5 years	Not active	NO	172	58%	81,021	148,091	229,112	13,935,636
100		NO	43	24%	37,044	288,418	325,462	1,592,874	13,994,860
		YES	301	51%	94,738	214,213	308,952	28,516,188	92,994,449
1000		NO	120	23%	39,283	345,405	384,688	4,713,964	46,162,614
		YES	224	61%	113,371	158,177	271,548	25,395,098	60,826,695
5000		NO	214	29%	42,581	316,778	359,359	9,112,295	76,902,805
		YES	130	80%	161,514	69,921	231,435	20,996,767	30,086,504
2 Years		Not active	NO	210	54%	77,154	177,612	254,766	16,202,289
	100	NO	36	24%	34,371	244,157	278,528	1,237,369	10,027,021
		YES	270	53%	98,537	208,384	306,921	26,605,040	82,868,719
	1000	NO	105	26%	42,961	312,458	355,419	4,510,888	37,318,958
		YES	201	62%	116,077	160,424	276,501	23,331,521	55,576,782
	5000	NO	192	31%	44,868	297,568	342,436	8,614,703	65,747,782
		YES	114	81%	168,664	69,476	238,140	19,227,706	27,147,958
	<b>General category vessels that had a permit after the control date</b>								
From March 2005 to Jan.2006		NO	81	87%	139,066	13,772	152,838	11,264,313	12,379,838

Table 197 includes landings and revenue information for other fisheries compared to scallop for several years, 2002-2005. Note that the revenue information for 2005 is preliminary so probably underestimates revenue in other fisheries, particularly the clam fishery. This table describes the composition of revenue for general category vessels by category of dependence on scallop revenue (less than 10%, 10-29%, 30-59%, 60-89% and over 90%). The average number of trips per year has remained similar for each dependence category. In terms of revenue from other fisheries, vessels that depend less on scallops (<10%) seem to depend more on groundfish, clam, squid, fluke and monkfish. Over the last few years the total revenue from these fisheries have fluctuated, while average revenue from scallops has increased. Total revenue for these vessels from clams has reduced while revenue from monkfish and lobster have increased. Revenue from groundfish, fluke and squid have remained similar from 2002 to 2005. Vessels that have been somewhat dependent on scallops (10-29% of total revenue) have seen an increase in revenue from scallops on average. Dependence on other fisheries for this group seems to vary year to year. In some years fluke was an important source of income, some years lobster and other years groundfish. The number of vessels that have become more dependent on scallop revenue has increased with time (30-59% and 60-89%). The primary other sources of revenue for these vessels (for these years) are groundfish, monkfish and fluke. Lastly, the number of vessels that

depend on scallop revenue for over 90% of total revenue has increased in recent years. These vessels are landings hardly anything else as compared to scallops.

**Table 197 - Composition of revenue for general category vessels by % revenue from scallops**

		All vessels that had a permit before control date				
		FISHYEAR				
DEPENDCAT	Data	2002	2003	2004	2005	Grand Total
LT 10%	Number of vessels	170	174	208	152	704
	Number of trips per vessel	5.4	5.0	5.6	4.7	5.2
	Avg. scal.landings per vess.	784	768	1,251	1,261	1,021
	Scallop revenue per vessel	\$ 3,046	\$ 3,264	\$ 5,685	\$ 6,990	\$ 4,731
	SHRIMPREV per vessel	\$ 5,494	\$ 3,844	\$ 2,750	\$ 256	\$ 3,145
	SURFCLAMREV per vessel	\$ 20,529	\$ 36,685	\$ 19,295	\$ 842	\$ 19,907
	OTHCLAMREV per vessel	\$ 28,292	\$ 43,460	\$ 48,768	\$ 2	\$ 31,982
	MONKREV per vessel	\$ 15,105	\$ 14,322	\$ 26,816	\$ 39,963	\$ 23,739
	FLUKEREV per vessel	\$ 26,016	\$ 37,865	\$ 31,130	\$ 34,208	\$ 32,224
	LOLISQUIREV per vessel	\$ 40,539	\$ 32,218	\$ 23,753	\$ 35,529	\$ 32,441
	SILHAKEREV per vessel	\$ 9,659	\$ 10,611	\$ 4,077	\$ 10,914	\$ 8,516
	LOBREV per vessel	\$ 4,854	\$ 5,799	\$ 11,739	\$ 16,564	\$ 9,650
	GRDREV per vessel	\$ 133,215	\$ 116,998	\$ 147,903	\$ 166,329	\$ 140,696
	HERREV per vessel	\$ 346	\$ 47	\$ 138	\$ 1,429	\$ 445
	OTHREV per vessel	\$ 37,274	\$ 36,454	\$ 46,729	\$ 51,884	\$ 43,019
Total revenue per vessel	\$ 338,494	\$ 351,165	\$ 368,264	\$ 417,539	\$ 367,488	
10%-29%	Number of vessels	28	31	33	32	124
	Number of trips per vessel	16	21	22	19	20
	Avg. scal.landings per vess.	4120	6267	6433	5177	5545
	Scallop revenue per vessel	\$ 17,005	\$ 28,237	\$ 32,345	\$ 37,185	\$ 29,103
	SHRIMPREV per vessel	\$ 3,564	\$ 4,523	\$ 2,727	\$ 12	\$ 2,664
	SURFCLAMREV per vessel	\$ -	\$ -	\$ 8,830	\$ 1,550	\$ 2,750
	OTHCLAMREV per vessel	\$ -	\$ -	\$ 29,325	\$ -	\$ 7,804
	MONKREV per vessel	\$ 8,850	\$ 7,535	\$ 14,666	\$ 11,667	\$ 10,796
	FLUKEREV per vessel	\$ 12,354	\$ 19,277	\$ 31,710	\$ 23,431	\$ 22,095
	LOLISQUIREV per vessel	\$ 2,580	\$ 3,644	\$ 20,160	\$ 20,401	\$ 12,123
	SILHAKEREV per vessel	\$ 3,460	\$ 1,356	\$ 648	\$ 3,311	\$ 2,147
	LOBREV per vessel	\$ 261	\$ 12,667	\$ 411	\$ 13,952	\$ 6,936
	GRDREV per vessel	\$ 43,459	\$ 54,098	\$ 22,076	\$ 29,219	\$ 36,753
	HERREV per vessel	\$ -	\$ 553	\$ 5	\$ 10	\$ 142
	OTHREV per vessel	\$ 14,959	\$ 15,994	\$ 31,663	\$ 35,120	\$ 24,866
Total revenue per vessel	\$ 100,557	\$ 145,291	\$ 195,113	\$ 199,303	\$ 162,388	
30%-59%	Number of vessels	14	23	33	45	115
	Number of trips per vessel	30	40	36	37	36
	Avg. scal.landings per vessel	10219	13871	13230	9877	11679
	Scallop revenue per vessel	\$ 47,980	\$ 1,741	\$ 60,715	\$ 6,094	\$ 69,301
	SHRIMPREV per vessel	\$ 2,475	\$ ,028	\$ 122	\$ 397	\$ 697
	SURFCLAMREV per vessel	\$ -	\$ -	\$ -	\$ 4,971	\$ 1,945
	OTHCLAMREV per vessel	\$ -	\$ -	\$ -	\$ 647	\$ 253
	MONKREV per vessel	\$ 24,926	17,674	\$ 4,127	7,927	\$ 10,855
	FLUKEREV per vessel	\$ 4,788	\$ 29,008	\$ 49,048	\$ 28,284	\$ 31,527
	LOLISQUIREV per vessel	\$ 10	\$ 355	\$ 3,065	\$ 4,156	\$ 2,578
	SILHAKEREV per vessel	\$ 5,617	\$ 212	\$ 160	\$ 883	\$ 1,117
	LOBREV per vessel	\$ 832	\$ 149	\$ 3,743	\$ 3,051	\$ 2,399
	GRDREV per vessel	\$ 36,019	\$ 11,188	\$ 14,810	\$ 15,764	\$ 17,041
	HERREV per vessel	\$ -	\$ -	\$ 8	\$ 2	\$ 3

	OTHREV per vessel	\$ 11,314	\$ 13,782	\$ 15,237	\$ 27,284	\$ 19,182
	Total revenue per vessel	\$ 125,358	\$ 136,086	\$ 153,239	\$ 197,119	\$ 163,584
60%-89%	Number of vessels	11	15	33	65	124
	Number of trips per vessel	27	42	46	62	52
	Avg. scal.landings per vessel	21034	13232	16355	21124	18892
	Scallop revenue per vessel	\$ 88,740	\$ 61,425	\$ 76,710	\$ 161,731	\$ 120,495
	SHRIMPREV per vessel	\$ 242	\$ 715	\$ -	\$ 26	\$ 121
	SURFCLAMREV per vessel	\$ -	\$ -	\$ -	\$ 929	\$ 487
	OTHCLAMREV per vessel	\$ -	\$ 23	\$ -	\$ 10	\$ 8
	MONKREV per vessel	\$ 11,897	\$ 11,736	\$ 5,376	\$ 3,311	\$ 5,641
	FLUKEREV per vessel	\$ 15,994	\$ 4,992	\$ 4,508	\$ 22,036	\$ 14,774
	LOLISQUIREV per vessel	\$ 27	\$ 104	\$ 304	\$ 745	\$ 486
	SILHAKEREV per vessel	\$ 14	\$ 11	\$ -	\$ 30	\$ 18
	LOBREV per vessel	\$ 66	\$ 150	\$ 280	\$ 2,021	\$ 1,158
	GRDREV per vessel	\$ 6,209	\$ 2,783	\$ 2,388	\$ 4,454	\$ 3,858
	HERREV per vessel	\$ -	\$ -	\$ -	\$ 2	\$ 1
	OTHREV per vessel	\$ 1,972	\$ 7,173	\$ 12,253	\$ 14,084	\$ 11,687
	Total revenue per vessel	\$ 124,647	\$ 87,778	\$ 101,695	\$ 224,698	\$ 166,525
90% or more	Number of vessels	76	83	118	206	483
	Number of trips per vessel	24	33	36	51	40
	Avg. scal.landings per vess.	6074	9057	16524	16310	13505
	Scallop revenue per vessel	\$ 29,605	\$ 43,672	\$ 87,267	\$ 132,360	\$ 89,935
	SHRIMPREV per vessel	\$ -	\$ -	\$ 5	\$ 27	\$ 13
	SURFCLAMREV per vessel	\$ -	\$ -	\$ -	\$ 18	\$ 8
	OTHCLAMREV per vessel	\$ 1	\$ 0	\$ -	\$ 10	\$ 5
	MONKREV per vessel	\$ 123	\$ 122	\$ 122	\$ 531	\$ 297
	FLUKEREV per vessel	\$ 1	\$ 23	\$ 33	\$ 137	\$ 71
	LOLISQUIREV per vessel	\$ -	\$ -	\$ 1	\$ 25	\$ 11
	SILHAKEREV per vessel	\$ -	\$ -	\$ -	\$ 9	\$ 4
	LOBREV per vessel	\$ -	\$ -	\$ 54	\$ 27	\$ 25
	GRDREV per vessel	\$ 51	\$ 101	\$ 191	\$ 272	\$ 188
	HERREV per vessel	\$ -	\$ -	\$ -	\$ 14	\$ 6
	OTHREV per vessel	\$ 106	\$ 3	\$ 141	\$ 765	\$ 378
	Total revenue per vessel	\$ 31,491	\$ 43,902	\$ 89,229	\$ 134,768	\$ 91,777

#### 5.6.1.1.2.1 Allocation of access for general category limited access qualifiers

The DSEIS includes several alternatives for allocation combined with limited entry. Most of these alternatives include an individual allocation program. In general, the impacts on other fisheries from all the individual allocation alternatives are expected to be similar because there is a total amount of effort per vessel that will be permitted under each alternative. The option to allocate in pounds versus trips may change fishing behavior which could have impacts on other fisheries, but the direction of that impact is uncertain. For example, if qualifying vessels are awarded access in trips it could increase incentive for vessels to change behavior and land up to the maximum 400 pound limit, since the total number of trips would be limited. If some general category vessels usually land a more incidental level of scallops now, the allocation in trip alternative may cause these vessels to fish for scallops independent of other species to maximize revenue from the number of trips they are allocated. If these vessels then fish in other fisheries on different trips, total effort for these vessels may increase; however effort in other fisheries

would remain the same. It cannot be determined if overall effort in other fisheries would increase or decrease as a result, since other vessels may choose to land up to 400 pounds of scallops on a trip that they otherwise would not land that many scallops and may focus on other species.

Hard TACs can have negative impacts of derby fisheries, which could have negative impacts on other fisheries. Vessels may have a greater incentive to fish for scallops as soon as the TAC is available and then switch to other fisheries the rest of the year, compared to fishing for both fisheries at once. If this alternative does change behavior it could increase impacts on other fisheries if some vessels that used to land groundfish and scallops on the same trip for example, decide to take more “directed” scallop trips up to 400 pounds under the hard TAC alternative and then focus on groundfish after the scallop TAC is fished. Total effort on groundfish should not increase as a result, but the vessel may be less efficient by fishing separately for scallops and groundfish.

**5.6.1.1.2.2 Limited entry permit provisions**

The alternatives under consideration for limited entry permit provisions are not expected to have any direct impacts on other fisheries. Provided that a qualified vessel would be permitted to have more than one limited access permit, then overall effort in other fisheries should not be affected.

**5.6.1.1.2.3 Measures to reduce incentive for limited entry qualifiers to fish for scallops with trawl gear**

These alternatives reduce incentive for qualifying vessels to target scallops with trawl gear. The Scallop PDT analyzed VTR data from 2005 for trips landing scallops with trawl gear. Most trips where scallops were landed using trawl gear were targeting other species; however there are a number of vessels that target scallops using trawl gear. In summary, when general category vessels with trawl gear were targeting other species like groundfish, monkfish, skate, squid and scup, about 50% of the trips landed less than 300 pounds per trip. In fact, for many of the other species, average scallop landings were lower. Table 4 summarizes the average scallop landings per trip by target species for general category vessels using trawl gear.

**Table 198 - Percentiles of scallop landings per trip by target species for general category vessels using finfish trawls.**

Target species or group	Trips	Vessels	Percentile						
			5%	10%	25%	50%	75%	90%	95%
Yellowtail flounder	152	68	50	60	114	231	369	400	400
Groundfish	163	69	45	50	65	100	150	380	400
Summer flounder	178	59	50	63	111	300	340	394	400
Skate	37	18	68	80	100	273	396	400	400
Monkfish	91	54	50	50	100	206	347	400	400
Scallops	2778	84	50	220	300	300	398	400	400
Scup	14	6	26	31	79	275	324	400	400
Loligo	9	7	59	73	150	300	300	314	342
Lobster	1	1	*	*	*	*	*	*	*
All	3423	203	50	97	286	300	395	400	400
All but scallops	645	160	50	50	90	180	340	400	400

Alternative 3.1.2.6.2 was developed to prevent an expansion in general category scallop effort using trawl gear and Alternatives 3.1.2.6.3 and 3.1.2.6.4 were developed to reduce incentive to fish for scallops with trawl gear. Since most effort using trawl gear is on vessels targeting other species, the impacts of these alternatives are not expected to affect other fisheries. Specifically the level of effort in other fisheries is expected to be similar, but potential landings of scallops may be reduced with lower possession limits.

#### **5.6.1.1.2.4 Sectors and Harvesting Cooperatives**

This action is considering a process for the creation of fishing “sectors” and the allocation of TAC shares to the sectors within the general category fishery. None of the options related to establishing a sector are expected to have impacts on other species since vessels in the sector would not be permitted to “pool” their access in other fisheries; the sector would be limited to general category scallop access privileges only. Sectors may have an indirect benefit on other fisheries if the sector is able to reduce bycatch in other fisheries, thus reducing non-harvest mortality of those species.

#### **5.6.1.1.2.5 Interim measures for transition to limited entry**

Overall, the impacts on other fisheries from both these alternatives is uncertain, they will limit capacity and mortality by reducing the number of vessels that can fish under general category, but non-qualifiers may increase fishing on other fisheries to make up lost revenue. However, many of the vessels that may not qualify have not had a large dependence on scallops, so their fishing activity in other fisheries may not change much. However, there are some vessels particularly those that got a permit after the control date that have developed a high dependence on scallops in recent years.

The alternative with the hard TAC option has a higher likelihood of controlling mortality up to 10% of the total projected catch, but depending on how the hard-TAC is implemented there may be impacts on other fisheries. Since most current general category vessels have other permits, once the general category scallop TAC is caught many of those vessels will likely prosecute other fisheries, so the impact on other fisheries is uncertain since it is unknown if effort in other fisheries would reduce, stay the same or increase as a result of a hard TAC. Since 10% is similar to catch in recent years, effort shift in other fisheries may not be very different than in recent years; however, the hard-TAC option may change behavior and if the TAC is caught earlier in the year vessels may fish in other fisheries during the latter part of the year. The alternative with no hard-TAC option does not have a backstop for total mortality, but the number of vessels that can participate in this fishery is reduced compared to the open access nature of the current fishery, so non-qualifiers may shift effort into other fisheries to make up for revenue losses.

#### **5.6.1.1.3 Hard Total Allowable Catch (Hard TAC)**

Since most general category vessels have other permits, once the general category scallop TAC is caught many of those vessels will likely prosecute other fisheries, so the impact on other fisheries is uncertain since it is unknown if effort in other fisheries would reduce, stay the same or increase as a result of a hard TAC.

#### **5.6.1.1.4 Establish a Northern Gulf of Maine Scallop Management Area (NGOM)**

Under Alternative 3.1.4.2, an open access permit to fish for scallops under general category would remain for the NGOM, and a vessel could land up to 400 pounds of scallops per trip if the vessel has VMS (IB permit). This alternative could have negative impacts on other fisheries in this region due to potential increases in impacts from fishing gear from an open access fishery. Since this alternative includes a hard TAC the potential negative impacts of open access on non-target species in this area would be reduced.

Alternative 3.1.4.3 would develop a separate limited entry general category program in the NGOM. If this alternative changes behavior of vessels in this area in terms of catch composition to take advantage of the scallop TAC before it is caught, then there could be impacts on other fisheries. But the overall impact on other fisheries is uncertain since it is unknown if effort in other fisheries would reduce, stay the same or increase as a result of this permit.

#### **5.6.1.1.5 Monitoring Provisions**

Both Alternative 3.1.5.2 and 3.1.5.3 have indirect benefits on other fisheries that general category vessels participate in as compared to the No Action alternative because reporting through VMS or IVR improves monitoring of fishing effort.

#### **5.6.1.1.6 Limited access fishing under general category rules**

Since most limited access scallop vessels do not have permits in other fisheries, these alternatives are not expected to have impacts on other fisheries. If access to the general category fishery is taken away or reduced for these vessels, most do not have the ability to make up lost revenue in other fisheries because they do not have permits to land those species.

#### **5.6.1.1.7 Allocation between limited access and general category fisheries (Objective #1)**

These alternatives are not expected to have impacts on other fisheries since they are related to how scallop TAC is allocated. It could be argued that on average general category vessels tend to have permits in more fisheries, and a percentage of their overall revenue comes from other fisheries, so if a smaller TAC was awarded to the general category fishery, those vessels may be able to make up some revenue lost in other fisheries. This could cause some increased impacts on other fisheries if effort is shifted out of the scallop fishery.

#### **Allocation of yellowtail flounder bycatch TAC in access areas**

Alternative 3.1.7.3.2 would actually divide the yellowtail bycatch TAC between the limited access and general category fisheries. Whatever overall allocation of the projected scallop catch is allocated to the general category fishery (2.5%-11%), that same percentage of the yellowtail flounder bycatch cap would also be allocate to the general category fleet for access areas. This alternative is not expected to have direct impacts on other fisheries since it is limited to scallop trips in access areas.

#### **5.6.1.1.8 Incidental Catch (Objective #4)**

There are no impacts on other species from either of these alternatives. Allowing vessels to possess scallops caught incidentally while fishing for other species is not expected to impact non-target species. Vessels fishing for other species could land and sell up to 40 pounds of scallop meat under Alternative 5.1.7.2, which should increase revenue for that trip for vessels

targeting other species. Forty pounds of scallop meat per trip is not expected to be an incentive for a vessel to go out and target scallops, so there should not be additional effort associated with the new permit category. Furthermore, it would be restricted to vessels that qualify under the qualification time period alternative selected; it would not be open access. The primary purpose of this alternative is to reduce bycatch of scallops caught incidentally on trips targeting other species.

#### **5.6.1.2 Measures to allow better and more timely integration of recent data (Goal #2, Objective #5)**

In general these alternatives will not impact other fisheries. The alternatives that change the start of the fishing year could have impacts on other fisheries depending on when the fishery begins and what allocation access alternative is adopted (i.e. IFQ versus hard-TAC without limited entry). If the general category fishery is managed under a fleetwide hard-TAC as a result of this action then it is possible that there will be derby effects causing an increase in effort at the start of the fishing year. If the fishing years changes to a time of year when a) bycatch rates are higher for non-target species, or b) vessels that normally fish for scallops and other species on the same trip decide instead to “direct” on scallops before the TAC is reached, then this effort could result in negative impacts on other fisheries.

#### **5.6.1.3 Other measures**

##### ***Trawl sweep restriction***

Alternative 3.3.1.2 would clarify that the 144 ft. net sweep restriction is intended for all vessels authorized to be in possession in excess of 40 pounds of scallop meat, except for vessels with a general category 1B permit and fishing under a multispecies or monkfish DAS. While the net restriction on trawl sweep size may have had beneficial impacts on non-target species by restricting the maximum size of trawl gear, the Council intended this restriction for vessels targeting scallops, not vessels that catch scallop incidentally. If this is clarified then vessels fishing for other species and landing scallops on the same trip should not be affected by a trawl sweep restriction. Effort in other fisheries is not expected to increase as a result of this alternative.

##### ***Modification to the 50 bushel possession limit east of the demarcation line***

This alternative would allow a vessel to shuck scallops up to 400 pounds of meat and not run the risk of being in possession of more than the possession limit. This alternative is not expected to have impacts on other fisheries.

#### **5.6.2 Impacts on non-target species**

The directed general category fishery operates throughout the range of the scallop resource from Maine to North Carolina and results in the incidental catch of several other species. While some species are retained, other species are discarded due to restrictions in other fisheries or if the catch is not of value. Measures to minimize bycatch to the extent practicable in the scallop fishery pertain to all scallop vessels, including general category scallop vessels. The primary measures are the 10-inch minimum twine top restriction, and the bycatch TAC for yellowtail flounder in access areas. The 4-inch minimum ring size may also reduce finfish bycatch and reduces the bycatch of small scallops. The Northeast (NE) Multispecies and Monkfish FMPs

also include measures to limit bycatch of species under the management of the specific FMP. The following measures in the FMPs apply:

The Northeast Multispecies FMP prohibits fishing in the Gulf of Maine/Georges Bank (GOM/GB) and Southern New England Exemption Areas unless a vessel is using exempted gear, is fishing under NE multispecies or scallop DAS, or is fishing under an exempted fishery. The prohibition prevents fisheries from occurring that might result in bycatch that could jeopardize the goals of the NE Multispecies FMP. Exempted fishery procedures in the NE Multispecies FMP allow a proven “clean” fishery to be implemented and allowed under the NE Multispecies FMP. Currently, the general category fishery can operate in two areas of the GOM/GB Exemption Area and in a portion of the SNE Exemption Area. In all three areas, vessels are restricted to 10 ½ ft dredges and may not possess any species other than scallops. In addition, in the Great South Channel Sea Scallop Exemption Area within the GOM/GB Exemption Area, general category scallop vessels may not fish for scallops from April through June for one sub-area (the month of June for the other sub-area). This period has been identified as the peak spawning for yellowtail flounder and protects high concentrations of yellowtail flounder from a portion of the scallop fleet.

The Monkfish FMP allows vessels fishing for other species to harvest monkfish depending on the monkfish permit category, the declared fishing activity (i.e., multispecies DAS, scallop DAS, and/or monkfish DAS), the area fished, and the gear used. Unless otherwise restricted under another FMP, a vessel fishing outside of monkfish DAS, and while fishing for scallops under general category rules, is permitted to catch and retain up to 50 lb of monkfish tails per day, up to 150 lb total for the trip. This limitation prevents a scallop vessel using dredge gear from targeting monkfish and limits bycatch during scallop trips.

Other FMPs include overall quotas, state-by-state quotas, possession limits, and gear restrictions that may also reduce bycatch. The Skate and Summer Flounder/Scup/Black Sea Bass FMPs offer examples. The Skate FMP restricts possession of some species of skates and requires a permit to catch and land skate. Vessels fishing for scallops under general category rules would be restricted to the Skate FMP possession limits, limiting the impacts on skates as bycatch. Management measures for the summer flounder fishery include a state-by-state quota. When the quota is closed in a particular state, vessels can no longer land summer flounder in that state. When the quota is closed, scallop vessels from that state, fishing under general category rules, may have less incentive to fish in areas where summer flounder catch might be high since it could not be landed in the closed state.

These measures under other FMPs would continue to limit the impacts on bycatch species that are caught in the general category scallop fishery under all of the alternatives considered in Amendment 11.

The impacts of limited access scallop vessels fishing outside of DAS (i.e., under general category rules) are considered to be consistent with the impacts of general category scallop vessels since the restrictions on these vessels are the same.

This section summarizes the impacts on bycatch or non-target species that interact with fishing gear when vessels are fishing for scallops under general category. Since this action is considering an allocation of TAC to the general category fishery, a skate baseline review is required, see Section ???.

### **5.6.2.1 Measures to control capacity and mortality in the general category scallop fishery**

#### **5.6.2.1.1 No Action**

Based on recent trends in the general category fishery, this alternative makes it difficult for the Scallop FMP to prevent overfishing (Section 5.1.1.1). The general category fishery is open access and if conditions are right in terms of scallop price and availability of resource relatively close to shore, the only limit on general category effort is a possession limit. The No Action alternative could have negative impacts on non-target species if effort in the general category fishery continues to increase. Interaction of fishing gear from these vessels could have negative impacts on non-target species; more potential fishing effort could increase interaction of scallop fishing gear with non-target species.

#### **5.6.2.1.2 Limited Entry**

In order to fish under general category rules a vessel would have to qualify for a limited access general category permit. Limited entry in and of itself would have positive impacts on non-target species as compared to the No Action alternative by reducing the number of potential participants. The participants that qualify may increase effort above levels they have historically fished, but reducing capacity decreases the number of vessels that could fish under this permit, having benefits on non-target species. In terms of the qualification alternatives under consideration, there is not a big difference in impacts on non-target species, because the amount of total effort allocated to this component of the fishery is the same no matter which qualification alternatives are selected. For example, if the most restrictive alternative is selected, the number of vessels would be fewer, but each individual vessel would be allocated more access, so overall effort would be the same. However, impacts on non-target species would vary depending on which vessels qualify.

For example, if more vessels qualify from Mid-Atlantic ports, the impacts on non-target species in that region would be greater. Under the least restrictive alternative (100 pounds and 11-year time period) of the 705 potential qualifiers, about 499 of them are from New England and 206 are from mid-Atlantic ports (**Table 81** through **Table 84**). Therefore, impacts on non-target species in New England could be impacted by more potential qualifiers than in the Mid-Atlantic, but the total level of effort will not be greater than status quo levels. Furthermore, while more vessels may qualify from New England, their level of access may be lower than the vessels from the Mid-Atlantic, which on average have fished more directly on scallops than vessels from New England.

The alternatives that determine the allocation amount for each qualifier will not have direct impacts on non-target species.

#### **5.6.2.1.2.1 Allocation of access for general category limited access qualifiers**

The DSEIS includes several alternatives for allocation combined with limited entry. Most of these alternatives include an individual allocation program. In general, the impacts on non-target species from all the individual allocation alternatives are expected to be similar because there is a total amount of effort that will be permitted under each alternative. However, there are potential differential impacts on non-target species from a system that allocates in pounds versus trips. If qualifying vessels are awarded access in trips it could increase incentive for vessels to change behavior and land up to the maximum 400 pound limit, since the total number of trips would be limited. If some general category vessels only land a more “incidental” level of scallops now while fishing for other species, the allocation in trip alternatives (Option B) may increase effort if these vessels change behavior to land more scallops per trip. There could be potential negative impacts on non-target species from increased effort. This potential increase in effort is limited however because there is a maximum TAC for the entire fleet under both the individual pound and trip alternatives.

Hard TACs can have negative impacts of derby fisheries, which could have negative impacts on non-target species because a vessel may have less incentive to move from higher bycatch areas. If the fleetwide hard TAC is divided up by quarter or trimester (Alternative 3.1.2.4.7) that will improve negative impacts of a derby fishery, but depending on when the quarters/trimesters are defined could impact non-target species if the beginning of a quarter/trimester coincides with higher discard rates of non-target species.

#### **5.6.2.1.2.2 Limited entry permit provisions**

The alternatives under consideration for limited entry permit provisions are not expected to have any direct impacts on non-target species. If there are no controls on upgrade restrictions (Alternative 3.1.2.5.2.1) then impacts on non-target species could increase as a result of increased effort potential.

#### **5.6.2.1.2.3 Measures to reduce incentive for limited entry qualifiers to fish for scallops with trawl gear**

These alternatives reduce incentive for qualifying vessels to target scallops with trawl gear. If these alternatives actually reduce effort by general category qualifiers to use trawl gear, then impacts on non-target species from that gear type will be reduced. Table 34 describes the distribution of general category vessels by gear type. Well over half of all general category landings have been from vessels using dredge gear (Table 35). Figure 36 and Figure 37 depict where scallop effort with trawl gear is in general, so if for example, Alternative 3.1.2.6.3 is selected (a reduction in possession limit) impacts on non-target species in this region from trawl gear could benefit.

#### **5.6.2.1.2.4 Sectors and Harvesting Cooperatives**

This action is considering a process for the creation of fishing “sectors” and the allocation of TAC shares to the sectors within the general category fishery. None of the options related to establishing a sector are expected to have impacts on non-target species. In fact, if any the indirect impacts may be beneficial since voluntary sectors may be able to identify ways to fish more efficiently, potentially reducing bottom contact time and impacts on scallops and other species. It is presumed that a self-selecting sector will have a plan to manage their allocation in a

way that mutually benefits the sector members and avoids wasteful fishing practices. Specific impacts would have to be addressed as part of a sector operations plan at a separate time in the future. Because the details of sector management will be included in the operations plan and submission will be accompanied by appropriate NEPA documents, impacts on non-target species would be evaluated by the proponents at that time and accepted by the agency with any accompanying caveats on the sector operations.

#### **5.6.2.1.2.5 Interim measures for transition to limited entry**

Overall, the impacts on non-target species from both these alternatives will be positive in general, because they will limit the number of vessels that will be able to fish for scallops under general category, thus potential interaction with non-target species will be reduced. The alternative with the hard TAC option may reduce effort compared to the alternative without a hard-TAC because vessels would not be able to fish for scallops once the 10% TAC was caught. See Section 5.6.2.1.3 for a description of the expected impacts of hard TACs on non-target species. The alternative with no hard-TAC option does not have a backstop for total effort, but the number of vessels that can participate in this fishery is reduced compared to the open access nature of the current fishery, so compared to No Action this alternative is expected to have positive impacts on non-target species. Furthermore, both these alternatives would only be in place on a temporary basis, once the poll of final qualifiers is identified, then the rest of the measures adopted by Amendment 11 could be implemented, namely the allocation of a hard-TAC and allocation of that total general category TAC to qualifiers.

#### **5.6.2.1.3 Hard Total Allowable Catch (Hard TAC)**

A fleetwide hard-TAC may have behavioral effects that could increase impacts on non-target species. For example, a hard TAC would increase the incentive to race for fish. If the entire general category hard TAC was available to all vessels with an open access permit it is likely that the TAC would be caught relatively quickly, and if this opening was during a time period of higher bycatch of non-target species that would have negative impacts compared to spacing effort out. On the other hand if the opening is during a season with lower impacts that could reduce impacts on non-target species. Since most general category vessels have other permits, once the general category scallop TAC is caught many of those vessels will likely prosecute other fisheries, still interacting with non-target species.

#### **5.6.2.1.4 Establish a Northern Gulf of Maine Scallop Management Area (NGOM)**

Under Alternative 3.1.4.2, an open access permit to fish for scallops under general category would remain for the NGOM, and a vessel could land up to 400 pounds of scallops per trip if the vessel has VMS (IB permit). Since this alternative includes a hard TAC the potential negative impacts of open access on non-target species in this area are reduced.

Alternative 3.1.4.3 would develop a separate limited entry general category program in the NGOM. Since this alternative includes a hard TAC the potential negative impacts of open access on non-target species in this area are reduced. The number of vessels that are expected to qualify under this alternative is 705. Of these vessels, not all are expected to participate in this program if it is adopted, due to distance from fishing grounds from various homeports in the region and the reduced possession limit may make fishing in the NGOM less attractive for some

qualifying vessels. For example, out of the 705 potential qualifiers, 358 of them are from states that do not border the NGOM area (447 are from either Maine, New Hampshire or Massachusetts) (See Table ??? was table 81 in Council version).

#### **5.6.2.1.5 Monitoring Provisions**

##### **5.6.2.1.5.1 Require landings and declaration of scallop trip through VMS**

Both Alternative 3.1.5.2 and 3.1.5.3 have indirect benefits on non-target species caught in the general category scallop fishery as compared to the No Action alternative because reporting through VMS or IVR improves monitoring of fishing effort.

##### **5.6.2.1.6 Limited access fishing under general category rules**

Section 4.4.5 describes the level of limited access effort under general category. The No Action alternative for this section (to permit all limited access vessels to fish under general category rules outside a DAS) it is not expected to have substantial impacts on non-target species as compared to scallop fishing by these vessels under regular their limited access permit. However, if effort increases by this component of the fishery then overall interactions with non-target species could be increased. This type of effort has been permitted since limited access was adopted in 1994, and the level of effort in this capacity has been limited. Alternative 3.1.6.1.2 and 3.1.6.1.3 would only allow limited access vessels that qualify under the same criteria selected for the limited access general category permit to fish under general category rules. The impacts on non-target species from these alternatives are positive compared to the no action because less vessels would have the opportunity to fish. Alternative 3.1.6.1.4 would prohibit all limited access permits (full-time, part-time and occasional) from fishing under general category rules while not on a scallop DAS. This alternative would reduce impacts on non-target species compared to the no action by preventing fishing under this category, but again impacts from this activity are minimal compared to normal scallop fishing by this fleet.

Whether the catch is reduced from the limited access portion of the total TAC (Alternative 3.1.6.2.2) or the general category portion (Alternative 3.1.6.2.1) these alternatives are not expected to have impacts on non-target species since they are related to how scallop catch is allocated and monitored.

##### **5.6.2.1.7 Allocation between limited access and general category fisheries (Objective #1)**

These alternatives are not expected to have impacts on non-target species since they are related to how scallop TAC is allocated. In general, general category vessels are less efficient because they use smaller gear and fewer crew. However, total bottom contact time is not necessarily higher per pound of scallop meat caught. For example, if a general category vessel uses one ten-foot dredge, and a limited access vessel uses two 15-foot dredges, the limited access vessel has three times as much gear in contact with the bottom. The potential impacts on non-target species is proportional to the length of dredge being used, not whether it is being pulled by a limited access or general category vessel. Because the economic incentives for the two fleets are different, there may be impacts on non-target species as a result. In general, vessels will fish to reduce time at sea and maximize profits. Limited access vessels in particular are under DAS, so these vessels need to maximize all their time spent at sea. These vessels are also more mobile, so if there are areas offshore that are more abundant, the limited access vessels are more likely to

fish in areas with high abundance to reduce time spent at sea. The less time spent at sea, the less time gear is on the bottom, so potential interactions with non-target species is reduced.

General category vessels cannot fish everywhere because they are more limited by vessel size etc. and they are not managed by DAS so do not have the same incentives to maximize time at sea; therefore, these vessels may spend more time fishing in sub-optimal areas to harvest the daily possession limit which could have higher impacts on non-target species that may live in these areas. On the other hand, there are some non-target species that may be able to escape from smaller gear used by general category vessels compared to larger gear used by the limited access fleet. For example, haddock have an escape response to swim up in the water column when fishing gear is approaching. There is not sufficient data to compare the bycatch rates of general category and limited access vessels.

#### **5.6.2.1.7.1 Allocation of yellowtail flounder bycatch TAC in access areas**

Alternative 3.1.7.3.2 would actually divide the yellowtail bycatch TAC between the limited access and general category fisheries. Whatever overall allocation of the projected scallop catch is allocated to the general category fishery (2.5%-11%), that same percentage of the yellowtail flounder bycatch cap would also be allocate to the general category fleet for access areas. This alternative is not expected to have direct impacts on non-target species. The estimated fishing mortality from an access area assumes all trips are taken, so if dividing that TAC enables one component of the fishery to fish longer, the impacts of those trips have already been accounted for.

There is not sufficient data in the observer database to ascertain whether there are significant differences between bycatch rates on general category and limited access vessels. Some finfish have an escape response when a dredge is approaching, so it could be argued that it would be easier for a finfish to escape a smaller dredge (used on general category vessels as compared to larger dredges on limited access vessels). However, yellowtail flounder do not have a behavioral escape response, rather these fish tend to remain on the bottom or further burrow in the sediment, so it is uncertain if dredge size would affect yellowtail flounder bycatch. Both fleets are required to use 10-inch twine top to reduce finfish bycatch in all areas. There is an experimental fishing permit that is currently researching bycatch on general category vessels east of Cape Cod. It is possible that this study will show that general category vessels may have different bycatch rates than limited access vessels.

#### **5.6.2.1.8 Incidental Catch (Objective #4)**

Impacts on non-target species from incidental catch are minimal. Vessels are targeting other species and scallop is actually the non-target species in this instance. So both No Action and the new incidental scallop permit alternative are not expected to have impacts on non-target species.

#### **5.6.2.2 Measures to allow better and more timely integration of recent data (Goal #2, Objective #5)**

In general these alternatives will not impact non-target species. If the general category fishery is managed under a fleetwide hard TAC as a result of this action then it is possible that there will be derby effects causing an increase in effort at the start of the fishing year. If the fishing years changes to a time of year when bycatch rates are higher these alternatives could increase impacts

on non-target species. Other alternatives that allocate access on an individual basis would more likely spread effort out and impacts on non-target species would be more distributed throughout the year.

### **5.6.2.3 Other measures**

#### **5.6.2.3.1 Trawl sweep restriction**

Alternative 3.3.1.2 would clarify that the 144 ft. net sweep restriction is intended for all vessels authorized to be in possession in excess of 40 pounds of scallop meats, except for vessels with a general category 1B permit and fishing under a multispecies or monkfish DAS. While the net restriction on trawl sweep size may have beneficial impacts on non-target species by restricting the maximum size of trawl gear, the Council intended this restriction for vessels targeting scallops, not vessels that catch scallop incidentally. The impacts of this gear type on scallop and other non-target species were analyzed in Scallop Amendment 4, or in other FMPs relative to gear size and other gear restrictions.

#### **5.6.2.3.2 Modification to the 50 bushel possession limit east of the demarcation line**

Limiting the amount of in-shell scallops a vessel can be in possession of reduces its incentive to highgrade, and if a vessel wants to shuck its catch and needs more than 50 bushels to reach the 400 pound possession limit, that vessel will have to shuck some of its catch before possessing over 50 bushels. The no action alternative potentially reduces fishing time if the shucked product from 50 bushels ends up being 400 pounds (i.e. the vessel may not have to make another tow if the in-shell product on deck ends up equaling 400 pounds of shucked scallop meat). However, in practice it is common that over 50 bushels are needed to shuck 400 pounds of scallop meat. Alternative 3.3.2.2 would allow a vessel to be in possession of up to 100 bushels east of the demarcation line. This alternative would allow a vessel to shuck scallops up to 400 pounds of meat and not run the risk of being in possession of more than the trip limit. This alternative does not necessarily increase time on the bottom, because a vessel planning to land 400 pounds of meat would continue to fish until it caught the sufficient amount of in-shell product to cut out 400 pounds of meat. This alternative would simply allow the vessel to be in possession of up to 100 bushels before it had to start shucking meats, rather than fishing for 50 bu. of scallops, then shucking those scallops, and then fishing for additional scallops to reach the 400 pound scallop meat possession limit.

#### **5.6.2.4 Skate Baseline Review**

The Skate FMP identified and characterized a baseline of management measures in other fisheries that provide additional conservation benefits to skate species. The FMP requires that if the Council initiates an action in another FMP that changes one or more of the baseline measures such that the change is likely to have an effect on the overall mortality for a species of skate in a formal rebuilding program, then a baseline review is required.

A baseline review must be initiated if one of seven categories of management measures are changed which have been identified as beneficial for skates. The seven categories of management measures identified in the Skate FMP are: (i) NE Multispecies year-round closed areas; (ii) NE Multispecies DAS restrictions; (iii) Gillnet gear restrictions; (iv) Lobster restricted gear areas; (v) Gear restrictions for small mesh fisheries; (vi) Monkfish DAS restrictions for

monkfish only permit holders; and (vii) Scallop DAS restrictions (See Section 4.1.6 of the Skate FMP for more details). Another issue was added related to the Scallop FMP was included but not as specific. The Skate FMP includes reference to the requirement to complete a skate baseline review if a TAC is allocated to the general category sector and increased in the future. This topic was included because at the time the Skate FMP was in development, the Council was considering allocating a portion of available scallop catch to the general category fishery in Amendment 10. Ultimately the Council did not allocate a portion of the TAC, but since Amendment 11 is considering a similar alternative the impacts on skate mortality should be considered. Overall, this action as a whole will reduce potential effort from the general category component of the fishery if a hard-TAC or limited entry (combined with or without a hard TAC) is implemented. The range of TAC under consideration is 2.5 to 11% which is lower than general category landings in recent years. Therefore, the overall impacts on skate mortality are expected to be positive as a result of this action.

### **5.6.3 Enforcement and Safety**

This section includes an analysis of the enforceability of the measures under consideration in Amendment 11. In general the measures are enforceable

#### **5.6.3.1 Measures to control capacity and mortality in the general category scallop fishery**

##### ***No Action***

*No law enforcement comments.*

##### ***Limited Entry***

- *Qualification criteria alternatives*

*No law enforcement comments.*

- *Qualification time period alternatives*

*No law enforcement comments.*

- *Determination of qualification amount*

*No law enforcement comments.*

- *Allocation of access for general category limited access qualifiers*

All individual allocation alternatives (3.1.2.4.1; 3.1.2.4.1.1) include allocation in pounds (Option A) or trips (Option B). In terms of enforceability, Option B is the preferred strategy for law enforcement. With the present automated VMS capabilities for tracking and trip information, fewer resources would be required to monitor this option. However, for effective enforcement, permit categories should be required to have VMS. With a known number of fishing trips for the year, a captain may have more flexibility to choose his/her trip on market conditions, sea conditions, and fuel economy. As is always the case, safety is ultimately the master's responsibility and this option does not change that responsibility.

Option A in pounds (particularly in Alternative 3.1.2.4.2 with two permit types with different possession limits) would be more difficult for law enforcement. This alternative poses greater incentive to conceal excess pounds, especially for those with a small possession limit, if no

enforcement personnel are present. Whatever landing limits are established, they should remain unchanged for that fishery for that permit category.

As for the individual transferable quota (ITQ) alternative law enforcement would be able to enforce this alternative. As stated in the precepts, unchanged regulations regarding landing limits are highly enforced by state JEA partners. Enforcement would need shore-side web access to current records and data to determine compliance.

Stand alone quarterly hard TAC alternative (Alternative 3.1.2.4.5) option would be enforceable and would require more personnel to monitor vessels for compliance after the closure. If this option were chosen, additional monitoring tools should be explored such as, declarations via VMS prior to crossing the demarcation line as to pounds on board, and a six-hour notice on intended landing port in an attempt discourage possible discrepancies between pounds landed and reported.

Alternative (fleetwide-hard TAC with limited entry) would be enforceable and have the same enforcement concerns as above. As for the quarterly/trimester hard-TAC alternative, this alternative has the same enforcement concerns as Alternative 3.1.2.4.5 and would require more personnel to monitor vessels for compliance after the closure as would the hard TAC.

- *Limited entry permit provisions*

The fishing history alternatives (No Action and one vessel potentially qualifying two permits) are not expected to have enforcement impacts. As for the vessel upgrade alternatives, the NMFS Office of Law Enforcement supports consistency as in other vessel upgrades (10:10:20 alternative) and baseline measures. However, the no upgrade restriction alternative is not expected to have enforcement impacts. In addition, the vessel replacement alternative is not expected to have enforcement impacts but it should be consistent with other vessel restrictions.

There are no enforcement impacts on the No Action alternative under permit stacking. The alternatives that consider stacking up to two permits may present difficulty for dockside enforcement to JEA partners unless authorization letters/documents are aboard the vessel at all times. The stacking alternative up to 60,000 or 150 trips would have similar enforcement impacts as above, but if allocation was in trips it would require less labor to enforce using current VMS and would require fewer staff to monitor. In general, the NMFS Office of law enforcement has no comment for other permit alternatives such as permit splitting, permit renewals and maximum percentage ownership restrictions but suggests that they be consistent with other plans.

- *Measures to reduce incentive for limited entry qualifiers to fish for scallops with trawl gear*

The No Action alternative for this section is not expected to have enforcement impacts. The alternative to prohibit a vessel from switching to trawl gear if it qualified under dredge gear would be enforceable. Enforcement would prefer that all permits have the same possession limit while under same activity. Lastly, enforcement prefers a known weight rather than a percentage in terms of the alternative that would restrict a trawl vessel to have only up to 5% of total

regulated species on board to be scallops. It is also easier for fishers to comply with a known poundage rather than a percentage.

- *Sectors and Harvesting Cooperatives*

The NMFS Office of Law Enforcement does not expect impacts from this alternative.

- *Interim measures for transition to limited entry*

There are no enforcement concerns with these measures. See discussion above about enforceability of hard-TACs with limited entry.

***Hard Total Allowable Catch (Hard TAC)***

The NMFS Office of Law Enforcement has the same concerns as under limited entry (3.1.2.4.5).

***Establish a Northern Gulf of Maine Scallop Management Area (NGOM)***

In general, any measure considered should be clear, simple, and consistent with other regulations.

**5.6.3.2 Monitoring Provisions**

These alternatives would improve monitoring and enforcement. The NMFS Office of Law Enforcement suggests that reports should be sent prior to crossing the demarcation line to discourage misreporting if shore side enforcement is not present. The fishers should also designate landing port at least 6-hours prior to their estimated time of arrival. In addition, it would be helpful to enforcement if IVR trip reports were submitted for each trip.

**5.6.3.3 Limited access fishing under general category rules**

There are no enforcement impacts expected from these alternatives. The NMFS Office of Law Enforcement suggests the above measures be considered.

**5.6.3.4 Allocation between limited access and general category fisheries**

There are no enforcement impacts expected from these alternatives. There are no enforcement impacts of the allocation of yellowtail flounder bycatch TAC in access areas alternatives.

**5.6.3.5 Incidental Catch (Objective #4)**

There are no enforcement impacts expected from these alternatives.

**5.6.3.6 Measures to allow better and more timely integration of recent data (Goal #2, Objective #5)**

There are no enforcement impacts expected from these alternatives. Changing the issuance date of permit alternative would be less confusing for fisheries and minimize the number of fishing years in the FMP, so simpler. Changing the start date is not expected to have impacts on enforcement.

**5.6.3.7 Other measures**

***Trawl sweep restriction***

No enforcement concerns.

### ***Modification to the 50 bushel possession limit seaward of the demarcation line***

The No Action alternative is in line with the enforcement precepts. Measuring up to 100 bu. seaward could prove problematic and possibly cause safety concerns, but NMFS Office of Law Enforcement is in favor of the stipulation that the vessel can only possess 50 bu. shoreward of the VMS demarcation line.

## **5.7 CUMULATIVE EFFECTS**

### **5.7.1 Introduction**

The term “cumulative effects” is defined in the Council of Environmental Quality’s (CEQ) regulations in 40 CFR Part 1508.7 as:

“The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.”

In 1997, the CEQ published a handbook titled, *Considering Cumulative Effects Under the National Environmental Policy Act*. The CEQ identified the following eight principles of cumulative effects analysis, which should be considered in the discussion of the cumulative effects of the proposed action:

1. Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions.
2. Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, non-federal, or private) has taken the actions.
3. Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, and human community being affected.
4. It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.
5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.
6. Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.
7. Cumulative effects may last for many years beyond the life of the action that caused the effects.
8. Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accumulate additional effects, based on its own time and space parameters.

The following analysis will identify and characterize the impact on the environment by the Proposed Action and alternatives considered in Amendment 11 when analyzed in the context of other past, present, and reasonably foreseeable future actions. Summary tables can be found following each of the text sections describing impacts. These tables contain brief text summaries intended to distill the more detailed text descriptions found in this section, and in Section 4.0

(Affected Environment), and Section 5.0 (Environmental Impacts). To enhance clarity and maintain consistency, the following terms are used to summarize impacts:

**Table 199 - Terms used in cumulative effects tables to summarize cumulative impacts**

Impacts Are Known	Impacts Are Uncertain	Impacts Are Unknown
High Negative/Positive	Potentially High Negative/Positive	Unknown
Negative/Positive	Potentially Negative/Positive	
Low Negative/Positive	Potentially Low Negative/Positive	
Neutral	Potentially Neutral	
No Impact		

*\*In some cases, terms like “more” and “most” are used for the purposes of comparing management alternatives to each other.*

### 5.7.2 Valued Ecosystem Components (VECs)

This document was structured such that the cumulative effects can be readily identified by analyzing the impacts on valued ecosystem components (VECs). The affected environment is described in this document based on VECs that were identified specifically for Amendment 11. The VECs identified for consideration in Amendment 11 include: **Atlantic sea scallop resource; physical environment and essential fish habitat (EFH); protected resources; fishery-related businesses and communities; and other fisheries.**

VECs represent the resources, areas, and human communities that may be affected by a proposed action or alternatives and by other actions that have occurred or will occur outside the proposed action. VECs are the focus of an EIS since they are the “place” where the impacts of management actions are exhibited. An analysis of impacts is performed on each VEC to assess whether the direct/indirect effects of an alternative adds to or subtracts from the effects that are already affecting the VEC from past, present and future actions outside the proposed action (i.e., cumulative effects). While the document includes a description of other potentially affected parts of the ecosystem such as bycatch and enforcement of scallop measures, these components are not included as a specific VEC for the cumulative effects. They have been described and discussed in terms of impacts, but they were not identified as primary valued ecosystem components.

Changes to the Scallop FMP have the potential to directly affect the sea scallop resource. Similarly, management actions that would alter the distribution and magnitude of fishing effort for scallops could directly or indirectly affect other species and their corresponding fisheries. The physical environment and EFH VEC focuses on habitat types vulnerable to activities related to general category scallop fishing. The protected resources VEC focuses on those protected species with a history of encounters with the general category scallop fishery. The fishery-related businesses and communities VEC could be affected directly or indirectly through a variety of complex economic and social relationships associated with either the general category scallop fishery or any of the other VECs.

The descriptive and analytic components of this document are constructed in a consistent manner. The Affected Environment (Section 4.0) traces the history of each VEC and consequently addresses the impacts of past actions. The Affected Environment section is designed to enhance the readers' understanding of the historical, current, and near-future conditions (baselines and trends) to fully understand the anticipated environmental impacts of the management action proposed in this amendment. The direct/indirect and cumulative impacts of the Proposed Action and other alternatives are then assessed in Section ??? of this document using a very similar structure to that found in the Affected Environment section. This EIS, therefore, is intended to follow each VEC through each management alternative.

### **5.7.3 Spatial and Temporal Boundaries**

The geographic area that encompasses the biological, physical, and human communities impacts to be considered in the following cumulative effects analysis is described in detail in Section 4.0 of this document. The physical range of the Atlantic sea scallop resource in the northeast region of the US is from Maine to North Carolina. The physical environment, including habitat and EFH, is bounded by the range of the Atlantic sea scallop fishery in the northeast region from Maine to North Carolina and includes adjacent upland areas (from which non-fishing impacts may originate). For Protected Species, the geographic range is the total range of the Atlantic sea scallop fishery. The geographic range for human communities is defined to be those fishing communities bordering the range of the scallop fishery. Lastly, the geographic range for impacts to fish species is the range of each fish species in the western Atlantic Ocean, as described in the Affected Environment section.

Overall, while the effects of the historical general category fishery are important and are considered in this amendment, the temporal scope of past and present actions for scallops, the physical environment and EFH, protected species, fishery-related businesses and communities, and other fisheries is focused principally on actions that have occurred since 1996, when the Magnuson-Stevens Fishery Conservation and Management Act was enacted and implemented new fisheries management and EFH requirements. In 1996, the Magnuson-Stevens Act identified sustained participation of fishing communities as a new National Standard (#8), so consideration of fishery-related businesses and communities is consistent within this temporal scope. The temporal scope for marine mammals begins in the mid-1990s, when NMFS was required to generate stock assessments for marine mammals that inhabit waters of the U.S. EEZ creating the baseline against which current stock assessments are evaluated. For turtle species, the temporal scope begins in the 1970s, when populations were noticed to be in decline.

The temporal scope for scallops is focused more on the time since the Council first submitted the Scallop FMP in 1982, and particularly since 1994 when Amendment 4 to the FMP implemented the general category scallop permit. The Scallop FMP was developed with comprehensive analysis as part of a complete EIS, which this document serves to supplement and update. The FMP has been adjusted a number of times since 1982, and many elements of the management plan that are not specifically addressed in this amendment will continue to influence the status of the sea scallop resource.

The Atlantic sea scallop fishery has a long history dating back to the late 1800s. Section ??? summarizes the major changes in the scallop fishery and management program since the FMP

was approved in 1982. Landings information for the scallop fishery date back to the early 1900s (Serchuck et al, 1979), but the temporal scope for fishery-related businesses and communities extends back to 1994 to consider impacts from the date the general category permit was first issued.

The temporal scope of future actions for all five VECs extends five years into the future. This period was chosen because of the dynamic nature of resource management and lack of specific information on projects that may occur in the future, which make it difficult to predict impacts beyond this time frame with any certainty.

#### **5.7.4 Past, Present and Reasonably Foreseeable Future Actions**

Section 4.0 of this document summarizes the current state of the scallop resource and general category scallop fishery, and it provides additional information about habitat, protected resources, and non-target species that may be affected by the Proposed Action.

##### **5.7.4.1 Past and Present actions**

The impacts of past and present actions have been considered relative to the VECs in this amendment and are described below and presented in Table 200.

##### ***Scallop Resource***

The Council established the Scallop FMP in 1982 and later implemented several Amendments and Framework Adjustments to modify the original plan. See Section 1.1 for a detailed description of past and present actions. One major action in the past (1994) includes Amendment 4, which implemented limited access for the directed scallop fishery that is primarily managed by DAS and other controls such as crew limits and gear restrictions. During that same year, large areas on Georges Bank were closed to scallop fishing because of concerns over finfish bycatch and disruption of spawning aggregations.

In 1999 Framework Adjustment 11 to the Scallop FMP allowed the first scallop fishing within portions of the Georges Bank groundfish closed areas since 1994. Since then, several other framework actions have provided controlled access in these areas. In 2004 Amendment 10 to the Scallop FMP introduced rotation area management and changed the way that the FMP allocates fishing effort for limited access scallop vessels. Instead of allocating an annual pool of DAS for limited vessels to fish in any area, vessels had to use a portion of their total DAS allocation in the controlled access areas defined by the plan, or exchange them with another vessel to fish in a different controlled access area. Vessels could fish their open area DAS in any area that was not designated a controlled access area. The amendment also adopted several alternatives to minimize impacts on EFH, including designating EFH closed areas, which included portions of the groundfish mortality closed areas. The most recent action that provided controlled access in the access areas was Framework 18 for FY2006 and FY2007.

The cumulative impacts of past and present management actions have resulted in substantial effort reductions in the scallop fishery. Sea scallop biomass has increased steadily since 1999. It is estimated that area rotation management will end overfishing and provide a healthy resource for scallop fishermen to harvest for the long-term. Overall, the realized reductions in effort have been positive for the scallop resource.

### ***Physical Environment and EFH***

The effects of mobile bottom-tending gear (trawls and dredges) on fish habitat have been recently reviewed by the National Research Council (NRC 2002). This study determined that repeated use of trawls/dredges reduce the bottom habitat complexity by the loss of erect and sessile epifauna and smoothing sedimentary bedforms and bottom roughness. This activity, when repeated over a long term also results in discernable changes in benthic communities, which involve a shift from larger bodied long-lived benthic organisms for smaller shorter-lived ones. This shift also can result in loss of benthic productivity and thus biomass available for fish predators. Therefore, such changes in bottom structure and loss of productivity can reduce the value of the bottom habitat for demersal fish, such as haddock and cod. These effects varied with sediment type with lower level of impact to sandy communities, where there is a high natural dynamic nature to these bedforms, to a high degree of impact to hard-bottom areas such as bedrock, cobble and coarse gravel, where the substrate and attached epifauna are more stable. Use of trawls and dredges are common in inshore and offshore areas and somewhat less common in riverine areas. The primary gear used in the scallop fishery is dredge gear; however, there is some otter trawl gear used in the scallop fishery. It is assumed for this analysis that the effects of bottom tending mobile gear, particularly dredge gear, are generally moderate to high, depending upon the type of bottom and the frequency of fishing activities to demersal species affected by this action.

These activities, which cause impacts to essential fish habitat for a number of federally managed species in a manner that is more than minimal and less than temporary in nature, have been mitigated by the measures in Amendment 10. Amendment 10 implemented a series of year-round closed areas to scallop gear to protect EFH in those areas. Furthermore, a gear modification (4-inch ring size) was implemented to reduce contact with the bottom. And total DAS allocated under Amendment 10 were reduced, which had additive benefits for EFH by reducing overall scallop fishing effort. It should be noted that sea scallop EFH is not considered adversely affected by dredge or otter trawl fishing effort.

### ***Protected Species***

Before 2001, there were only three known interactions between sea turtles and scallop dredge gear. Although the exact reasons for the interactions are not well known, they probably occurred before 1999 and may have become more prevalent since 1993. Around this time, scallop fishing intensity in the Mid-Atlantic region increased following a general decline of scallop biomass in the Georges Bank region and closure of the groundfish Closed Areas in December 1994. Since turtle interactions in the high use areas and seasons are in part related to fishing effort, sea turtles may have benefited from reductions of fishing effort allocations in Amendments 4 and 7. During this time, DAS use declined from 40,490 DAS in 1993 to 23,074 DAS in 1999, before increasing to 30,082 DAS, in 2003. The amendments and intervening framework adjustments also made other management changes, including new gear restrictions, although the effect of these changes on sea turtle interactions is unknown.

The extent of interactions between fishing with scallop dredges and sea turtles is still under investigation. Following the opening of the Hudson Canyon Access Area and increased observer coverage in the area, additional interactions between sea turtles and scallop dredge gear became

known. New research is continuing to identify additional gear modifications and changes in fishing that could reduce interactions in the fishery.

The main goal of Amendment 10 to the Scallop FMP was to focus scallop fishing effort in areas where biomass is greatest with the rationale that actual fishing time is likely to be reduced as the overall catch per tow increases. Scallop management areas have been monitored through annual scallop surveys for scallop biomass and growth rates. When biomass in a closed area is high and the growth rates decline (i.e. the scallop resources are at maximum levels in the area) areas open to fishing at a controlled level. Conversely, closings occur when the reverse situation occurs (low biomass and high growth rate indicating a depleted scallop resource in the area). While Scallop Amendment 11 continues this management program, its purpose is to control capacity and mortality in the general category scallop fishery.

Certain general statements can be made regarding areas in the scallop management unit. Shifts in scallop effort from the Mid-Atlantic region to areas of Georges Bank may have had the effect of reducing potential risks to sea turtles. As the Georges Bank scallop resource is reduced and the Mid-Atlantic areas rebound a reverse shift in effort from an area of low use for turtles, to a high use areas in the Mid-Atlantic may potentially increase the risk of interactions from current levels. Accordingly, impacts to protected species could shift back and forth over the years under the management scheme implemented under Amendment 10. Since modifications to NEFMC management actions will occur through framework adjustments and plan amendments, they will undergo additional review to assess impacts to protected species.

The most recent Biological Opinion for the sea scallop fishery, dated 9/18/2006, summarized the overall impacts to threatened and endangered species. It concluded that the fishing operations being carried out under the Scallop FMP and as modified by Framework 18 were likely to adversely affect, but not jeopardize the continued existence of loggerhead, leatherback, Kemp's ridley and green sea turtles.

The alternatives under consideration in this action do not appear to have any adverse cumulative effects on protected species that would alter the prognosis for impacts of fishing under Amendment 10 and Framework Adjustment 18, although there are other sources of human-induced mortality and/or harassment of turtles in the action area. These include incidental takes in state-regulated fishing activities, vessel collisions, ingestion of plastic debris, and pollution. While the combination of these activities may affect populations of endangered and threatened sea turtles, preventing or slowing a species' recovery, the magnitude of these effects is currently unknown.

*State Water Fisheries* - Fishing activities are considered one of the most significant causes of death and serious injury for sea turtles. A 1990 National Research Council report estimated that 550 to 5,500 sea turtles (juvenile and adult loggerheads and Kemp's ridleys) die each year from all other fishing activities besides shrimp fishing. Fishing gear in state waters, including bottom trawls, gillnets, trap/pot gear, and pound nets, take sea turtles each year. However, information on the takes is limited. Given that state managed commercial and recreational fisheries along the Atlantic coast are expected to continue within the action area in the foreseeable future, additional takes of sea turtles in these fisheries is anticipated.

*Vessel Interactions* – NOAA Fisheries STSSN data indicate that interactions with small recreational vessels are responsible for a large number of sea turtles stranded each year within the action area. Collision with boats can stun or easily kill sea turtles, and many stranded turtles have obvious propeller or collision marks.

*Pollution and Contaminants* - Marine debris (*e.g.*, discarded fishing line or lines from boats) can entangle turtles in the water and drown them. Turtles commonly ingest plastic or mistake debris for food. Chemical contaminants may also have an effect on sea turtle reproduction and survival. While the effects of contaminants on turtles is relatively unclear, pollution may be linked to the fibropapilloma virus that kills many turtles each year (NOAA Fisheries 1997). If pollution is not the causal agent, it may make sea turtles more susceptible to disease by weakening their immune systems. Excessive turbidity due to coastal development and/or construction sites could influence sea turtle foraging ability. As mentioned previously, turtles are not very easily affected by changes in water quality or increased suspended sediments, but if these alterations make habitat less suitable for turtles and hinder their capability to forage, eventually they would tend to leave or avoid these less desirable areas (Ruben and Morreale 1999).

The factors discussed above, and other factors, potentially have had cumulative adverse effects on most protected species to varying degrees. Because of a lack of cause-effect data, little is known about the magnitude and scope of these factors and how they have contributed to the species' listing.

A number of activities are in progress that may ameliorate some of the negative impacts on marine resources, sea turtles in particular, posed by the activities summarized above. Education and outreach are considered one of the primary tools to reduce the risk of collision represented by the operation of federal, private, and commercial vessels.

NMFS' regulations require fishermen to handle sea turtles in such a manner as to prevent injury. Any sea turtle taken incidentally during fishing or scientific research activities must be handled with due care to prevent injury to live specimens, observed for activity, and returned to the water according to a series of procedures (50 CFR 223.206(d)(1)). NMFS has been active in public outreach efforts to educate fishermen regarding sea turtle handling and resuscitation techniques. NMFS has also developed a recreational fishing brochure that outlines what to do should a sea turtle be hooked and includes recommended sea turtle conservation measures. These outreach efforts will continue in an attempt to increase the survival of protected species through education on proper release guidelines.

There is an extensive network of STSSN participants along the Atlantic and Gulf of Mexico coasts. This network not only collects data on dead sea turtles but also rescues and rehabilitates live stranded turtles. Data collected are used to monitor stranding levels and identify areas where unusual or elevated mortality is occurring. The data are also used to monitor incidence of disease, study toxicology and contaminants, and conduct genetic studies to determine population structure. All states that participate in the STSSN are collecting tissue for genetic studies to better understand the population dynamics of the northern subpopulation of nesting loggerheads. These states also tag live turtles when encountered through the stranding network or in-water

studies. Tagging studies help provide an understanding of sea turtle movements, longevity, and reproductive patterns, all of which contribute to our ability to reach recovery goals for the species.

There is no organized formal program for at-sea disentanglement of sea turtles. However, recommendations for such programs are being considered by NMFS pursuant to conservation recommendations issued with several recent Section 7 consultations. Entangled sea turtles found at sea in recent years have been disentangled by STSSN members, the whale disentanglement team, the USCG, and fishermen. NMFS has developed a wheelhouse card to educate fishermen and recreational boaters on the sea turtle disentanglement network and disentanglement guidelines.

NMFS has also recently published a final rule (70 FR 42508, July 25, 2005) that allows any agent or employee of NMFS, the FWS, the U.S. Coast Guard, or any other Federal land or water management agency, or any agent or employee of a state agency responsible for fish and wildlife, when acting in the course of his or her official duties, to take endangered sea turtles encountered in the marine environment if such taking is necessary to aid a sick, injured, or entangled endangered sea turtle, or dispose of a dead endangered sea turtle, or salvage a dead endangered sea turtle that may be useful for scientific or educational purposes. NMFS already affords the same protection to sea turtles listed as threatened under the ESA (50 CFR 223.206(b)).

In December 2003, NMFS issued new regulations for the use of gillnets with larger than 8 inch stretched mesh in federal waters off of North Carolina and Virginia (67 FR 71895, 3 Dec. 2002). Gillnets with larger than 8 inch stretched mesh are not allowed in federal waters (3-200 nautical miles) north of the North Carolina/South Carolina border at the coast to Oregon Inlet at all times; north of Oregon Inlet to Currituck Beach Light, NC from March 16 through January 14; north of Currituck Beach Light, NC to Wachapreague Inlet, VA from April 1 through January 14; and, north of Wachapreague Inlet, VA to Chincoteague, VA from April 16 through January 14. Federal waters north of Chincoteague, VA are not affected by these new restrictions although NMFS is looking at additional information to determine whether expansion of the restrictions are necessary to protect sea turtles as they move into northern mid-Atlantic and New England waters. These measures are in addition to Harbor Porpoise Take Reduction Plan measures that prohibit the use of large-mesh gillnets in southern mid-Atlantic waters (territorial and federal waters from Delaware through North Carolina out to 72E 30'W longitude) from February 15-March 15, annually.

In May 2004, NMFS issued new regulations prohibiting the use of all pound net leaders, set with the inland end of the leader greater than 10 horizontal ft (3 m) from the mean low water line, from May 6 to July 15 each year in the Virginia waters of the mainstem Chesapeake Bay, south of 37° 19.0' N. lat. and west of 76° 13.0' W. long., and all waters south of 37° 13.0' N. lat. to the Chesapeake Bay Bridge Tunnel at the mouth of the Chesapeake Bay, and the James and York Rivers downstream of the first bridge in each tributary. Outside this area, the prohibition of leaders with greater than or equal to 12 inches (30.5 cm) stretched mesh and leaders with stringers, as established by the June 17, 2002 interim final rule, will apply from May 6 to July 15 each year. The action, taken under the ESA, is necessary to conserve sea turtles listed as

threatened or endangered. NMFS also provides an exception to the prohibition on incidental take of threatened sea turtles for those who comply with the rule (69 FR 24997, 5 May 2004).

In July 2004, NMFS issued new sea turtle bycatch and bycatch mortality mitigation measures for all Atlantic vessels that have pelagic longline gear onboard and that have been issued, or are required to have, Federal HMS limited access permits, consistent with the requirements of the ESA, the MSFCMA, and other domestic laws. These measures include mandatory circle hook and bait requirements, and mandatory possession and use of sea turtle release equipment to reduce bycatch mortality. This final rule also allows vessels with pelagic longline gear onboard that have been issued, or are required to have, Federal HMS limited access permits to fish in the Northeast Distant Closed Area, if they possess and/or use certain circle hooks and baits, sea turtle release equipment, and comply with specified sea turtle handling and release protocols (69 FR 40733, 6 Jul 2004).

In February 2003, NMFS issued a final rule to amend regulations protecting sea turtles to enhance their effectiveness in reducing sea turtle mortality resulting from shrimp trawling in the Atlantic and Gulf areas of the southeastern U.S. TEDs have proven to be effective at excluding sea turtles from shrimp trawls; however, NMFS has determined that modifications to the design of TEDs needed to be made to exclude leatherbacks and large and mature loggerhead and green sea turtles. In addition, several approved TED designs did not function properly under normal fishing conditions. NMFS disallowed these TEDs. Finally, the rule requires modification to the trawl net and bait shrimp exemptions to the TED requirements to decrease mortality of sea turtles (68 FR 8456, 21 Feb 2003)

Significant measures have been taken to reduce sea turtle takes in summer flounder trawls and trawls that meet the definition of summer flounder trawls, which would include fisheries for species like scup and black sea bass, by requiring TEDs in trawl nets fished in the area of greatest turtle bycatch off the North Carolina and part of the Virginia coast from the North Carolina/South Carolina border to Cape Charles, VA. These measures are attributed to significantly reducing turtle deaths in the area. In addition, NMFS issued a final rule (67 FR 56931), effective September 3, 2002, that closes the waters of Pamlico Sound, NC to fishing with gillnets with a mesh size larger than 4 1/4 inch (10.8 cm) stretched mesh ("large-mesh gillnet"), on a seasonal basis from September 1 through December 15 each year, to protect migrating sea turtles. The closed area includes all inshore waters of Pamlico Sound south of 35° 46.3' N. lat., north of 35° 00' N. lat., and east of 76° 30' W. long.

Other recent actions taken to protect sea turtles include a Strategy for Sea Turtle Conservation and Recovery in Relation to Atlantic Ocean and Gulf of Mexico Fisheries (Sea Turtle Strategy), released by NMFS in June 2001, to address the incidental capture of sea turtle species in state and federal fisheries in the Atlantic and Gulf of Mexico. The major elements to the strategic plan include: continuing and improving stock assessments; improving and refining estimation techniques for the takes of sea turtles to ensure that ESA criteria for recovery are being met; continuing and improving the estimation or categorization of sea turtle bycatch by gear type and fishery; evaluating the significance of incidental takes by gear type; convening specialist groups to prepare take reduction plans for gear types with significant takes; and promulgating ESA and

MSFCMA regulations implementing plans developed for take reduction by gear type. Actions taken under the Sea Turtle Strategy are expected to provide a net benefit to sea turtles.

NMFS has recently finalized a rule (71 FR 50361, August 23, 2006) that requires modification of scallop dredge gear by use of a chain mat when the gear is fished in Mid-Atlantic waters south of 49 9.0'N from the shoreline to the outer boundary of the EEZ during the period May 1 through November 30 each year. The intent of the dredge gear modification is to reduce the severity of some turtle interactions that might occur by preventing turtles from entering the dredge bag.

On February 15, 2007 the agency also issued an advance notice of proposed rulemaking to announce it is considering amendments to the regulatory requirements for turtle excluder devices (TEDs). Among other issues, specific changes include increasing the size of the TED escape opening currently required for sea scallop trawl gear and moving the current northern boundary of the Summer Flounder Fishery-Sea Turtle Protection Area off Cape Charles, Virginia to a point farther north. The objective of the proposed measures is to effectively protect all life stages and species of sea turtle in Atlantic trawl fisheries where they are vulnerable to incidental capture and mortality.

#### ***Fishery-related Businesses and Communities***

All actions taken under the Scallop FMP have had effects on fishery-related businesses and communities. None have specifically been developed to primarily address elements of fishing related businesses and communities. In general, actions that prevent overfishing have long-term benefits on businesses and communities that depend on those resources. Some actions that limit participation, such as the limited entry program that was adopted under Amendment 4 had distributional impacts on individuals and ports that participated in the scallop fishery at that time. While short-term negative impacts may follow an action that reduces effort, past and present actions had positive cumulative impacts on vessels owners, crew and their families in the scallop fishery by increasing their fishing revenues, incomes and standard of living. These impacts of these past and present actions were also positive for the related sectors including dealers, processors, primary suppliers to the vessels that sell them gear, engines, boats, etc. The increases in gross profits for scallop vessels and in crew incomes have had positive economic benefits on these sectors indirectly through the multiplier impacts. Total landings have increased, catch per unit of effort has increased, and price has steadily increased as well.

The Passamaquoddy Native American Tribe has been awarded licenses in the State of Maine to harvest scallops in state waters since 1998. Since this is a state fishery, the state of Maine monitors these landings. However, the impact of this fishery on the overall scallop resource is minimal because the size of the fleet is small relative to the scallop fleet managed under this FMP.

#### ***Other Fisheries***

When Amendment 4 implemented limited entry for directed scallop effort, there was a stipulation that any vessel that qualified had to relinquish any other limited access permits (i.e. multispecies) unless that vessel qualified for a combination permit. Therefore, the ability of these qualifying vessels to fish in other limited access fisheries was eliminated. In effect, potential capacity and effort in other limited access fisheries has been reduced since 1994. Since

the main component of the scallop fishery directs on scallops, the impacts of scallop actions on other fisheries is limited. The frameworks that have permitted controlled access in portions of the Georges Bank groundfish mortality closed areas have assessed the impacts on non-target species and they have not been significant. The access area program is under a yellowtail flounder bycatch TAC, so when that TAC is projected to be caught the area closes to scallop fishing. This has reduced impacts of scallop fishing on YT flounder within the access areas. Overall, measures adopted under the Scallop FMP do not have direct significant impacts on other fisheries.

**Table 200 – Summary of effects from past and present actions**

Action	Description	Impacts on Scallops	Impacts on Physical Env. and EFH	Impacts on Protected Species	Impacts on Fishery and Communities	Impacts on Other Fisheries
<b>SCALLOP ACTIONS</b>						
Scallop FMP	Restore adult scallop stock and reduce fluctuation in stock abundance	Positive	Positive	Positive	Positive	Positive
Amendment 4	Changed the primary management mechanism from the meat-count standard to an effort control program for all resource areas	Positive	Positive	Positive	Positive	Positive
Amendment 10	Implement area rotation program and other measures to prevent overfishing and minimize impacts on EFH	Positive	Positive	Positive	Positive	Positive
<b>SUMMARY OF IMPACTS FROM SCALLOP ACTIONS-</b>		<b>Positive</b>	<b>Positive</b>	<b>Positive</b>	<b>Positive</b>	<b>Positive</b>
<b>PHYSICAL ENVIRONMENT AND EFH ACTIONS</b>						
EFH Omnibus Amendment (1998)	Comply with 1996 SFA to describe and identify EFH and minimize impacts of fishing on EFH	Positive	Positive	Neutral	Neutral	Positive
A13/A10	Gear effects evaluation, minimize adverse impacts	Positive	Positive	Neutral	Negative	Positive
<b>SUMMARY OF IMPACTS FROM PHYSICAL ENV/EFH ACTIONS –</b>		<b>Positive</b>	<b>Positive</b>	<b>Neutral</b>	<b>Neutral/Negative</b>	<b>Positive</b>
<b>PROTECTED RESOURCES ACTIONS</b>						
Chain mat rule	Gear modification to address turtle bycatch in the Mid-Atlantic	Neutral	Neutral	Positive	Low Negative	Neutral
<b>FISHERY AND COMMUNITY ACTIONS</b>						
No Specific Actions	N/A	N/A	N/A	N/A	N/A	N/A
<b>OTHER FISHERY ACTIONS</b>						
Multispecies A13		Neutral	Positive	Positive	Low Negative	Positive
<b>SUMMARY OF IMPACTS FROM OTHER FISHERIES ACTIONS –</b>		<b>Neutral</b>	<b>Positive</b>	<b>Positive</b>	<b>Low Negative</b>	<b>Positive</b>
<b>SUMMARY OF IMPACTS OF ALL PAST AND PRESENT ACTIONS ON EACH VEC</b>		<b>Positive</b>	<b>Positive</b>	<b>Positive/Neutral</b>	<b>Positive/Neutral</b>	<b>Positive</b>

*P = Past action/impact*

*Pr = Presently occurring action/impact*

#### **5.7.4.2 Reasonably Foreseeable Future Actions**

The impacts of reasonably foreseeable future actions have been considered relative to the VECs in this amendment and are described below and presented in Table 201. Overall, the impacts associated with reasonably foreseeable future actions to the VECs considered in this assessment are neutral and/or considered to be insignificant, as most impacts cannot be predicted at this time.

##### ***Scallop Resource***

Several reasonably foreseeable future federal fishery management actions may affect the scallop resource. In general, the actions in the foreseeable future are expected to have positive impacts on the scallop resource overall.

##### Amendment 13 to the Scallop FMP

The purpose of this action was to re-activate the industry-funded observer program for the scallop fishery. Observer coverage is necessary in the scallop fishery to monitor bycatch of finfish and interactions with endangered and threatened species. Due to unresolved legal issues concerning the use of a contract to administer the industry funded observer program, an action was needed to provide a mechanism to certify observer service providers. The Council approved Amendment 13 at the February 2007 Council meeting and submitted the document to NMFS on February 16, 2007. The action is under review, and if approved is expected to be implemented by June 2007. This action is not expected to have cumulative impacts on the scallop resource, fishery or other aspects of the environment.

##### Framework 19 to the Scallop FMP

The purpose of Framework 19 is to achieve the objectives of the Scallop FMP to prevent overfishing and improve yield-per-recruit in the scallop fishery. The primary need for Framework 19 is to adjust the DAS allocations and area rotation schedule for the 2008 and 2009 fishing years as part of the biennial adjustment process implemented under Amendment 10. The Council initiated Framework 19 at the November 2006 Council meeting, and is expected to make final decision on this action in September 2007. If approved by NMFS, implementation is expected in March 2008. It is still too early to predict what specific measures will be included in Framework 19 since the biological projections used for the action are not available until mid-summer 2007. While effort reductions are sometimes implemented by framework in terms of open area DAS etc., long-term benefits on the resource and fishery are expected since the action is intended to prevent overfishing and optimize yield.

In addition to what has been considered in previous biennial frameworks, this framework will be the first action implemented after (or simultaneously) with Amendment 11 (this action). Depending on which measures are ultimately selected by the Council in Amendment 11, Framework 19 may also include specific requirements related to general category fishing effort and allocations.

### Sector Omnibus Amendment

The Council has initiated an effort that would potentially enable voluntary sectors in all fishery management plans in New England. To date, there have only been two Committee meetings on the subject so it is too early to determine potential cumulative impacts from this action.

### SBRM Omnibus Amendment

The Council is currently developing a Standardized Bycatch Reporting Methodology Amendment (SRRM Amendment) to all FMPs in this region. Section 303(a)(11) of the Magnuson-Stevens Fishery Conservation and Management Act requires that all FMPs include “a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery.” The SBRM Omnibus Amendment will ensure that all FMPs fully comply with the act. Amendment 10 and Framework 16 to the Scallop FMP were submitted to NMFS several years ago, and in 2004 Oceana, an environmental organization filed suit in the U.S. District Court challenging the SBRM elements of the FMP. The Court found the actions did not fully evaluate reporting methodologies, did not sufficiently address potentially important scientific evidence, and did not mandate a methodology for bycatch monitoring. Therefore, the Court remanded that the Secretary of Commerce take further action on the SBRM aspects of the Scallop FMP.

SBRM is the combination of sampling design, data collection procedures, and analyses used to estimate bycatch and to determine the most appropriate allocation of observers across the relevant fishery modes. The Council has worked with NMFS in development of the SBRM Omnibus Amendment since 2005 and final action is expected in 2007. Once the Council makes a final recommendation about this action and the SBRM Amendment is approved by NMFS the Scallop FMP will be in compliance with the standardized bycatch reporting methodology required by the Magnuson-Stevens Fishery Conservation and Management Act. This action is not expected to have cumulative impacts on the resource, fishery, or environment overall since it is simply a bycatch reporting methodology.

### ***Physical Environment and EFH***

In the spring of 2003, the New England Council initiated a Habitat Omnibus Amendment that will be considered Amendment 14 to the Atlantic Scallop FMP. It will also amend the Northeast Multispecies (Amendment 14), Monkfish (Amendment 4), Herring (Amendment 3) Skate (Amendment 2), Red Crab (Amendment 3) and Atlantic Salmon (Amendment 3) FMPs. This omnibus amendment will fulfill the five year EFH review and revision requirement specified in 50 CFR Section 600.815(a)(10). Although it is not known at this time how the recommendations might change fisheries or fisheries management, the intention is to provide additional habitat and species protection where it is needed. Currently, the DSEIS of Phase 1 of the EFH Omnibus is being prepared for public comment and no final decisions have been made by the Council.

### ***Protected Species***

Anticipated Research - NMFS recognizes that the specific nature of the interaction between sea turtles and scallop dredge gear remains unknown. The scallop dredge may strike sea turtles as it is fished, and this interaction would remain undocumented. Sea turtles could be taken when the dredge is being fished on the bottom or during haulback. NMFS does not know how the modified gear interacts with sea turtles on the bottom and in the water column. In order to understand the interaction, research is currently being conducted and is expected to continue.

This work may provide more information on the interaction between sea turtles and scallop dredge gear in the water.

Summary - In summary, sea turtles, fishery resources, habitat, and the human community have been impacted by past and present actions in the area and are likely to continue to be impacted by these actions in the future. The measures under consideration in Amendment 11 are not expected to substantially affect the physical environment, habitat, or fishery resources. Therefore, there is no net beneficial or adverse effect on these ecosystem components.

Vessel and fishing operations, dredging activities, marine pollution and impaired water quality have had a net negative impact to the biological resources found in the area. Vessel and fishery operations and dredging have likely had a positive impact on the human community. These same activities will likely have the same impact on the same ecosystem components in the future.

Biological resources, in particular sea turtles, have been, are, and will continue to be negatively impacted by a variety of past, present, and future activities. These cumulative impacts may be impacting the recovery of the species, although the extent cannot be quantified. Measures in the proposed action are unlikely to alter the impacts on sea turtles that occur as a result of fishing activities.

The activities that are negatively impacting sea turtles should continue to be addressed to ensure sea turtles are protected. One of the goals under the NMFS Sea Turtle Strategy is to develop and implement plans to reduce the take of sea turtles in Atlantic Ocean and Gulf of Mexico fisheries. Implementation of these plans will have a net beneficial impact to sea turtles. NMFS also intends to continue outreach efforts to educate fishermen regarding sea turtles. The future anticipated research will likely further our knowledge on the nature of the interaction between sea turtles and sea scallop dredge gear, potentially leading to the implementation of different measures impacting the sea scallop fishery and having a beneficial impact to sea turtles. The Sea Turtle Strategy, outreach efforts, and anticipated research all address activities that negatively impact sea turtles and are expected to have a beneficial impact on sea turtles.

The human community will likely experience negative impacts from the scallop dredge modification, some conservation measures, marine pollution, and impaired water quality. It is unknown if those impacts will outweigh the benefits experienced from the other past, present, and future activities.

#### ***Fishery-related Businesses and Communities***

There are no reasonably foreseeable future federal fishery management actions in addition to the ones listed under the scallop resource section above that are expected to have cumulative effects on fishery-related businesses and communities.

#### ***Other Fisheries***

The New England Council is embarking on a new amendment (Multispecies Amendment 16) that is being developed to continue the rebuilding programs adopted by Multispecies Amendment 13. The Council is currently considering a wide range of possible management

strategies such as area management, hard-TACs, sectors, and adjustments to the current effort control program (DAS, area closures etc.). There are several alternatives that are currently being considered that could have impacts on the scallop fishery. For example, one alternative currently being considered is to allow a vessel to possess both a limited access groundfish and scallop permit.

**Table 201 – Summary of effects from reasonably foreseeable future actions**

Action	Description	Impacts on Scallops	Impacts on Physical Env. and EFH	Impacts on Protected Species	Impacts on Fishery and Communities	Impacts on Other Fisheries
<b>SCALLOP ACTIONS</b>						
Amendment 13	Implement a mechanism to reactivate industry funded observer program	Positive	No Impact	Positive	Low Negative	Positive
Framework 19	Biennial framework for FY2008-2009	Potentially Positive	Potentially Neutral	Potentially Neutral	Potentially Positive	Potentially Neutral
Sector amendment	Potentially allow voluntary sectors in all FMPs in New England	Potentially Positive	Potentially Positive	Potentially Positive	Potentially Positive	Potentially Positive
SBRM Amendment	Implement a bycatch reporting methodology	Potentially Neutral	No Impact	Potentially Positive	Potentially Neutral	Potentially Positive
<b>SUMMARY OF IMPACTS FROM SCALLOP ACTIONS-</b>		<b>Potentially Positive</b>	<b>Uncertain/ No Impact</b>	<b>Potentially Positive</b>	<b>Potentially Positive/ Neutral</b>	<b>Potentially Positive</b>
<b>PHYSICAL ENVIRONMENT AND EFH ACTIONS</b>						
Phase I EFH Omnibus	Review EFH designations, consider HAPC alternatives, describe prey species, evaluate non-fishing impacts	Positive	Positive	Neutral	Neutral	Positive
Phase II EFH Omnibus	Review gear effects and minimize adverse impacts	Uncertain	Uncertain	Neutral	Uncertain	Uncertain
<b>SUMMARY OF IMPACTS FROM PHYSICAL ENV/EFH ACTIONS –</b>		<b>Positive</b>	<b>Positive</b>	<b>Neutral</b>	<b>Uncertain</b>	<b>Uncertain</b>
<b>PROTECTED RESOURCES ACTIONS</b>						
Sea turtle strategy	NMFS program to address incidental capture of turtles in state and federal fisheries	No Impact	No Impact	Positive	Low Negative	Low Negative/ Neutral
Atlantic take reduction team	Requirements to reduce interaction with marine mammals	No Impact	No Impact	Positive	Low Negative	Low Negative/ Neutral
<b>SUMMARY OF IMPACTS FROM PROTECTED RESOURCES ACTIONS</b>		<b>No Impact</b>	<b>No Impact</b>	<b>Positive</b>	<b>Low Negative</b>	<b>Low Negative/ Neutral</b>
<b>FISHERY AND COMMUNITY ACTIONS</b>						
No Specific Actions	N/A	N/A	N/A	N/A	N/A	N/A
<b>OTHER FISHERY ACTIONS</b>						
Multispecies A16	Continue the rebuilding programs implemented by Mult. Amendment 13	Potentially Neutral	Uncertain	Uncertain	Uncertain	Uncertain
<b>SUMMARY OF IMPACTS FROM OTHER FISHERIES ACTIONS –</b>		<b>Potentially Neutral</b>	<b>Uncertain</b>	<b>Uncertain</b>	<b>Uncertain</b>	<b>Uncertain</b>
<b>SUMMARY OF IMPACTS OF ALL PAST AND PRESENT ACTIONS ON EACH VEC</b>		<b>Potentially Positive</b>	<b>Neutral/ Potentially Positive</b>	<b>Neutral/ Potentially Positive</b>	<b>Neutral/ Uncertain</b>	<b>Neutral/ Uncertain</b>

### 5.7.5 Non-fishing Impacts

The impacts of the following non-fishing activities are discussed in relation to scallop EFH in Section ??? of this document. Although they are presented in relation to the physical environment and EFH, the non-fishing impacts relate to all VECs identified in this amendment and are considered in this analysis (Table 202). Other non-fishing impacts that are important for consideration are also discussed below. The non-fishing impacts discussed in this section include:

- Vessel operations and marine transportation;
- Dredge and fill activities;
- Pollution/water quality;
- Agricultural and silvicultural/timber harvest runoff;
- Pesticide application;
- Water intake structures/discharge plumes;
- Loss of coastal wetland;
- Road building and maintenance;
- Flood control/shoreline stabilization;
- Utility lines/cables/pipeline installation;
- Oil and gas exploration/development/production;
- Introduction of exotic species;
- Aquaculture operations;
- Marine mining; and
- Other potential sources.

**Low frequency sonar** may pose an additional threat to protected species, although the extent of its continued use by the U.S. military is unclear at this writing. A successful lawsuit brought by environmental groups limited the use of such sonar following a number of marine mammal deaths in the vicinity of naval exercises in several places around the world. Federal legislation being debated in Congress at this time could override the lawsuit settlement agreement and exempt the military from the “harassment” provisions of the MMPA, easing the restrictions on the limited deployment of low frequency sonar.

The **National Offshore Aquaculture Act** is proposed to provide the necessary authority to the Secretary of Commerce to establish and implement a regulatory system for aquaculture in Federal waters. The bill would: authorize the Secretary to issue offshore aquaculture permits and establish environmental requirements where existing requirements under current law are inadequate; exempt permitted offshore aquaculture from legal definitions of fishing that restrict size, season, and harvest methods; authorize the establishment of a research and development program in support of offshore aquaculture; require the Secretary to work with other Federal agencies to develop and implement a streamlined and coordinated permitting process for aquaculture in the EEZ; authorize to be appropriated “such sums as may be necessary” to carry out this Act; and provide enforcement for the Act.

In addition, one way the United States plans to meet its present and future energy demands is through the importation of **Liquefied Natural Gas (LNG)**. Currently, the United States has four onshore LNG import terminals in coastal port areas: Everett, Massachusetts, Cove Point, Maryland, Elba Island, Georgia, and Lake Charles, Louisiana. These four existing import terminals have been around since the 1970s. There is an additional onshore import facility located in Penuelas, Puerto Rico. This facility began importing liquefied natural gas in August 2000.

Due to potential hazards associated with onshore LNG terminals, many state and local governments have opposed the construction of any new onshore LNG terminals. For example, there have been numerous proposals for onshore LNG terminals along the coast of Maine. Most of these proposals (Harpwell, Hope Island, Cousins Island, Sears Island, and Pleasant Point) have either been rejected by local voters or withdrawn. Most opponents to onshore LNG terminals maintain that LNG is unsafe, harms the environment, and disrupts commercial fishing. Companies, like ChevronTexaco and Shell, are now moving towards developing LNG terminals offshore on the outer continental shelf.

In April 2005, Gulf Gateway Energy Bridge (formerly known as El Paso Energy Bridge) became the world's first offshore LNG terminal to begin operation. Gulf Gateway is located 116 miles offshore of the Louisiana coastline. To date, including Gulf Gateway, there are three offshore LNG projects that have been approved. These three LNG terminals are all located in the Gulf of Mexico. Port Pelican's (ChevronTexaco) proposed site is located thirty-six miles off the Louisiana coastline, while Gulf Landing's (Shell) is located thirty-eight miles offshore of Louisiana.

Nationally, seven proposed offshore LNG terminals are currently under review, including a potential terminal to be built offshore of Gloucester, Massachusetts. The other projects under review include: Cabrillo Port (fourteen miles offshore of Ventura County, California), Clearwater Port (fourteen miles offshore of southern California), Main Pass Energy Hub (offshore of Alabama, Louisiana, and Mississippi), Compass Port (offshore of Alabama and Mississippi), Pearl Crossing (forty-one miles offshore of Louisiana), and Beacon Port (offshore of Louisiana). The application for the proposed offshore LNG terminal off the coast of Gloucester (Gateway and Neptune projects) have been approved.

The two primary effects on the commercial and recreational fishing industries from offshore LNG terminals are the indirect impacts of displaced fishing effort and the potential for adverse impacts on fish stocks resulting from adverse impacts on EFH due to the vaporization process, where LNG is converted from a liquid to gaseous state. The degree to which the scallop fishery in particular may be impacted can not be fully understood until an LNG terminal has completed the sitting process. However, a recent EIS filed by the U.S. Coast Guard and the Maritime Administration on the Main Pass Energy Hub plan indicates that the "open-loop" vaporization process, which pushes seawater through a radiator-type structure that warms and vaporizes the super-cooled LNG and discharges that water back into the sea, would affect fish eggs and larvae as well as other zooplankton and phytoplankton. The resulting impacts are limited to the water discharge plumes, and while no firm data on the size of such plumes have been provided, the

report states that the effects will not be serious or long lasting. The report concludes that none of the potential impacts on EFH would be expected to result in population-level impacts or a reduction in biomass for any stocks.

According to preliminary documents filed with the U.S. Coast Guard and the Federal Energy Regulatory Commission, displacement of fishing effort would be limited to a less than one nautical mile radius circle that would be closed to all fishing and recreational activities during the offloading of LNG. Additionally, a security zone of less than one quarter of a nautical mile would be maintained around the LNG tankers as they transit to and from the offload facility. While these closures may displace a limited amount of fishing effort, the total amount of fishable bottom impacted is expected to be minimal, and the effort displaced would not likely have an adverse impact on neighboring, or any other, fishing areas.

Onshore LNG facilities are currently being proposed or planned for construction in Pleasant Point, ME; Somerset, MA; Providence, RI; Long Island Sound, NY; Logan Township, NJ; Philadelphia, PA; and an expansion of an existing facility in Cove Point, MD.

Depending on the specific location and type of LNG facility, a range of impacts to fisheries and/or fisheries habitat may result from both construction and operation of terminals. Due to the large size of LNG tankers, dredging may need to occur to access onshore terminals. Dredging can result in direct loss of fish and/or shellfish habitat and can elevate levels of suspended sediment within the water column. As with other dredging, suspended sediments can impact various life stages of fish and shellfish. Further, the construction of pipelines and fill associated with site construction can have adverse impacts on inter-tidal habitats and salt marshes in the area.

Although only two **offshore wind energy projects** have formally been proposed in the northeast region, at least 20 other separate projects may be proposed in the near future. Cape Wind Associates (CWA) proposes to construct a wind farm on Horseshoe Shoal, located between Cape Cod and Nantucket in Nantucket Sound, Massachusetts. A second project is proposed by the Long Island Power Authority (LIPA) off of Long Island, New York. The CWA project would have 130 wind turbines located as close as 4.1 miles offshore of Cape Cod in an area of approximately 24 square miles, with the turbines being placed at a minimum of 1/3 mile apart. The turbines will be interconnected by cables, which will relay the energy to shore to the power grid. If approved, vessels from southern New England may experience an increase in costs associated with having to steam around the wind farms on their way to and from fishing grounds on Georges Bank.

The Army Corps of Engineers has developed a DEIS and has completed a scoping process for the proposed Cape Wind Associates (CWA) project on Horseshoe Shoal. If constructed, the turbines would preempt other bottom uses in an area similar to oil and natural gas leases. The potential impacts associated with the CWA offshore wind energy project include the construction, operation and removal of turbine platforms and transmission cables; thermal and vibration impacts; and changes to species assemblages within the area from the introduction of vertical structures. A thorough analysis of the effects of these impacts on fishing has not yet been conducted, but data indicate that there would not be a substantial impact on the scallop

fishery as there is little scallop fishing activity in this area. While EFH may be adversely impacted in the vicinity of the wind turbines, the extent of this proposal is not sufficient to have any population-level impacts on resource biomass or health.

Non-fishing activities pose a risk to EFH for all species as well as to each scallop life stage's EFH. Many of the non-fishing impacts are unknown and/or unquantifiable. In general, the greatest potential for adverse impacts to scallops and scallop EFH occurs in close proximity to the coast where human-induced disturbances, like pollution and dredging activities, are occurring. Because inshore and coastal areas support essential egg, larval and juvenile scallop habitats, it is likely that the potential threats to inshore and coastal habitats are of greater importance to the species than threats to offshore habitats. It is also likely that these inshore activities will continue to grow in importance in the future. Activities of concern include: chemical threats; sewage; changes in water temperature, salinity and dissolved oxygen; suspended sediment and activities that involve dredging and the disposal of dredged material.

Impacts of non-fishing activities on all the VECs that were considered in this EIS were evaluated to be low to moderately negative.

**Table 202 – Summary of effects from non-fishing activities**

Action	Description	Impacts on Scallops	Impacts on Protected Species	Impacts on Physical Env and EFH	Impacts on Fishery and Communities	Impacts on Other Species
P, Pr, RFFA Vessel operations, marine transportation	Expansion of port facilities, vessel operations and recreational marinas	<b>No Impact at Site</b>	<b>Negative at Site</b> – inshore species impacted by reduced water quality and haul out activity	<b>Potentially Negative Inshore</b> – may lead to destruction of habitat	<b>Potentially Negative</b> if loss of fishing opportunities occur	<b>No Impact at Site</b>
P, Pr, RFFA Beach nourishment, dredge and fill activities	Offshore mining of sand for beaches Placement of sand to nourish beach shorelines	<b>Negative at Site</b> – entrainment, sedimentation and turbidity impacts to fish in area in and around borrow site  <b>Negative at Site</b> – may displace fish, remove benthic prey and increase mortality of early life stages	<b>Negative at Site</b> – mining activity increases noise and reduces water quality  <b>Negative at Site</b> – turtles susceptible to impacts from beach nourishment	<b>Negative at Site</b> – may lead to destruction of habitat in and around borrow site  <b>Negative at Site</b> – may result in burial of structures that serve as foraging or shelter sites	<b>Negative at Site</b> – potential loss of fishing opportunities  <b>Positive at Site</b> – restoration of an eroding shore may protect or restore recreational beaches	<b>Negative at Site</b> – entrainment, sedimentation and turbidity impacts to fish in area in and around borrow site  <b>Negative at Site</b> – may displace fish, remove benthic prey and increase mortality of early life stages
P, Pr, RFFA Pollution/water quality	Land runoff, precipitation, atmospheric deposition, seepage, or hydrologic modification Point-source discharges	<b>Negative at Site</b> – impacts primarily inshore	<b>Negative at Site</b> – inshore species impacted by impaired biological food chain and poor water quality due to nutrient loading	<b>Negative at Site</b> – impacts primarily inshore, leads to destruction of habitat and EFH	<b>Negative at Site</b> – potential loss of fishing opportunities, human health issues	<b>Negative at Site</b> – impact to species located inshore
P, Pr, RFFA Agriculture and timber harvest runoff	Nutrients applied to agriculture land are introduced into aquatic systems	<b>Negative at Site</b> – impacts primarily inshore	<b>Negative at Site</b> – inshore species impacted by impaired biological food chain and poor water quality due to nutrient loading	<b>Negative at Site</b> – impacts primarily inshore, leads to destruction of habitat	<b>Negative at Site</b> – potential loss of fishing opportunities	<b>Negative at Site</b> – impact to species located inshore
P, Pr, RFFA Pesticide application	Substances that are designed to repel, kill, or regulate the growth of undesirable biological organisms	<b>Negative at Site</b> – impacts primarily inshore	<b>Negative at Site</b> – inshore species impacted by impaired biological food chain and poor water quality due to nutrient loading	<b>Negative at Site</b> – impacts primarily inshore, leads to destruction of habitat and EFH	<b>Negative at Site</b> – potential loss of fishing opportunities, human health issues	<b>Negative at Site</b> – impact to species located inshore
P, Pr, RFFA Water intake structures/ discharge plumes	Withdrawal of estuarine and marine waters by water intake structures	<b>No Impact</b>	<b>Negative at Site</b> – intake structures can entrap protected species	<b>Potentially Low Negative at Site</b> - discharge plumes may affect local oceanographic conditions	<b>No Impact</b>	<b>Potentially Low Negative at Site</b> – particularly anadromous species that school or spawn in the vicinity of such structures

Action	Description	Impacts on Scallops	Impacts on Protected Species	Impacts on Physical Env and EFH	Impacts on Fishery and Communities	Impacts on Other Species
P, Pr, RFFA Loss of coastal wetland	Urban growth and development Development activities within watersheds and in coastal marine areas	<b>Potentially Low Negative at Site</b> – may result in habitat degradation	<b>Negative at Site</b> – results in habitat loss for fish species that represent prey items	<b>Potentially Low Negative at Site</b> – may result in habitat degradation	<b>Potentially Low Negative at Site</b> – may result in biomass declines if spawning, health, or mortality are affected	<b>Potentially Low Negative at Site</b> – may result in habitat degradation
P, Pr, RFFA Road building and maintenance	Paved and dirt roads Poorly surfaced roads can substantially increase surface erosion	<b>Unknown</b> – no data	<b>Unknown</b> – no data	<b>Unknown</b> – no data	<b>Unknown</b> – no data	<b>Unknown</b> – no data
P, Pr, RFFA Flood control/shoreline stabilization	Protection of riverine and estuarine communities from flooding events Dikes, levees, ditches, or other water controls	<b>Unknown</b> – no data	<b>Unknown</b> – no data	<b>Unknown</b> – no data	<b>Unknown</b> – no data	<b>Unknown</b> – no data
P, Pr, RFFA Utility lines/cables/ pipeline installation	Dredging of wetlands, coastal, port and harbor areas for port maintenance	<b>Negative at Site</b> – impacts primarily inshore	<b>Negative at Site</b> – dredging activity increases noise and may lead to mortality or injury of protected species	<b>Negative at Site</b> – impacts primarily inshore, leads to destruction of habitat	<b>Negative</b> – potential loss of fishing opportunities	<b>Negative at Site</b> – impact to species located inshore
P, Pr, RFFA Oil and gas exploration/development	General exploration and development, as well as hydrocarbon spills associated with the transportation, loading and offloading of oil and gas products	<b>Unknown</b> – no data	<b>Unknown</b> – no data	<b>Unknown</b> – no data	<b>Unknown</b> – no data	<b>Unknown</b> – no data
P, Pr, RFFA Exotic Species	Introduction of non-indigenous and reared species	<b>Potentially Negative</b> – while no direct evidence exists, it is likely that invasive species may affect overall ecosystem health and the biomass of marketable species	<b>Potentially Negative</b> – ecosystem effects of non-native species	<b>Potentially Negative</b> – exotic species (ex., tunicates) found to adversely impact EFH and displace marketable and forage species	<b>Potentially Negative</b> – while no direct evidence exists, it is likely that invasive species may affect overall ecosystem health and the biomass of marketable species	<b>Potentially Negative</b> – while no direct evidence exists, it is likely that invasive species may affect overall ecosystem health and the biomass of marketable species
P, Pr, RFFA Marine Mining	Offshore mining as well the mining of gravel from beaches	<b>Unknown</b> – no data	<b>Unknown</b> – no data	<b>Unknown</b> – no data	<b>Unknown</b> – no data	<b>Unknown</b> – no data
P, Pr, RFFA Low and mid-Frequency Sonar	Used in military exercises; considered a potential source of	<b>Unknown</b> – may negatively impact species in immediate	<b>Potentially Negative</b> – literature documents cetacean mortalities	<b>Unknown</b>	<b>Unknown</b> – potential loss of fishing opportunities, but	<b>Unknown</b> – may negatively impact species in immediate

	serious injury and mortality	vicinity of exercises using sonar	in vicinity of exercises using sonar		exercises related to national security	vicinity of exercises using sonar
<sup>RFFA</sup> National Offshore Aquaculture Act of 2005 (currently proposed)	Legislation would grant DOC authority to issue permits for offshore aquaculture in federal waters	<b>Unknown-</b> may negatively impact species by reducing water quality near aquaculture sites	<b>Unknown-</b> may be negative if activities result in interactions with protected species	<b>Unknown-</b> may negatively impact habitat by reducing water quality near aquaculture sites	<b>Unknown-</b> may be positive for communities near sites; negative if prices of commercially harvested fish are impacted	<b>Unknown-</b> may negatively impact species by reducing water quality near aquaculture sites
<sup>RFFA</sup> Liquefied Natural Gas (LNG) terminals - several LNG terminals are proposed, including RI, NY, NJ and DE (w/in 5 years)	Transportation of natural gas via tanker to terminals located offshore and onshore	<b>Potentially Negative</b> — short-term disruption of habitat during construction could negatively impact organisms	<b>Negative</b> – may disrupt protected species during construction through increased noise and poor water quality	<b>Negative</b> - habitat negatively impacted during construction phase and when vessels anchor to offload gas	<b>Negative</b> - security zones around LNG facilities restrict access to fishing areas Positive – location of LNG facilities offshore may protect or improve communities	<b>Potentially Negative</b> — short-term disruption of habitat during construction could negatively impact organisms
<sup>RFFA</sup> Offshore Wind Energy Facilities - several facilities proposed from ME through NC, including off the coast of NY/NJ and VA (w/in 5 years)	Construction of wind turbines to harness electrical power	<b>Potentially Negative</b> — short-term disruption of habitat during construction could negatively impact organisms	<b>Potentially Negative</b> — may disrupt protected species during construction through increased noise and poor water quality	<b>Negative</b> – habitat negatively impacted during construction phase	<b>Negative</b> – if fishing activity is precluded in area where turbines are located Negative – aesthetic impacts <b>Positive</b> – renewable clean energy resource	<b>Potentially Negative</b> — short-term disruption of habitat during construction could negatively impact organisms
<b>SUMMARY OF IMPACTS OF NON-FISHING ACTIVITIES – Overall, impacts are variable but greatest on the physical environment and EFH, but found to be low to moderately adverse; lack of data precludes more in-depth analysis of impacts on other VECs</b>		Potentially Negative	<b>Potentially Negative</b>	<b>Negative</b>	<b>Potentially Negative</b>	<b>Potentially Negative</b>

### **5.7.6 Cumulative Impacts**

Below is a description of the expected cumulative impacts on the measures under consideration for Amendment 11. First is a summary paragraph followed by Table 203, which describes the cumulative impacts of each VEC (scallop resource, EFH, protected resource, fishery related businesses and communities and other fisheries) on the measures under consideration. The proposed action measures are highlighted in grey (*will be highlighted after final measures are selected*). Section 5.7.6.1 is a summary of the cumulative effects of the proposed action only in terms of the magnitude and extent of cumulative impacts on a VEC-by-VEC basis in combination with other actions (past, present, and reasonably foreseeable future actions) as well as the effects from non-fishing actions.

#### ***Scallop Resource***

Overall the impact of No Action is negative for the scallop resource. Open access may increase the risk that estimates could be inaccurate and fishing mortality exceeded. The No Action would not help reduce fishing pressure in near shore waters which are below average in terms of abundance. Since the No Action does not address potential growth of the general category fishery there is a greater chance that overfishing could result if projections do not accurately predict mortality from the general category sector. Limited entry is expected to have positive impacts on the scallop resource. While the specific qualification alternatives have neutral impacts in terms of cumulative effects, overall limiting the number of vessels that can harvest scallop under general category helps prevent overfishing. In general, how access is allocated has neutral impacts, but the hard TAC options may have negative impacts on the scallop resource depending on how it is implemented and how vessels respond to a hard TAC. In general, the other alternatives under limited entry such as permit provisions, fishing with trawl gear and sectors have neutral or potentially positive effects.

In terms of limited access fishing under general category the impacts on the scallop resource are neutral. Allocating a portion of the total scallop TAC to the general category fishery would help prevent the fishery from exceeding fishing mortality rates, but there are some concerns with near shore areas and vessel behavior in terms of scallop mortality. The cumulative impacts of the NGOM alternatives are neutral provided the TAC is set at an appropriate level to prevent overfishing. Lastly, positive cumulative impacts are expected from the measures to improve integration of scallop data so that management measures can be developed using the most recent data available.

#### ***Physical Environment / EFH***

In general, most alternatives under consideration have neutral to slightly positive cumulative impacts on EFH when compared to the No Action. Similar to the scallop resource, negative cumulative impacts are expected under No Action and positive impacts under limited entry. Limited entry will have long-term positive impacts on EFH by reducing the number of potential participants and controlling effort as compared to the No Action open access fishery. The specific qualification alternatives and permit provisions do not have expected impacts on EFH. Permitting the formation of sectors may have potential positive impacts on EFH if vessels can fish more efficiently and reduce bottom contact time. And if additional monitoring requirements are selected potential positive impacts on EFH may result with better information about the

general category fishery. Overall if the general category fishery is allocated a portion of the scallop TAC there could be potential positive impacts on EFH because the potential expansion of general category effort would be limited, thus potential impacts to EFH reduced. If general category effort is concentrated in near shore areas with critical effort then the cumulative impacts on EFH in those areas would be potentially negative in the long term.

### ***Protected Resources***

In general, most alternatives under consideration have neutral cumulative impacts on protected resources when compared to the No Action. Similar to the scallop resource, negative cumulative impacts are expected under No Action and positive impacts under limited entry. The specific qualification alternatives and permit provisions do not have expected impacts on protected resources. Permitting the formation of sectors may have potential positive impacts on protected resources if vessels can fish more efficiently and reduce bottom contact time. Potentially negative impacts could occur if a change in the fishing year results in an increase in effort or derby effects that overlap with periods when turtles are most abundant. And if additional monitoring requirements are selected potential positive impacts on protected resources may result with better information about the general category fishery. Overall if the general category fishery is allocated a portion of the scallop TAC there could be potential positive impacts on protected resources because the potential expansion of general category effort would be limited, thus potential impacts to protected resources reduced.

### ***Fishery Related Businesses and Communities***

The direct and indirect impacts of the alternatives included in Amendment 11 on fishery related businesses and communities were analyzed in Section 5.4 (Economic Impacts) and Section 5.5 (Social Impacts) of this document. The cumulative impacts of the limited access, TAC, and other alternatives included in Amendment 11 are summarized in Table 203. Overall, these impacts are expected to be positive on fishery related businesses and communities.

Past and present actions had positive cumulative impacts on the communities by increasing the scallop landings and revenues, and by giving relatively smaller general category vessels an option to fish on a rebuild resource. The proposed action will continue providing this opportunity to a subset of vessels that had a general category permit and participated in the general category fishery before the control date for a period ranging from 2 to 11 years. Although the limited entry alternatives will have negative distributional impacts on the groups of general category vessels excluded from limited access, the overall cumulative impacts of the proposed action are expected to be positive compared to taking no action. Since with no action there are no limits on the number of trips a general category vessel could take and no limits on the number of vessels able to participate in the general category fishery, total fishing effort in this fishery could increase in response to higher scallop prices, to an increase in resource productivity, or to changes in fishing opportunities in other fisheries. As a result, scallop mortality could exceed sustainable levels, reducing the stock biomass, the future yield, scallop revenues and income for the participants of the sea scallop fishery. Limited access, by itself, will not entirely eliminate these possible effects, but it will reduce the risks of overfishing of the scallop resource by preventing new entry to the general category fishery and by restricting the number of participants in this fishery to vessels that meet the poundage qualification criteria within a qualification time period.

Amendment 11 also includes alternatives that would control scallop fishing mortality in the general category fishery by allocating a separate TAC for this sector. In general, the cumulative impacts of the TAC alternatives are expected to be positive on fishery related businesses and communities compared to taking no action for the following reasons:

- Even with limited access and in the absence of measures that control overall scallop landings by general category vessels, it is possible for the fishing mortality to increase beyond the target levels if the qualified vessels increase the number of trips targeting scallops. This could have negative impacts on both the limited access and the general category vessels as scallop catch per day-at-sea declines and fishing costs per pound of scallops increase.
- Since any increase in overfishing of the scallop resource will need to be corrected through framework action according to the Sea Scallop FMP, the Council could reduce the DAS allocations for limited access vessels, negatively impacting these vessels and their communities. The Council could also reduce the possession limit for all general category vessels, affecting negatively most of the general category vessels that participate in the fishery and depend on scallops as a significant source of income.

If the general category fishery is managed by hard TAC, however, without limited access and/or without allocation of quota to individual vessels (either an individual quota or allocations to tiers), it could lead to a race to fish and market gluts, which could have negative economic impacts especially on smaller vessels that fish seasonally and cannot access all areas due to the constraints on their capacity. Fleet-wide hard TAC by trimester or by quarter will spread out the fishing season and reduce negative impacts from derby fishing and market gluts to some extent. TAC management combined with limited entry and allocation for vessels (in terms of IQ in pounds or trips, in terms of individual allocation or equal allocation for tiers) will prevent derby-style fishing and the negative impacts associated with it.

The impacts of the other alternatives regarding permit and monitoring provisions, NGOM area management alternatives, limited access fishing under general category rules, allocation between general category and limited access vessels, incidental catch, more timely integration of data and other measures were analyzed in Section 5.4 (Economic Impacts) and Section 5.5 (Social Impacts) and summarized in Table 5. Since the overall impacts of these alternatives are, in general, expected to be positive for the participants in the sea scallop fishery (for the reasons provided in Section 5.4 and 5.5), the cumulative impacts of the Amendment 11 alternatives including the past actions are also expected to be positive compared to taking no action.

### ***Other Fisheries***

In general, most alternatives under consideration have neutral cumulative impacts on other fisheries when compared to the No Action. Some of the hard- TAC alternatives have potential negative impacts on other fisheries because if a hard TAC leads to vessels changing behavior impacts could increase. Specifically, if vessels end up fishing for scallops on a more direct basis until the TAC is caught and then fish for other species, then effort could shift into other fisheries after the general category TAC is caught.

**Table 203 – Impacts of alternatives under consideration on the five Amendment 11 VECs (preferred alternatives are shaded)**

SECTION	ALTERNATIVES	SCALLOP RESOURCE	PHYSICAL ENVIRONMENT / EFH	PROTECTED RESOURCES	FISHERY-RELATED BUSINESSES AND COMMUNITIES	OTHER FISHERIES
<b>3.1</b>	<b>MEASURES TO CONTROL CAPACITY AND MORTALITY IN THE GENERAL CATEGORY FISHERY</b>					
<b>3.1.1</b>	<b>No Action</b>	Negative	Negative - Potential unrestricted growth of open access fishery will likely have negative impacts on EFH by increasing effort.	Potentially Negative	Negative - an increase in general category effort could lead to overfishing and reduce future scallop landings, revenues and economic benefits.	Uncertain
<b>3.1.2</b>	<b>Limited Entry</b>	Positive	Positive - By reducing the number of potential participants, over long-term will have positive impacts as effort is controlled compared to No Action.	Positive	Positive - The number of participants in the fishery will decline, reducing the risks of overfishing and decline in future economic benefits. Could have negative distributional impacts in the short-term for some participants that are not provided access to fishery.	Low Negative
3.1.2.1	Qualification criteria alternatives					
3.1.2.1.1	Permit before control date and 100 pound trip	Neutral	Neutral	Neutral	Positive	Neutral
3.1.2.1.2	Permit before control date and 1,000 annual pounds	Neutral	Neutral	Neutral	Positive -except higher positive (negative) distributional impacts on vessels that qualify (do not) qualify for limited access compared to 3.1.2.1.1.	Neutral
3.1.2.1.3	Permit before control date and 5,000 annual pounds	Neutral	Neutral	Neutral	Positive - number of participants would decline significantly, with potential negative distributional impacts on vessels and their communities not provided access to general category fishery compared to 3.1.2.1.1 and 3.1.2.1.2.	Neutral
3.1.2.2	Qualification time period alternatives					
3.1.2.2.1	March 1, 2003-November 1, 2004	Neutral	Neutral	Neutral	Positive - larger negative distributional impacts on historical participants that were not active during these two years.	Neutral
3.1.2.2.2	March 1, 2000-November 1, 2004	Neutral	Neutral	Neutral	Positive - Limiting the access to general category fishery participants in the last five years will eliminate new entry and will reduce the risks of a future decline in economic benefits due to overfishing. Positive (negative) distributional impacts on qualifiers and their communities.	Neutral

SECTION	ALTERNATIVES	SCALLOP RESOURCE	PHYSICAL ENVIRONMENT / EFH	PROTECTED RESOURCES	FISHERY-RELATED BUSINESSES AND COMMUNITIES	OTHER FISHERIES
3.1.2.2.3	March 1, 1994-November 1, 2004	Neutral	Neutral	Neutral	Positive- (negative) distributional impacts on historical (recent) participants of general category fishery.	Neutral
3.1.2.3	Determination of qualification amount					
3.1.2.3.1	Best year	No Impact	No Impact	No Impact	<b>Overall Positive</b> – provides opportunity for each vessel to maximize their allocation share. <b>Positive (negative)</b> distributional impacts on recent (historical) participants and their communities.	No Impact
3.1.2.3.2	Best year indexed by number of years active in the scallop fishery (Option B preferred – 25% index)	No Impact	No Impact	No Impact	<b>Overall Positive –Negative (positive)</b> distributional impacts on recent (historical) participants and their communities.	No Impact
3.1.2.3.3	Cap of 50,000 pounds for a vessels individual contribution factor	No Impact	No Impact	No Impact	<b>Positive</b> – reduces the concentration of quota in a few vessels with large landings or inaccurate records, distributes benefits among more equitably among qualifiers and their communities.	No Impact
3.1.2.4	Allocation of access for qualifiers					
3.1.2.4.1	Individual allocation (Option B preferred – in trips)	Neutral	Neutral	Neutral	<b>Positive</b> – reduces race to fish, allocates each vessel an amount proportional to its best year landings.	Neutral
3.1.2.4.1.1	Modify the 400 pounds possession limit to 2,000 pounds per trip if individual allocation alternative adopted only	Neutral	Neutral	Neutral	<b>Potentially negative</b> –Negative impacts due to overfishing and reduced revenue from resource could outweigh the positive impacts on fishing costs.	Neutral
3.1.2.4.2	Individual allocation with two permits	Neutral	Neutral	Neutral	<b>Overall Positive</b> – reduces race to fish, could have some negative impacts on vessels qualify for part-time permit.	Neutral
3.1.2.4.3	Individual allocation with three tiers	Neutral	Neutral	Neutral	<b>Overall Positive</b> – Reduces race to fish, provides more equitable distribution of allocations. Could have negative impacts on vessels with landings in excess of tier averages.	Neutral

SECTION	ALTERNATIVES	SCALLOP RESOURCE	PHYSICAL ENVIRONMENT / EFH	PROTECTED RESOURCES	FISHERY-RELATED BUSINESSES AND COMMUNITIES	OTHER FISHERIES
3.1.2.4.4	Stand alone ITQ alternative	Neutral	Neutral	Neutral	<b>Positive</b> - reduces race to fish and distributes gains from limited access among more vessels.	Neutral
3.1.2.4.5	Stand alone quarterly hard TAC alternative with limited entry	Low Negative	Neutral	Neutral	<b>Potentially low positive - Quarterly</b> hard TAC will reduce but not eliminate race to fish. This could reduce the positive impacts of limited entry and prevention of overfishing by a hard TAC. Could also have negative distributional impacts on vessels with lower (200 lb.) possession limit.	Neutral/ Potentially Negative
3.1.2.4.6	Fleetwide Hard TAC with limited entry	Low Negative	Neutral	Neutral	<b>Potentially negative</b> – Negative impacts of derby style fishing with annual hard TAC could outweigh the positive impacts of limited entry and prevention of overfishing with a hard TAC.	Neutral/ Potentially Negative
3.1.2.4.7	Fleetwide Hard TAC by quarter/trimester with limited entry	Low Negative	Neutral	Neutral	<b>Potentially low positive</b> - Hard TAC by quarter/trimester will reduce but not eliminate race to fish. This could reduce the positive impacts of limited entry and prevention of overfishing by a hard TAC.	Neutral/ Potentially Negative
3.1.2.5	Limited Entry Permit Provisions					
3.1.2.5.1	Fishing history and permit transfers					
3.1.2.5.1.1	No Action	Neutral	Neutral	Neutral	Potentially neutral– will prevent an increase in the number of participants with positive impacts for the scallop fishery as a whole but will have negative impacts on some participants.	Neutral
3.1.2.5.1.2	One vessel potentially qualifying more than one permit	Neutral	Neutral	Neutral	Potentially positive – positive impacts on some participants could outweigh negative impacts of a potential increase in the number of participants.	Neutral
3.1.2.5.2	Vessel Upgrades					
3.1.2.5.2.1	No upgrade restriction	Neutral	Neutral	Neutral	<b>Potentially low negative</b> – Increase in capacity could lead to overfishing with negative impacts on the scallop fishery as a whole. Positive impacts on some participants that can upgrade and negative impacts on others that cannot invest in more fishing power.	Neutral
3.1.2.5.2.2	10:10:20 upgrade restriction	Neutral	Neutral	Neutral	<b>Potentially low positive</b> - will provide vessels the flexibility to adjust their fishing power to changing circumstances	Neutral

SECTION	ALTERNATIVES	SCALLOP RESOURCE	PHYSICAL ENVIRONMENT / EFH	PROTECTED RESOURCES	FISHERY-RELATED BUSINESSES AND COMMUNITIES	OTHER FISHERIES
					up to a limit, with positive economic impacts on these vessels.	
3.1.2.5.2.2.1	Vessel baselines	Neutral	Neutral	Neutral	<b>Low positive</b> – will ensure that subsequent vessel upgrades do not exceed the restrictions.	Neutral
3.1.2.5.3	Vessel replacements	Neutral	Neutral	Neutral	<b>Low positive</b> – will ensure proper replacement of existing vessel with a new vessel.	Neutral
3.1.2.5.4	Permit stacking					
3.1.2.5.4.1	No Action	Neutral	Neutral	Neutral	<b>Neutral</b> – since this is in line with the current regulations for all limited access programs in this region.	Neutral
3.1.2.5.4.2	Allow stacking up to two permits	Neutral	Neutral	Neutral	<b>Positive</b> - will help to reduce fishing costs and maintain an economically viable operation for some vessels.	Neutral
3.1.2.5.4.3	Allow stacking up to 60,000 pounds or 150 trips	Neutral	Neutral	Neutral	<b>Potentially positive</b> - will help to reduce fishing costs and maintain an economically viable operation for some vessels. Consolidation of allocations could have negative distributional impacts on some communities.	Neutral
3.1.2.5.5	Voluntary Relinquishment of Eligibility	Neutral	Neutral	Neutral	<b>Positive</b> - reduce and/or prevent an increase in capacity in the general category fishery.	Neutral
3.1.2.5.6	Permit splitting	Neutral	Neutral	Neutral	<b>Positive</b> - same as above.	Neutral
3.1.2.5.7	Permit renewals and CPH	Neutral	Neutral	Neutral	<b>Low positive</b> - will help to determine the fishermen who have an active interest in participating in the general category fishery.	Neutral
3.1.2.5.8	Percentage ownership restriction					
3.1.2.5.8.1	Maximum of 1-5% of total general category access	Neutral	Neutral	Neutral	<b>Positive</b> –will prevent a few vessels from dominating the fishery and will help to redistribute gains from the limited access more equitably.	
3.1.2.6	Measures to reduce incentive for limited entry qualifiers to fish for scallops with trawl gear (no preferred alternative identified)					
3.1.2.6.1	No Action	Low Negative	Neutral	Neutral	<b>Low negative</b> – if vessels with trawl gear increase overfishing could occur with negative economic impacts.	No Impact

SECTION	ALTERNATIVES	SCALLOP RESOURCE	PHYSICAL ENVIRONMENT / EFH	PROTECTED RESOURCES	FISHERY-RELATED BUSINESSES AND COMMUNITIES	OTHER FISHERIES
3.1.2.6.2	Prohibit a vessel from switching to trawl gear if it qualified under dredge gear	Low positive	Neutral	Neutral	<b>Low positive</b> - will reduce scallop mortality from an increase in fishing effort by trawl gear with minimal negative impacts on most participants.	Neutral
3.1.2.6.3	Lower possession limit for vessels that qualify for a limited entry general category permit and fish with trawl gear	Low Positive	Neutral	Neutral	<b>Low positive</b> – Same as above.	Neutral
3.1.2.6.4	If a vessel is fishing with a net and has a general category scallop permit, scallops can only be up to 5% of total regulated species onboard (maintaining the 400 pound possession limit)	Low Positive	Neutral	Neutral	<b>Low positive</b> – Same as above.	Neutral
3.1.2.7	Sectors and Harvesting Cooperatives (no preferred alternative identified)					
3.1.2.7.1	No Action	Neutral	Neutral	Neutral	<b>Neutral</b> - since no change compared to current regulations for sea scallop fishery.	Neutral
3.1.2.7.2	Establish a process for sectors in the general category scallop fishery	Potentially Positive – if fishing is more efficient in sector	Potentially Positive	Potentially Positive	<b>Potentially low positive</b> - will have positive impacts on the participants, by allowing fishermen to combine their allocations and to fish using fewer vessels in order to reduce fishing costs.	Potentially Positive
3.1.2.7.2.9.1	20% maximum allocation per sector	Neutral	Neutral	Potentially Neutral	<b>Potentially low positive</b> – could reduce potentially negative impacts of concentration of quota in a few sectors.	Neutral
3.1.2.8	Interim measures for transition to limited entry					
3.1.2.8.1	Vessels that qualify and appeal can fish under a hard-TAC equal to 10% of total projected catch	Low positive	Neutral/Uncertain	Neutral	Potentially low negative	Neutral

SECTION	ALTERNATIVES	SCALLOP RESOURCE	PHYSICAL ENVIRONMENT / EFH	PROTECTED RESOURCES	FISHERY-RELATED BUSINESSES AND COMMUNITIES	OTHER FISHERIES
	until limited entry program can be fully implemented					
3.1.2.8.2	Vessels that qualify and appeal can fish under current restrictions for general category until limited entry program can be fully implemented	Low positive	Neutral	Neutral	Potentially neutral	Neutral
<b>3.1.3</b>	<b>Hard TAC</b>					
3.1.3.1	Fleet-wide Hard TAC	Low Negative	Uncertain	Potentially Negative	<b>Potentially negative</b> - the race to fish will intensify if there are new entrants to the fishery with negative impacts on prices, costs and revenues.	Neutral/ Potentially Negative
<b>3.1.4</b>	<b>Establish a NGOM Scallop Management Area</b>					
3.1.4.1	No Action	Neutral	Neutral	Neutral	Potentially low negative– negative economic impacts on these vessels that do not qualify for limited access due to low landings of scallops in NGOM area.	Neutral
3.1.4.2	Amendment 11 would not apply to waters in the NGOM	Neutral	Neutral	Neutral	<b>Potentially low positive</b> - will provide vessels (that do not qualify for limited access) the opportunity to land scallops NGOM area when the resource conditions are favorable.	Uncertain
3.1.4.3	Establish a limited entry program for the NGOM (Option A preferred as boundary option)	Neutral	Neutral	Neutral	<b>Potentially low positive</b> - Same as above.	Uncertain
<b>3.1.5</b>	<b>Monitoring provisions (no preferred alternative identified)</b>					
3.1.5.1	Require landings and declaration of scallop trip through VMS	Low positive	Low positive	Low Positive	<b>Positive</b> –will have indirect economic benefits for the sea scallop fishery participants by improving the monitoring of the fishing effort and ensuring better compliance with the regulations.	Low Positive
3.1.5.2	Require vessels to report landings through IVR	Low positive	Low positive	Low Positive	<b>Low positive</b> – for the same reasons as above. Fewer benefits compared to VMS monitoring which includes location.	Low positive
<b>3.1.6</b>	<b>Limited access fishing under general category rules</b>					
3.1.6.1	Permit or prohibit limited access fishing under general category rules					
3.1.6.1.1	No Action	Negative Low	Negative low	Negative low	<b>Negative</b> – could lead to an increase in general category fishing effort by limited access vessels with negative impacts on	Negative low

SECTION	ALTERNATIVES	SCALLOP RESOURCE	PHYSICAL ENVIRONMENT / EFH	PROTECTED RESOURCES	FISHERY-RELATED BUSINESSES AND COMMUNITIES	OTHER FISHERIES
					scallop biomass and economic benefits. Not equitable to general category participants if limited access instituted for fishery.	
3.1.6.1.2	Permit limited access vessels that qualify	Neutral	Neutral	Neutral	<b>Low positive</b> – gives opportunity for limited access vessels that qualify to participate in general category fishery with positive economic impacts on these vessels.	Neutral
3.1.6.1.3	Permit occasional or part-time limited access vessels that qualify	Neutral	Neutral	Neutral	<b>Low positive</b> – gives opportunity for those vessels that have more dependence on general category fishery.	Neutral
3.1.6.1.4	Prohibit all limited access vessels from fishing under general category rules	Positive low – but if access redistributed impacts the same	Positive low	Positive low	<b>Potentially neutral</b> - Negative impacts on some limited access vessels could outweigh positive impacts of reducing general category effort due to participation by limited access vessels.	Positive low
3.1.6.2	Allocation of quota to limited access vessels under general category rules					
3.1.6.2.1	Landings deducted from general category TAC	No impact	No impact	No impact	<b>Potentially neutral</b> – could have negative impacts on general category vessels if limited access vessels' share in total general category landings are not taken into account in TAC determination.	No impact
3.1.6.2.2	Landings deducted from separate allocation – 0.5% of total TAC	No impact	No impact	No impact	<b>Potentially neutral</b> - could have minimal negative or minimal positive distributional impacts on some participants depending on the level of total <b>TAC</b> .	No impact
3.1.7	<b>Allocation between limited access and general category fisheries</b>					
3.1.7.1	No Action	Potentially negative	Potentially negative	Potentially Negative	<b>Negative</b> –an increase in general category effort could lead to overfishing and reduce future scallop landings, revenues and economic benefits. DAS allocations or possession limits could be lowered with negative impacts on limited access and general category vessels.	Potentially negative

SECTION	ALTERNATIVES	SCALLOP RESOURCE	PHYSICAL ENVIRONMENT / EFH	PROTECTED RESOURCES	FISHERY-RELATED BUSINESSES AND COMMUNITIES	OTHER FISHERIES
3.1.7.2	Allocation for general category fishery of 2.5-11% of projected annual scallop catch <b>(5% identified as preferred)</b>	Neutral – but higher values for gen cat could have some concerns	Potentially positive – a limit on gen cat effort prevents expanded effort in that sector. Potentially negative for inshore habitat areas if effort there.	Potentially positive – a limit on gen cat effort prevents expanded effort in that sector	<b>Positive</b> – will prevent overfishing due to an increase in general category effort with overall positive economic benefits for the participants. Could have negative (positive) distributional impacts on general category vessels (limited access vessels) depending on the level of TAC for general category.	Neutral – but if lower value for gen cat more effort could shift in other fisheries
3.1.7.3	Allocation of yellowtail flounder bycatch TAC in access areas (no preferred identified)					
3.1.7.3.1	No Action	Neutral	Neutral	Neutral	<b>Low negative</b> – would negatively impact those vessels that are less likely to fish in the early winter months (which are mainly small vessels in the general category fleet), if the larger limited access fleet quickly reaches the overall 10% TAC for the scallop fishery as a whole.	Neutral
3.1.7.3.2	Allocate a proportional allocation of the 10% to the general category fishery	Neutral	Neutral	Neutral	<b>Low positive-</b> provides opportunity for smaller category vessels to continue to fish in access areas until general category yellowtail TAC is reached. Will also prevent yellowtail bycatch TAC to be reached due to general category effort and will allow limited access take their allocated trips to the access areas.	Neutral
<b>3.1.8</b>	<b>Incidental Catch (no preferred alternative identified)</b>					
3.1.8.1	No Action	Neutral	Neutral	Neutral	<b>Neutral</b> – continues the allowance of incidental bycatch of scallops up to 40 lbs. with no impacts on general category and limited access vessels.	Neutral
3.1.3.2	New incidental scallop permit	Neutral	Neutral	Neutral	<b>Low positive</b> – positive impacts on vessels that do not qualify	Neutral
<b>3.2</b>	<b>MEASURES TO ALLOW BETTER AND MORE TIMELY INTEGRATION OF RECENT DATA (no preferred alternative identified)</b>					
3.2.1	No Action	Negative	Neutral	Potentially Neutral	<b>Neutral</b> – fishing year remains the same with no new impacts on the participants.	Neutral
3.2.1.1	Change issuance date of permit	Positive low	Neutral	Potentially Neutral	<b>Potentially low positive</b> - allow better estimation of the number of participants and the level of effort in the fishery.	Neutral
3.2.2	Change start of FY to May 1	Positive – especially is survey can be moved	Neutral	Potentially Negative	<b>Low positive</b> - an implementation time that coincides better with the fishing year will benefit the scallop fishery and have positive economic impacts on the	Neutral

SECTION	ALTERNATIVES	SCALLOP RESOURCE	PHYSICAL ENVIRONMENT / EFH	PROTECTED RESOURCES	FISHERY-RELATED BUSINESSES AND COMMUNITIES	OTHER FISHERIES
		earlier			participants. Some negative impacts due to adjustment cost with fishing	
3.2.3	Change start of FY to August 1	Positive – especially if survey remains in summer	Neutral	Potentially Negative	<b>Same as above</b> – except higher adjustment costs for businesses due to starting fishing year 5 months later than present start on March.	Neutral
<b>3.3</b>	<b>OTHER MEASURES NOT DIRECTLY RELATED TO GOALS AND OBJECTIVES OF AMENDMENT 11 (no preferred alternatives identified)</b>					
<b>3.3.1</b>	<b>Trawl gear restriction</b>					
3.3.1.1	No action	Neutral	Neutral	Potentially Neutral	<b>Neutral</b> – no change from current regulations.	Neutral
3.3.1.2	Clarification of trawl gear restriction	Neutral	Neutral	Potentially Neutral	<b>Low positive</b> – reduces uncertainty for fishermen.	Neutral
<b>3.3.2</b>	<b>Possession limit of 50 bushels</b>					
3.3.2.1	No Action	Neutral	Neutral	Potentially Neutral	<b>Neutral</b> – no change from current regulations.	Neutral
3.3.2.2	Possession limit of 50 bu. Shoreward of the VMS demarcation line and up to 100 bushels east of the line	Potentially neutral	Potentially negative	Potentially Neutral	<b>Low positive</b> –will prevent vessels from in violation if they have more than 50 bushels on board or landing less than 400 lb. scallops per trip to avoid violation.	Neutral

#### **5.7.6.1 Summary of Cumulative Impacts**

To determine the magnitude and extent of cumulative impacts, the incremental impacts of the actions proposed in this amendment should be considered, on a VEC-by-VEC basis, with the effects of all actions – those effects identified and discussed relative to the past, present, and reasonably foreseeable future actions as well as the effects from non-fishing actions. In general, while the management measures proposed result in cumulative impacts in some cases, none of the impacts discussed exceed the threshold that would indicate a significant adverse impact.

*[Section to be completed after proposed action is selected]*