2001 Summer Flounder Specifications
(Includes Scup and Black Sea Bass Specifications)
Environmental Assessment
Regulatory Impact Review
Final Regulatory Flexibility Analysis
Essential Fish Habitat Assessment

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INTEGRATED ANALYSIS OF ALTERNATIVES FOR EA/RIR/IRFA

Introduction

A suite of management alternatives for fishing year 2001 for summer flounder, scup, and black sea bass were developed and analyzed in the EA/RIR/IRFA/EFH assessment submitted to the National Marine Fisheries Service (NMFS) by the Mid-Atlantic Fishery Management Council (Council). Subsequently, NMFS developed additional quota specification options for scup and developed an additional scup GRA option. As a result, NMFS prepared a Supplemental Analysis to the RIR/IRFA in order to examine the overall economic impacts of the four options being considered for scup management in combination with the Council's preferred alternatives for summer flounder and black sea bass.

NMFS analysis was similar to that of the Council, but there were several substantive differences. The Council analyzed the potential impacts of quota alternatives, Gear Restricted Areas (GRAs) and trip limit changes independently of each other. Conversely, NMFS examined the total economic impacts of the four options being considered for scup (including the GRAs, exemptions, harvest limits and trip limits) in conjunction with the preferred measures for summer flounder and black sea bass. In addition, the Council analysis compared the impacts of the proposed scup GRAs to the 1999 fishery, when no GRAs existed. However, the NMFS analysis compared the impacts of the proposed GRAs to the impacts of the GRAs that had been established in 2000. While each method compared the impacts of GRAs and other measures, NMFS believes the approach used in this integrated analysis incorporates a thorough assessment of the combined effects of the proposed management measures for 2001 for comparative purposes.

While SAW 31 concluded that a reduction in fishing mortality from discards would provide the most benefit to rebuilding the scup stock, however the issue is complicated by a lack of sufficient sea sampling (observer) data to definitely characterize the sources of the discards. Although NMFS does not have a precise estimate of scup discards, it is known that discards contribute to the mortality of small scup, and that levels of scup discards may have approached or exceeded scup landings. Given the absence of observer data, it has been difficult to determine exactly when, where, and in what fisheries the discards have occurred and what the magnitudes of the discards are. In addition, because scup are migratory and fishing operations are mobile, it is difficult to define GRAs that will be equally effective over time. All of the uncertainties have made it difficult to devise GRAs that sufficiently reduce scup bycatch and discards, without significantly impacting small-mesh fisheries.

NMFS recognizes that GRAs are not the only way to address scup discard mortality. Therefore, NMFS is proposing four options that vary in terms of the quota recommendations, the size and location of the GRAs, and the fisheries to be exempted. The quotas recommended depend on both the TAC specified and the amount deducted for discards (TAC - discards = TAL). These alternatives were evaluated and compared against the status quo alternative. These alternatives are summarized below.

Status Quo - The status quo alternative provides the baseline against which proposed regulatory alternatives are compared. For this supplemental analysis the status quo was defined as being equivalent to a continuation of measures that were in effect for fishing year 2000 into 2001. Thus the status quo is similar to the Council's Alternative 2 with the exception that the commercial summer flounder TAL was adjusted to 10.75 million pounds, a level necessary to comply with the recent Court Order. For the status quo, the time and areas for the scup GRAs were equivalent to the Council's preferred alternative except that herring was the only exempted fishery. Last, the fishing year 2000 trip limits for black sea bass and scup were assumed to be carried forward to 2001. The analysis of GRA impacts for status quo and all other alternatives defined affected trips as trips that occurred using mesh smaller than 4.5" during the proposed closure time and areas. Exempted trips were comprised of only occasions where herring was landed. Consistent with the exemption regulations that were implemented for fishing year 2000, landings of any small-mesh species other than herring were deducted from total landings on exempted trips.

Option I (Council) - This alternative consists of the Council's preferred alternative for summer flounder, scup, and black sea bass TALs as well as the Council's preferred GRA alternative (GRA 7a) with exemptions for herring, mackerel, and loligo squid. For scup, this would mean a TAC of 8.37 million lb, a discard deduction of 2.15 million lb, and a TAL of 6.22 million lb. The resulting commercial quota for scup would be 4.45 million lb and the resulting recreational harvest limit would be 1.77 million lb. Option I (Council) also includes the Council's preferred alternative trip limits for scup and black sea bass. Note that based on 1999 logbook data, the aggregate landings of scup did not exceed 75% of the resulting Winter I quota so the trip limit reduction proposed to be made at 75% quota attained did not occur and a 10,000 pound trip limit was assumed to prevail for the entire Winter I period.

Option II (MC) - This alternative consists of the Council's preferred alternative quota specifications for summer flounder and black sea bass with the MC's recommended commercial TAL (3.359 million lb) for scup. The MC's recommended TAC for scup is 7.85 million lb with a discard deduction of 2.85 million lb. The resulting commercial quota would be 3.36 million lb and the recreational harvest limit would be 1.64 million lb. The Council's preferred scup GRA's (GRA 7a) were applied but exemptions were limited to herring and mackerel as recommended by the MC. The Council preferred alternative for black sea bass and scup trip limits were also applied except that the lower overall TAL for scup meant that, according to 1999 data, 75% of the Winter I scup quota would be reached by the end of February. Therefore, a 1,000 pound trip limit for scup was applied for March and April of the Winter I period.

Option III (no GRA) - This alternative consists of the Council's preferred alternative quota specifications for summer flounder and black sea bass. For scup, presumed the Monitoring Committee's recommended commercial TAC (7.85

million lb) coupled with the SAW 31 recommendation that landings equals discards (3.15 million lb) for a TAL of 4.70 million lb. The resulting commercial scup TAL would be 3.065 million lb and the resulting recreational harvest limit would be 1.64 million lb. For Alternative 3a no GRAs were applied. The Council preferred alternative for black sea bass and scup trip limits were applied except that the lower overall TAL for scup meant that 75% of the Winter I scup quota would be reached by the end of February. Therefore, a 1,000 pound trip limit for scup was applied for March and April of the Winter I period.

Option IV (Southern GRA) - This alternative consists of the Council's preferred alternative quota specifications for summer flounder and black sea bass coupled with the MC's quota recommendation (a TAC of 7.85 million lb, a discard deduction of 2.85 million lb, and a TAL of 5 million lb). The resulting commercial quota would be 3.36 million lb and the recreational harvest limit would be 1.64 million lb. A new GRA option (GRA 8 as defined below) developed by NMFS was applied with exemptions for herring and mackerel fisheries. The development of this new GRA was based upon winter sea sampling information showing that a more southerly GRA would encompass more of the scup stock during the winter months (see Figure NMFS-1). In addition, a more southerly GRA would impact a substantial amount of coincident fishing effort directed at *Loligo* squid, based on vessel trip report (VTR) data (see Figure NFMS-2). The Council preferred alternative for black sea bass and scup trip limits were also applied except that the lower overall TAL for scup meant that 75% of the Winter I scup quota would be reached by the end of February. Therefore, a 1,000 pound trip limit for scup was applied for March and April of the Winter I period. The coordinates and time periods for the newly developed GRA 8 consist of the following:

Northern Gear Restricted Area I (November 1 - December 31)

Point	N. lat.	W. long.
NGA 1	41E 00"	71E 00"
NGA 2	41E 00"	71E 30"
NGA 3	40E 00"	72E 40"
NGA 4	40E 00"	72E 05"
NGA 1	41E 00"	71E 00"

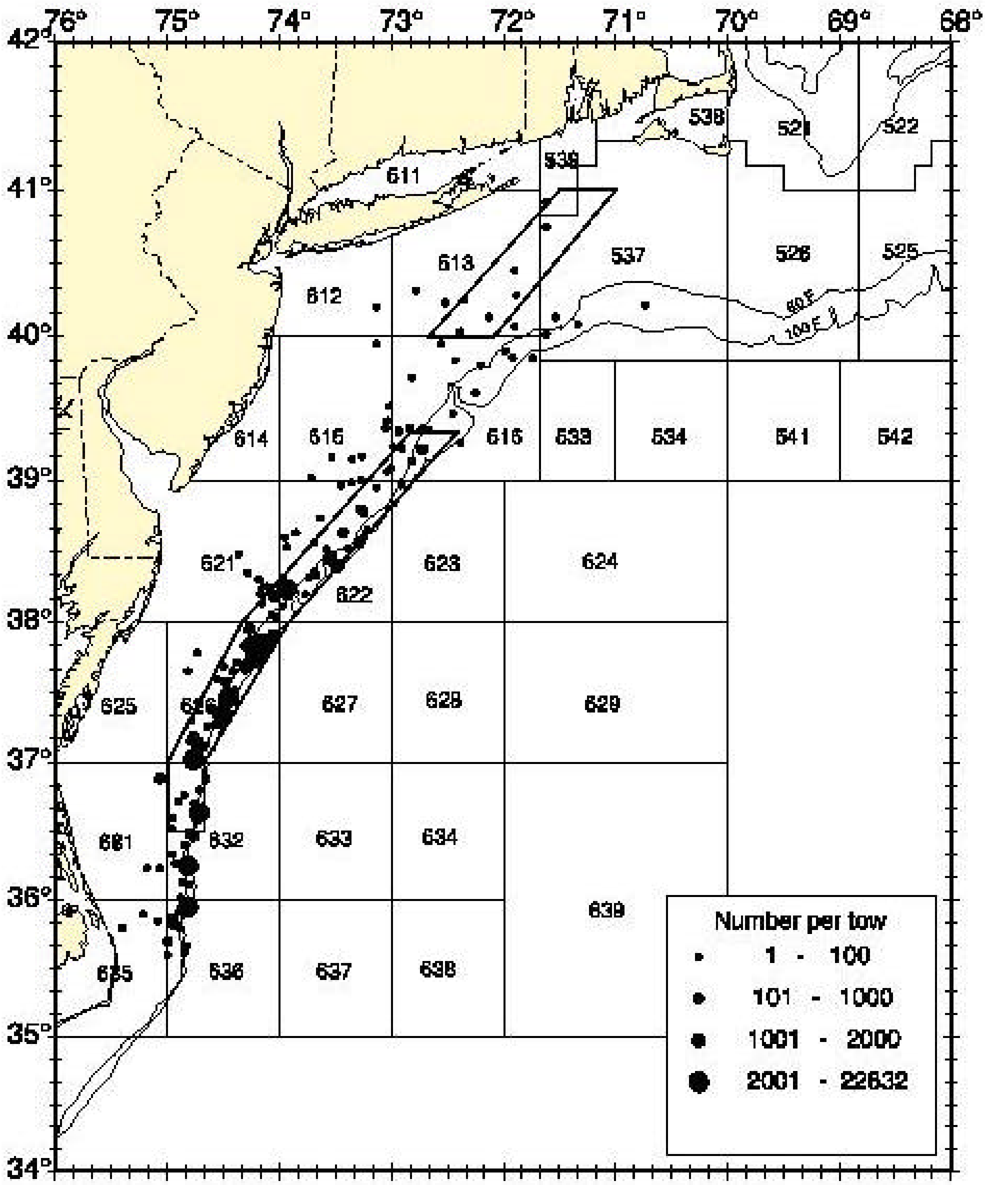
Southern Gear Restricted Area (January 1 - March 15)

Point	N. lat.	W. long.
SGA 1	39E 20"	72E 50"
SGA 2	39E 20"	72E 25"
SGA 3	38E 00"	73E 55"
SGA 4	37E 00"	74E 40"
SGA 5	36E 30"	74E 40"
SGA 6	36E 30"	75E 00"
SGA 7	37E 00"	75E 00"
SGA 8	38E 00"	74E 20"
SGA 1	39E 20"	72E 50"

Option V (Council Preferred Quotas with Southern GRA)

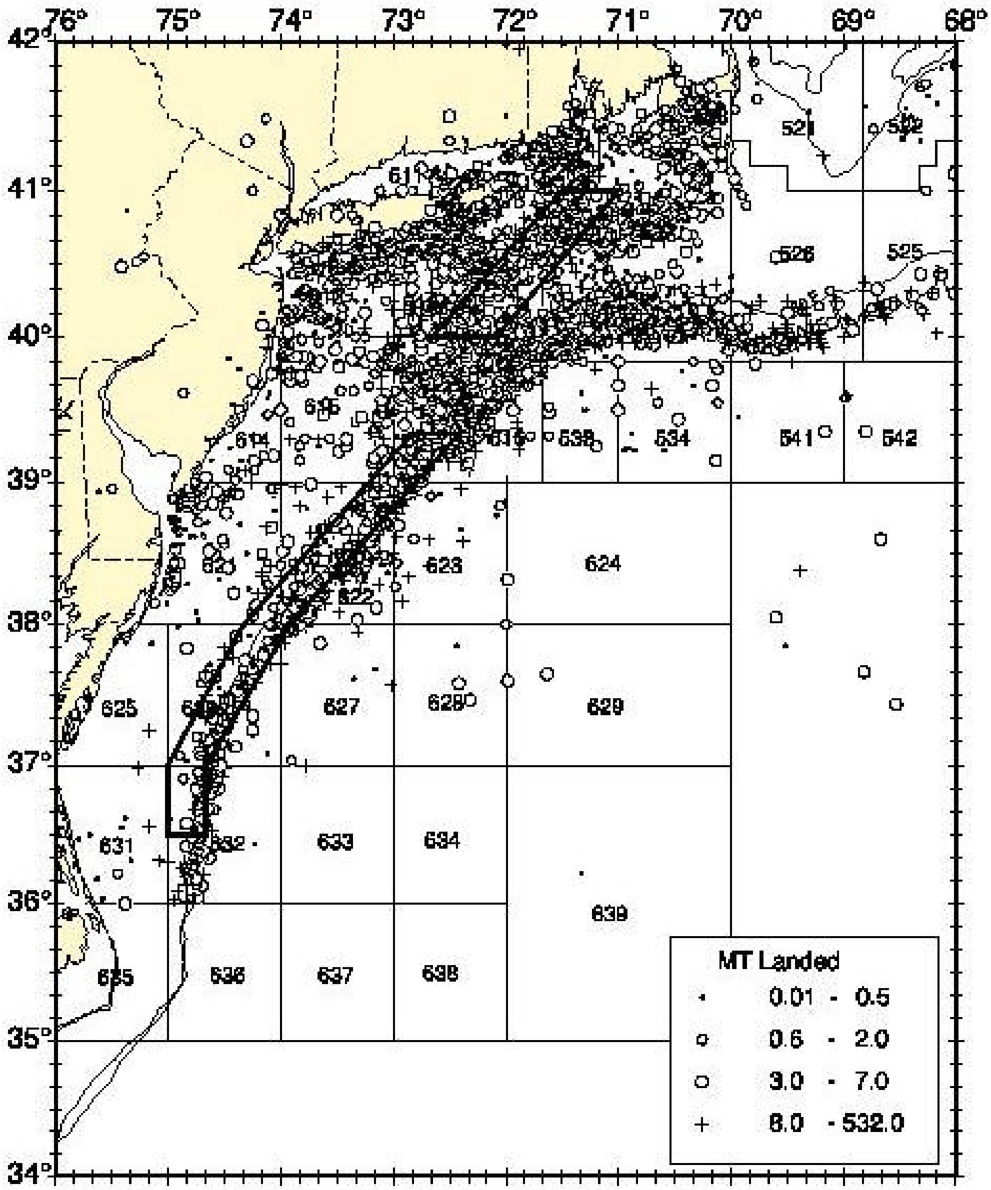
This alternative consists of the Council's preferred alternative for summer flounder, scup, and black sea bass TALs. The new GRA option (GRA 8 as defined above) developed by NMFS was applied with exemptions for herring and mackerel fisheries. This option also includes the Council's preferred alternative trip limits for scup and black sea bass. Note that based on 1999 logbook data, the aggregate landings of scup did not exceed 75% of the resulting Winter I quota so the trip limit reduction proposed to be made at 75% quota attained did not occur and a 10,000 pound trip limit was assumed to prevail for the entire Winter I period.

Figure NMFS-1. Winter scup distribution from sea sampling data.



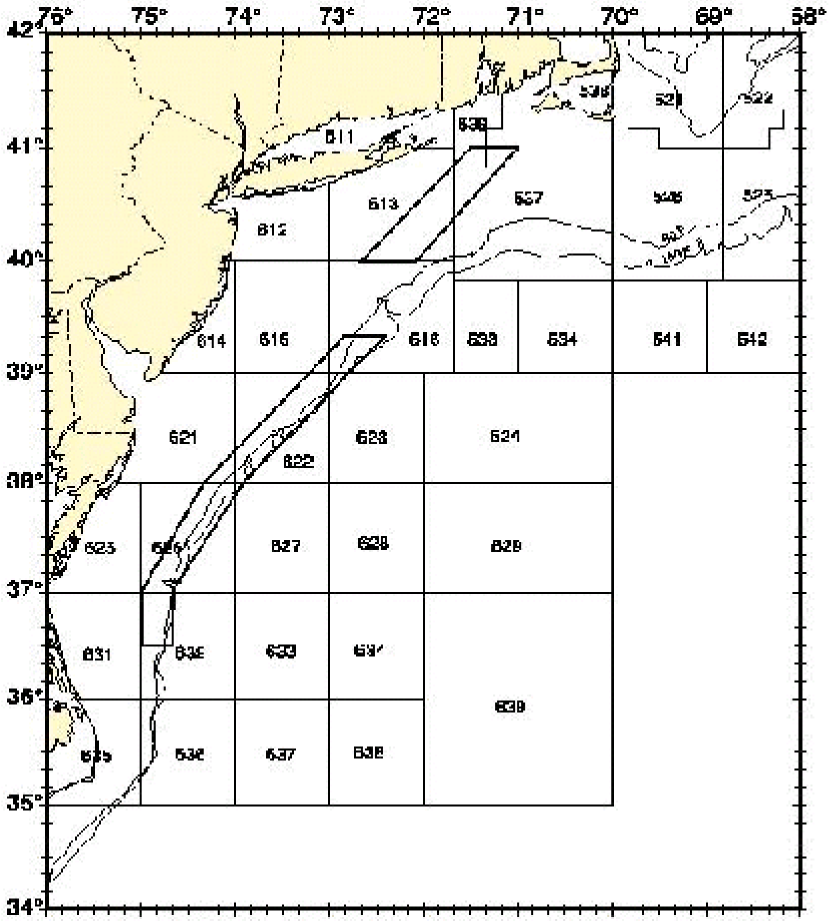
Distribution of Scup during NEFSC 1992-1998 Winter Bottom Trawl Surveys

Figure NMFS-2. Distribution of directed *Loligo* effort from VTR data.



Loligo Landed (MT): VTR 1997-1999: Dec., Jan., Feb.

Figure 1. Gear Restricted Area 8.



1.0 Methods

The general analytical approach was similar to that performed in the Council's EA and which has been used in analyses of previous years (see Section 2.0 and 3.1 of the EA). Specifically, anticipated changes in gross revenues were estimated by prorating estimated inter-annual differences between adjusted quotas (i.e. adjusted for known or expected overages) to a baseline fishing year. For the present analysis, the baseline fishing year was assumed to be the most recent complete year of data (calendar year 1999).

The economic effects of each alternative were compared against the status quo using two alternative methods. First, consistent with the Council's analysis, the 1999 fishing year data were prorated by the percent change in the proposed year 2001 adjusted quotas compared to the adjusted year 2000 quotas. This proration scheme (hereafter referred to as the quota baseline) better reflects inter-annual changes in fishing opportunity without biasing the impacts by a large overage that may have occurred in the baseline year. Nevertheless, a large overage in a given year does represent a potential loss of income to participating vessels in a subsequent year. Therefore, a second proration scheme (hereafter referred to as the landings baseline) was developed based on the percentage change in the adjusted year 2001 quota relative to the year 2000 landings wherever available (i.e. Winter period I and summer period for scup and quarters I, II, and III for black sea bass) and 1999 landings otherwise. Note that projected changes using both baseline and landings proration schemes are based on the assumption that there will be no overages in fishing year 2001. Using both proration schemes provides a range estimate of economic impact for the status quo and all alternatives.

The proration schedule applied for the quota and landings baseline for scup and black sea bass are reported in Tables 1 and 2 respectively. To illustrate how the quota and landings baseline proration factors were calculated consider the status quo alternative for the scup Winter I period. The 2000 quota for Winter I scup was 1,143,160 pounds (column 1 of Table 1). Year 2000 landings were 1,403,151 (column 6); an overage of 259,991 pounds (column 4). Given the year 2001 status quo quota of 1,143,160 (column 2) the adjusted quota for 2001 would be 883,169 (column 5). This adjusted 2001 quota represents a 22.74% (column 8) reduction compared to the adjusted 2000 quota (i.e. percent change calculated as [(column 3 - column 5)/column 3)]). However, compared to actual landings for fishing year 2000 during Winter period I the year 2001 adjusted quota represents a 37.06% (column 9; [(column 6 - column 5)/column

6])reduction in potential earnings.

As was the case for black sea bass, the year 2000 Winter II period for scup has not been completed. Due to large overages in 1999 the adjusted year 2000 quota for Winter period II is 70,356 pounds. In an attempt to minimize any overages from this fishing year, the Winter II period will be limited to a 2-day opening. Should this measure prove successful in controlling quota overages, there will be only small adjustments that may need to be made to the Winter II period quota for 2001. Therefore, the proration factor for the quota baseline applied for this supplemental analysis was based on the year 2000 unadjusted quota [(column 1-column 2)/column 1]. If the 2-day opening fails to keep overages in check, then the economic impacts of each alternative may be more negative than estimated in this supplement.

As of October 7, 2000 the state of Maine had exceeded its summer flounder quota by 51.4% while all other states were at or under their quota. Similarly, there were only limited overages in Maine, Massachusetts, and New Jersey for the 1999 fishing year. Based on recent fishery performance, the summer flounder fishery was assumed to be affected by the reduction in summer flounder TAL necessary to comply with the recent Court Order; a reduction of 1.25% for all states other than Maine.

For each of the scup GRA alternatives 1999 logbook data were used to identify mobile gear trips that were taken within the prescribed time and area that used less than 4.5" mesh. Trip locations were identified using reported latitude and longitude or converted Loran coordinates. These locations were then matched against the coordinates of the GRAs using GIS software. Vessel trip reports represent the only feasible way to identify affected trips but these data have two important limitations. First, vessels that do not have logbook reporting requirements will not be represented in the analysis. Second, only about 50% of the logbook records report valid lat-lon or Loran coordinates. The former limitation may not be as significant a problem as the latter since most of the vessels that would be affected by any of the quota specifications or GRA alternatives are required to submit logbooks. While, the inability to assign about half of the logbook records to a location will not affect estimated impacts associated with either trip limits or quota changes, it may substantially affect the estimated impacts of the GRA’s. A precise assessment of this potential bias cannot be conducted but a potential range can be developed. The total value of all species reported in the logbooks that could be specifically assigned to either GRA 7a or GRA 8 was $1.05 and $1.13 million respectively.

To assess the potential bias in these estimates, total activity for the dates corresponding to each of the GRA’s for the statistical areas that correspond most closely to each GRA (area 613 and 537 for the Northern GRA; area 616 for Area 2 of GRA 7a; area 622 for Area 3 of GRA 7a; and areas 616, 622, and 626 for the southern GRA 8)were summed. Based on these data, the total value of all species reported in the logbook for these statistical areas was $5.02 and $7.64 million for GRA 7a and GRA 8 respectively. These values represent a maximum estimate of potential economic impact. Thus, the economic analysis includes 21% and 15% of all economic activity that took place within the time and statistical areas defined by GRA 7a and 8 respectively. Given the relative difference between the size of the GRA and statistical areas it is not known how much of this total activity could or should be assigned to the boundaries of either GRA. If it is assumed that much of the activity does take place along the depth contours that are captured by the GRA's then the economic impacts of either GRA may be closer to the maximum values reported above. If this is indeed the case, this also means that the difference between Option III with no GRA and other options including the status quo that do contain GRA's will be equivalent to the bias in the estimated GRA impacts. That is, the relative value of Option III (no GRA) as compared to the status quo is likely to be greater (by the amount of the GRA estimation bias) than that reported herein.

2.0 Results

Industry Level Impacts

During fishing year 1999, there were a total of 1,158 vessels that were found to have participated in at least one or more of the summer flounder, black sea bass, or scup fisheries, or had fished with mobile gear with less than 4.5" mesh inside at least one GRA. Further, all of these vessels participated (landed one or more pounds) in at least one of the summer flounder, black sea bass, or scup fisheries. This means that, given available data, the GRA's do not affect a unique set of vessels that are not involved at least to some extent in the summer flounder, scup or black sea bass fishery.

Under the status quo (i.e. the estimated revenue if the year 2000 specifications were continued for 2001) expected fishing revenues for all participating vessels was $78.9 and $77.6 million for the quota baseline and landings baseline respectively. Note that the status quo yields highest gross revenues because of the higher trip limits (i.e. the year 2000 levels) assigned to scup and black sea bass even though the scup quota was lowest among all considered alternatives.

Of the **5** alternatives that were analyzed, Option I (Council), Option III (no GRA) and Option V (Council quota and GRA 8) yielded higher gross revenues than the status quo with Option I (Council) yielding highest gross revenues. The difference between Option V and Option 1 was estimated to be $0.2 million. The difference between these Option I and Option III was estimated to be $0.8 and $0.5 million for the quota and landings baselines respectively. This difference may be more than offset by the higher costs associated with implementation of the GRA's under Option I (Council) (and for that matter all other options that contain GRA's). These costs, which cannot be quantified, include the added enforcement burden as well as any additional costs that participating vessels will have to bear in order to seek out alternative fishing locations or switching gear to make up for lost fishing opportunities during the closure periods. Taking these costs into account, Option III (no GRA) may yield higher net benefit than Option I (Council). To the extent that the revenue impacts of the GRA's are underestimated, the net benefit of Option III may be even greater.

None of the specified options provide a clear-cut comparison of the marginal effects of the two alternative GRA options or the marginal gains from the fishery exemptions. To examine these tradeoffs the quota and trip limit specifications for Option III (no GRA) were selected and each GRA and fishery exemption alternative was systematically varied to identify the marginal economic effects of each possible combination. Note that the magnitude of marginal effects of the GRA's will be independent of the selected quota specification or trip limits because retention of any small-mesh species other than that specified under a fishery exemption will not be allowed.

Implementation of the GRA's without any fishery exemptions would result in a loss of $0.73 and $0.81 million for GRA alternative 7a (the Council's preferred alternative) and GRA 8 (the new NMFS alternative); a difference of less than $0.1 million (Table 4). The marginal gains (i.e. lower reductions in gross revenues compared to Option III (no GRA)) from fishery exemptions were estimated to be greater for GRA 8 than that of GRA 7a. For both GRA's the fishery exemption for herring alone provides relatively little additional benefit. The addition of mackerel also has little effect on the estimated effects of the GRA 7 but adds a little more than $0.1 million under GRA 8. In terms of revenue "recovery" (relative to no fishery exemptions) exemption of loligo squid has the greatest benefit. Note that the combined revenue recovery from fishery exemptions for herring, mackerel, and loligo squid under GRA 8 is nearly 100%.

Since the economic effects of the GRA's are independent of the selected quota specification the results reported in Table 4 may be generalized to other options considered in this supplement. Specifically, the estimated economic effects of implementing GRA 7a with no fishery exemptions are less than that of GRA 8, but by less than $0.1 million. However, fishery exemptions under GRA 8 yield higher levels of revenue recovery than under GRA 7a. For example, the aggregate revenue loss for GRA 8 with fishery exemptions for mackerel and herring was estimated to be $691 thousand as compared to $735 thousand for GRA 7a. As stated previously, these comparisons are based on 15 to 20% of the reported activity in the 1999 VTR data. However, while It seems likely that the overall impacts of the GRA's will be greater, the relative difference between GRA 7a and GRA 8 is probably similar what is reported above.

Small Entity Impacts

Since the industry level impacts described above were based on the cumulative impacts of individual participating vessels, the small entity impacts were estimated for each vessel by comparing projected performance under the status quo (a continuation of the year 2000 specifications) to the projected earnings under the fishing year 2001 alternatives.

Relative to the status quo, Option I (Council) had no negative impact on vessels that only landed summer flounder or scup (Table 5). Vessels engaged in at least one black sea bass trip were relatively more impacted than otherwise. This impact is due to the lower trip limits for black sea bass that have been proposed for fishing year 2001.

Relatively more vessels that participated in a black sea bass fishery were negatively impacted under Option II (MC) for the same reasons as they were under Option I (Council) (Table 6). However, with the lower scup quota and with no fishery exemption for squid in the proposed GRA proportionally more vessels may be negatively impacted under Option II (MC) than under Option I (Council).

Compared to Option I (Council) proportionally more vessels were projected to be negatively impacted under Option III (no GRA), Option IV (Southern GRA) and Option V (Council quotas with Southern GRA) (Table 7, 8 and 9 respectively). As was the case previously, the majority of negatively affected vessel were engaged in at least one fishery combination involving black sea bass.

Comparing small entity impacts across all alternatives, proportionally fewer vessels may be negatively impacted under Option I (Council) as compared to all other options (Table 10). Option V (Council quotas with Southern GRA) is second to Option I (Council) in terms of lowest/highest number of negatively/positively affected entities followed by Option IV (Southern GRA), Option II (MC)and Option III (No GRA).

3.0 Impacts on Protected Resources and Essential Fish Habitat (EFH)

Although this proposed action would revise the areas and timing of the GRAs, it does not alter the conclusion stated in section 6.2 of the EA that the preferred alternative will not have any negative impact on any endangered or threatened species or marine mammals. Furthermore, this action does not alter the Council's original conclusions (Section 7.0 of the EA) that the action will have no more than minimal adverse impact upon the listed EFH.

4.0 Impacts of Proposed Measures on the Human Environment

The combined social impacts of the proposed measures are directly related to the impacts on small entities and industry level impacts discussed in Section 2.0 of this Supplemental Analysis. Furthermore, a detailed discussion of the individual impacts of preferred and most restrictive quota alternatives can be found in Section 6.7 of the EA. This section also discusses the social impacts relating to GRAs.

Since the proposed measures do not differ substantially from existing measures, this action is not expected to have a significantly adverse impact on the human environment. The NMFS analysis identified 1,158 commercial vessels impacted by the 4 options, whereas the Council analysis of impacts on the human environment identified 1,303 commercial vessels as affected. We conclude that the NMFS vessels are a subset of the Council universe. Therefore, there is no effect on the finding of no significant impact (FONSI) in Section 10.0.

Table 1. Summary of Overages[a], Adjusted Quotas, and Proration Schedule for Scup

	Y2000 Quota	Y2001 Quota	Adjusted Y2000 Quota	Y2000 Overages	Adjusted Y2001 Quota	Y2000 Landings	Y1999 Landings	Adjusted Quota Baseline	Landings Baseline
Status Quo									
Winter I	1143160	1143160	1143160	259991	883169	1403151	1204434	-22.74%	-37.06%
Summer	987055	987055	637878	570326	416729	1208204	1285960	-34.67%	-65.51%
Winter II	403945	403945	70356	0	403945		713615	0.00%	-43.40%
Option 1/5									
Winter I	1143160	2004959	1143160	259991	1744968	1403151	1204434	52.64%	24.36%
Summer	987055	1731172	637878	570326	1160846	1208204	1285960	81.99%	-3.92%
Winter II	403945	708469	70356	0	708469		713615	75.39%	-0.72%
Option 2/4									
Winter I	1143160	1515245	1143160	259991	1255254	1403151	1204434	9.81%	-10.54%
Summer	987055	1308331	637878	570326	738005	1208204	1285960	15.70%	-38.92%
Winter II	403945	535425	70356	0	535425		713615	32.55%	-24.97%
Option 3									
Winter I	1143160	1381043	1143160	259991	1121052	1403151	1204434	-1.93%	-20.11%
Summer	987055	1192454	637878	570326	622128	1208204	1285960	-2.47%	-48.51%
Winter II	403945	488003	70356	0	488003		713615	20.81%	-31.62%

a Based on quota monitoring reports as of 10/7/2000.

Table 2. Summary of Overages[a], Adjusted Quotas, and Proration Schedule for Black Sea Bass

	Y2001 Quota	Adjusted Y2000 Quota	Y2000 Overages	Adjusted Y2001 Quota	Y2000 Landings	Y1999 Landings	Adjusted Quota Baseline	Landings Baseline
Quarter I	1168760	1168760	0	1168760	848019	662783	0.00%	0.00%
Quarter II	885040	738837	229075	655965	967912	1057640	-11.00%	-48.00%
Quarter III	372951	220691	64101	308850	284792	372983	40.00%	8.00%
Quarter IV	597991	450661	0	597991		634051	33.00%	-6.00%

a Based on quota monitoring reports as of 10/7/2000.

Table 3. Summary of Estimated Total Industry Revenues For Status Quo and Year 2001 Specifications for Summer Flounder, Black Sea Bass and Scup

	Quota Baseline		Landings Baseline	
	Total Revenue	Change From Status Quo	Total Revenue	Change From Status Quo
Status Quo	78,933,509	NA	77,624,406	NA
Option 1	79,948,192	1,014,683	78,536,302	911,896
Option 2	78,632,485	-301,024	77,467,297	-157,109
Option 3	79,139,625	206,116	78,020,229	395,823
Option 4	78,681,970	-251,539	77,511,264	-113,142
Option 5	79,712,246	778,737	78,294,581	670,175

Table 4. Marginal Effects of GRA’s and Fishery Exemptions Compared to Option 3 Estimated Total Revenues

	GRA 7a ($)	GRA 8 ($)
No Fishery Exemption	-734,965	-807,133
Exempt Herring	-734,913	-802,585
Exempt Herring /Mackerel	-734,653	-690,661
Exempt Herring/Mackerel/Loligo	-440,923	-93,530

Table 5. Revenue Impacts for Participating Vessels for Option 1 (quota base and landings base)

	Increased Revenue or No Change	< 5	5-9	10-19	20-29	30-39	40-49	> 50
				Quota Base				
FLK Only	330	0	0	0	0	0	0	0
SCP Only	12	0	0	0	0	0	0	0
BSB Only	143	2	6	5	6	5	2	0
FLK/SCP	34	0	0	0	0	0	0	0
FLK/BSB	222	8	2	3	0	1	0	0
BSB/SCP	51	4	2	5	0	0	0	0
FLK/SCP/BSB	311	2	0	0	1	1	0	0
				Landings Base				
FLK Only	330	0	0	0	0	0	0	0
SCP Only	12	0	0	0	0	0	0	0
BSB Only	148	4	4	6	5	2	0	0
FLK/SCP	34	0	0	0	0	0	0	0
FLK/BSB	225	8	1	1	1	0	0	0
BSB/SCP	59	1	1	0	0	0	0	1
FLK/SCP/BSB	312	1	1	0	0	0	0	1

Table 6. Revenue Impacts for Participating Vessels for Option 2 (quota base and landings base)

	Increased Revenue or No Change	< 5	5-9	10-19	20-29	30-39	40-49	> 50
				Quota Base				
FLK Only	330	0	0	0	0	0	0	0
SCP Only	10	1	0	0	0	0	0	1
BSB Only	143	2	6	5	6	5	2	0
FLK/SCP	34	0	0	0	0	0	0	0
FLK/BSB	219	11	2	3	1	0	0	0
BSB/SCP	50	4	3	4	0	1	0	0
FLK/SCP/BSB	277	24	3	8	2	0	1	0
				Landings Base				
FLK Only	330	0	0	0	0	0	0	0
SCP Only	10	1	0	0	0	0	0	1
BSB Only	148	4	4	6	5	2	0	0
FLK/SCP	34	0	0	0	0	0	0	0
FLK/BSB	222	11	1	1	1	0	0	0
BSB/SCP	59	1	1	0	0	0	0	1
FLK/SCP/BSB	281	20	6	6	1	0	0	1

Table 7. Revenue Impacts for Participating Vessels for Option 3 (quota base and landings base)

	Increased Revenue or No Change	< 5	5-9	10-19	20-29	30-39	40-49	> 50
				Quota Base				
FLK Only	319	11	0	0	0	0	0	0
SCP Only	11	1	0	0	0	0	0	0
BSB Only	143	2	6	5	6	5	2	0
FLK/SCP	34	0	0	0	0	0	0	0
FLK/BSB	201	29	2	3	1	0	0	0
BSB/SCP	50	3	3	5	0	0	1	0
FLK/SCP/BSB	295	10	3	5	1	0	1	0
				Landings Base				
FLK Only	319	11	0	0	0	0	0	0
SCP Only	11	1	0	0	0	0	0	0
BSB Only	148	4	4	6	5	2	0	0
FLK/SCP	34	0	0	0	0	0	0	0
FLK/BSB	204	29	1	1	1	0	0	0
BSB/SCP	59	1	1	0	0	0	0	1
FLK/SCP/BSB	299	6	4	5	0	0	0	1

Table 8. Revenue Impacts for Participating Vessels for Option 4 (quota base and landings base)

	Increased Revenue or No Change	< 5	5-9	10-19	20-29	30-39	40-49	> 50
				Quota Base				
FLK Only	330	0	0	0	0	0	0	0
SCP Only	11	1	0	0	0	0	0	0
BSB Only	143	2	6	5	6	5	2	0
FLK/SCP	34	0	0	0	0	0	0	0
FLK/BSB	218	8	3	4	0	2	0	1
BSB/SCP	50	4	3	4	0	0	0	1
FLK/SCP/BSB	288	14	6	3	3	0	0	1
				Landings Base				
FLK Only	330	0	0	0	0	0	0	0
SCP Only	11	1	0	0	0	0	0	0
BSB Only	148	4	4	6	5	2	0	0
FLK/SCP	34	0	0	0	0	0	0	0
FLK/BSB	221	7	3	2	1	1	0	0
BSB/SCP	60	1	1	0	0	0	0	0
FLK/SCP/BSB	292	14	4	3	2	0	0	0

Table 9. Revenue Impacts for Participating Vessels for Option 5 (quota base and landings base)

	Increased Revenue or No Change	< 5	5-9	10-19	20-29	30-39	40-49	> 50
				Quota Base				
FLK Only	330	0	0	0	0	0	0	0
SCP Only	12	0	0	0	0	0	0	0
BSB Only	143	2	6	5	6	5	2	0
FLK/SCP	34	0	0	0	0	0	0	0
FLK/BSB	218	8	3	4	0	2	0	1
BSB/SCP	51	4	3	5	0	0	0	0
FLK/SCP/BSB	297	9	3	3	2	0	0	1
				Landings Base				
FLK Only	330	0	0	0	0	0	0	0
SCP Only	12	0	0	0	0	0	0	0
BSB Only	148	4	4	6	5	2	0	0
FLK/SCP	34	0	0	0	0	0	0	0
FLK/BSB	222	7	3	2	1	1	0	0
BSB/SCP	59	1	1	0	0	0	1	0
FLK/SCP/BSB	299	8	4	2	2	0	0	0

Table 10. Comparison of Small Entity Impacts By Management Option

	No Change/ Positive Impact	Percent Affected Vessels	< 5	5-9	10-19	20-29	30-39	40-49	> 50
			Quota Base						
Option 1	1103	4.7%	16	10	13	7	7	2	0
Option 2	1063	8.2%	42	14	20	9	6	3	1
Option 3	1053	9.1%	56	14	18	8	5	4	0
Option 4	1074	7.3%	29	18	16	9	7	2	3
Option 5	1085	6.3%	23	14	17	8	7	2	2
			Landings Base						
Option 1	1120	3.3%	14	7	7	6	2	0	2
Option 2	1084	6.4%	37	12	13	7	2	0	3
Option 3	1074	7.3%	52	10	12	6	2	0	2
Option 4	1097	5.3%	27	12	11	8	3	0	0
Option 5	1104	4.7%	20	12	10	8	3	1	0

ENVIRONMENTAL ASSESSMENT

Purpose and Need

This purpose of this document is to examine the impacts to the environment that would result from the implementation of the 2001 management measures recommended for the summer flounder, scup, and black sea bass fisheries. These measures include harvest limits (commercial and recreational) and other measures to ensure that the annual fishing targets specified in the Fishery Management Plan for the Summer Flounder Scup, and Black Sea Bass fisheries (FMP) are attained.

Introduction

The management measures contained in the FMP are intended to address the overfished condition of these stocks. The summer flounder measures are based on a management plan drafted by the State/Federal Summer Flounder Management Program pursuant to a contract between the New Jersey Division of Fish, Game, and Wildlife, and the National Marine Fisheries Service (NMFS). The State/Federal draft was adopted by the Atlantic States Marine Fisheries Commission (Commission) in 1982. The Mid-Atlantic Fishery Management Council (Council) adopted the FMP in April 1988 and NMFS approved it in September 1988. The FMP has been amended several times since its initial implementation, with Environmental Impact Statements prepared to consider the impacts of the three major amendments relevant to this action. Amendment 2 enacted management measures for the summer flounder fishery through final regulations implemented on December 4, 1992 (57 FR 57358). Amendment 8 enacted management measures for the scup fishery through final regulations implemented on September 23, 1996 (61 FR 43420). Amendment 9 enacted management measures for the black sea bass fishery through final regulations implemented on December 16, 1996 (61 FR 58461). Each of these amendments enacted comprehensive management measures to attain annual fishing targets and address overfishing. Each of the amendments was adopted jointly by the Council and the Commission, so state regulatory actions complement federal management actions.

The management objectives of the FMPs are as follows:

1) reduce fishing mortality in the summer flounder, scup and black sea bass fisheries to assure that overfishing does not occur;
2) reduce fishing mortality on immature summer flounder, scup, and black sea bass to increase spawning stock biomass;
3) improve the yield from the fishery;
4) promote compatible management regulations between state and federal jurisdictions;
5) promote uniform and effective enforcement of regulations;

6) minimize regulations to achieve the management objectives stated above.

To attain these management objectives the FMP specifies the following measures that may be specified annually:

* commercial quotas;
* minimum sizes;
* gear regulations;
* recreational harvest limit;
* recreational possession limit, season, and no-sale provision.

In addition, the Council is in the process of establishing a research set-aside program that will include the summer flounder, scup, and black sea bass fisheries. Its purpose is to support research and the collection of additional data that may be used to improve fisheries management. Collaborative efforts between the public, research institutions, and the government will be subsidized by a percentage set-aside from the total allowable landings (TAL) of selected species under management by the Mid-Atlantic Council.

At the August 2000 Council meeting, the Council voted to set-aside 2% of the Total Allowable Landings (TAL) of summer flounder, scup, and black sea bass for 2001 pending approval of the enabling framework adjustment. If projects making use of these set-aside amounts are submitted and approved prior to the end of 2000, then the appropriate set-aside amounts will be withheld from the following year's quota for each species. If projects are not approved that make use of a particular species' set-aside prior to year's end, then the set-aside will be released back to the overall TAL and made available to commercial and recreational fishermen.

To use the summer flounder fishery as an example, if the initial summer flounder TAL for 2001 is 17.912 million lb (10.748 million lb commercial quota; 7.165 million lb recreational harvest limit), then approximately 358,240 lb would be set-aside for research purposes. Therefore, the final TAL allocation (after a set-aside has been deducted) would be approximately 17.554 million lb (10.532 million lb commercial quota; 7.022 million lb recreational harvest limit). If in a given year no research projects were submitted to the Council by a certain time, the set-aside for that year would be added back to the overall TAL and made available to commercial and recreational fishermen.

1.0 Annual Specification Process

Comprehensive measures enacted by Amendment 2 and modified in Amendments 3 through 7 were designed to rebuild the severely depleted summer flounder stock. Amendments 8 and 9 to the Summer Flounder, Scup and Black Sea Bass FMP implemented recovery strategies to rebuild the scup and black sea bass stocks, respectively. The FMP specifies for summer flounder a target F for 2001 of the level of fishing that produces maximum yield per recruit (F_{MAX}). Best available data indicate that F_{MAX} is currently equal to 0.26. However, in order to comply with a court order issued on April 25, 2000, NMFS has implemented an emergency rule to amend the regulations that the implement the TAL for summer flounder for 2001. Specifically, the rule will revise the regulations to specify a biomass target for December 31, 2001 of 148.8 million pounds (67,500 mt) instead of the fishing mortality target of F_{max}. The biomass target to be achieved in 2001 is the same biomass that would have resulted if the target fishing mortality targets had been achieved in 1999, 2000, and 2001. The target F will be attained by specification of total allowable landings (TAL) allocated to the commercial (60 percent) and the recreational (40 percent) sectors. The commercial sector's quota is allocated to the coastal states based on percentage shares specified in the FMP. The FMP established a target exploitation rate for scup in 2001 of 33 percent. The total allowable catch (TAC) associated with that rate is allocated 78 percent to the commercial sector and 22 percent to the recreational sector. Discard estimates are deducted from both TACs to establish TALs for both sectors. The commercial TAL is allocated to three different periods. The Black Sea Bass FMP specifies a target exploitation rate of 37 percent for 2001. This target is to be attained through specification of a TAL level that is allocated to the commercial (49 percent) and recreational (51 percent) fisheries. The commercial quota is specified on a coastwide basis by quarter.

These amendments established Monitoring Committees which meet annually to review the best available scientific data and make recommendations regarding the total allowable landings and other management measures in the plan. The Committee's recommendations are made to achieve the target fishing mortality or exploitation rates established in the amendments to reduce overfishing. The Committee bases its recommendations on the following information: (1) commercial and recreational catch data; (2) current estimates of fishing mortality; (3) stock status; (4) recent estimates of recruitment; (5) virtual population analysis (VPA); (6) target mortality levels; (7) levels of regulatory noncompliance by fishers or individual states; (8) impact of fish size and net mesh regulations; (9) sea sampling data; (10) impact of gear other than otter trawls on the mortality of each species; and (11) other relevant information.

Based on the recommendations of the Monitoring Committee, the Mid-Atlantic Council's Demersal Species Committee makes a recommendation to the Council which in turn makes a recommendation to the Regional Administrator. The Regional Administrator reviews the recommendation and may revise it if necessary to achieve FMP objectives. In addition, because the FMP is a joint plan with the Commission, the Commission's Summer Flounder, Scup and Black Sea Bass Board (Board) adopts complementary measures. The Council met jointly with the Board and adopted recommended measures at the August, 2000, meeting.

2.0 Methods of Analysis

The basic approach adopted in this analysis is an assessment of various management measures from the standpoint of determining the impacts upon the environment. In order to conduct a more complete analysis, impacts were examined in four alternatives (Table 10). The alternative examines the measures adopted by the Council and the Board for 2001, the preferred alternative. The second alternative examines the impacts of the status quo alternative, i.e. the quotas that were implemented in 2000. The third and fourth alternatives examine the highest quotas (least restrictive alternative) and the lowest quotas (most restrictive alternative) considered by the two bodies, respectively. A full description of these alternatives is given in sections 3.0, below.

Table 10. Comparison (in lb) of the alternatives of quota combinations reviewed. "FLK" is summer flounder.

	Commercial Quota*	**Percent of 1999 Landings**	**Percent Change**
Quota Alternative 1 (Preferred)			
FLK Preferred Alternative	10,747,535	100.23	0.23
Scup Preferred Alternative	4,444,600	133.75	33.75
Black Sea Bass Preferred Alternative	3,024,742	101.71	1.71
Quota Alternative 2 (Status Quo)			
FLK Status Quo	11,111,298	103.62	3.62
Scup Status Quo	2,534,160	76.26	-23.74
Black Sea Bass Status Quo	3,024,742	101.71	1.71
Quota Alternative 3 (Least Restrictive)			
FLK Non-Selected Alternative 3	12,276,662	114.49	14.49
Scup Non-Selected Alternative 3	5,138,800	154.65	54.65

Black Sea Bass Non-Selected Alternative 3	3,875,900	130.33	30.33
Quota Alternative 4 (Most Restrictive)			
FLK Non-Selected Alternative 4	9,940,643	92.71	-7.29
Scup Non-Selected Alternative 4	3,496,120	105.21	5.21
Black Sea Bass Non-Selected Alternative 4	1,999,200	67.22	-32.78

* Note that quotas are provisional and would be adjusted in 2001 to account for 2000 overage.

3.0 Alternatives Being Considered

3.1 Alternative 1 (Preferred Alternative)

Alternative 1 analyzes the impacts of the harvest limits recommended by the Council and Board on vessels that are permitted to catch any of the three species. The Council and Board recommend a total allowable landings (TAL) level of 17,912,559 (8,125,000 kg) for 2001 for summer flounder. The recommended coastwide (TAL) for 2001 for summer flounder of 17,912,559 lb (8,125,000 kg) is approximately 3.28 percent below the level established for 2000. The TAL for 2001 would be divided between the commercial and recreational components of the fishery in the same proportion as it was each year from 1993 to 2000. In 2001, the commercial fishery would receive 10,747,535 lb (4,875,000 kg) as a quota, and the recreational fishery would receive 7,165,024 lb (3,250,000 kg) as a harvest limit.

The Council and Commission voted to establish a system in 1998 whereby 15 percent of each states quota for summer flounder would be set-aside each year to reduce discards after the closure of the directed commercial fishery. In addition to this, the set-aside system would allow for summer flounder landings to continue throughout the fishing season. This system was introduced for the first time in 1999, and no data as to its effectiveness are yet available. However, the program would continue in 2001. In order for fishermen to land the incidental catch allowance in a state, the Commission recommended that a state implement trip limits such that summer flounder on board cannot exceed 10 percent of other species on board for any trip set under the incidental catch allocation. Trip limits must be sufficiently restrictive to allow the incidental catch fishery to remain open for the entire year without exceeding the state's overall quota. In addition, the Commission recommended that states implement programs to collect additional data on discards in the commercial fishery.

The Council and Board recommend a coastwide total allowable catch (TAC) of 8,370,000 lb (3,796,568 kg) for 2001 for scup. This TAC is 41.34 percent above the TAC established for 2000. The 2001 TAC is divided between the commercial and recreational components of the fishery in the same proportion as it was each year from 1997 to 2000. The commercial TAC for 2001 is 6,528,600 lb (2,961,323 kg) and the recreational TAC is 1,841,400 lb (835,245 kg). Discard estimates are deducted from these TACs to set a TAL - what can be brought to the docks - for the commercial and recreational sectors. The commercial TAL is a quota; and the recreational TAL is a harvest limit. Both are shown below.

	Commercial (lb)	Recreational (lb)
TAC:	6,528,600 (2,961,323 kg)	1,841,400 (835,245 kg)
Less Discard Estimate:	2,084,000 (945,286 kg)	70,000 (29,484 kg)
TAL:	4,444,600 (2,016,037 kg)	1,771,400 (803,494 kg)

The Council also recommended gear restricted areas to reduce the discards of small scup and also increased the mesh threshold to 500 lb in the winter period.

The Council recommend a coastwide total allowable landing (TAL) level of 6,172,943 lb (2,800,000 kg) for 2001 for black sea bass. This TAL is identical to the black sea bass TAC for 2000. Based on landings data from 1983 to 1992, 49 percent of the TAL is allocated to the commercial fishery as quota and 51 percent is allocated to the recreational fishery as a harvest limit. As such, the recommended quota for 2001 is 3,024,742 lb (1,372,000 kg) and the recommended recreational harvest limit is 3,148,201 lb (1,428,000 kg).

3.2 Alternative 2 (Status Quo)

Alternative 2 analyzes the impacts of maintaining the 2000 harvest limits for 2001 (status quo). More specifically, a summer flounder TAL of 18,518,830 lb. The commercial fishery would 11,111,298 lb as a quota, and the recreational fishery would received 7,407,532 lb in 2001. The scup fishery would receive a commercial TAL of 2,534,160 lb and a recreational harvest limit of 1,237,840 lb. A TAL of 6,172,943 lb would be established for the black sea bass fishery, the commercial fishery would receive a quota of 3,024,742 lb and the recreational fishery would receive a harvest limit of 3,148,201 lb.

3.3 Alternative 3 (Least Restrictive)

Alternative 3 analyzes the impacts of the harvest limits that resulted in the highest possible landings for 2001 (relative to 2000), regardless of their probability of achieving the targets. Thus, this alternative includes non-selected alternatives for all three species. More specifically, a summer flounder TAL of 20,461,103 lb (12,276,662 lb commercial; 8,184,441 lb recreational), a 5,138,800 lb commercial quota for scup (1,967,200 lb recreational), and a 7,91,000 lb TAL for black sea bass (3,875,900 lb commercial; 4,034,100 lb recreational).

3.4 Alternative 4 (Most Restrictive)

Alternative 4 analyzes the impacts of those harvest limits that result in the greatest reductions in landings for 2001 (relative to 2000). Thus, this alternative includes non-selected alternatives for all three species. More specifically, a summer flounder TAL of 16,567,739 lb (9,940,643 lb commercial; 6,627,096 lb recreational), a 3,496,120 lb commercial quota for scup

(1,503,880 lb recreational), and a 4,080,000 lb TAL for black sea bass (1,999,200 lb commercial; 2,080,800 lb recreational).

4.0 Affected Environment

4.1 Port and Community Description

In order to identify the ports important to fisheries managed by the Mid-Atlantic Council and to identify the fisheries relatively important to those ports, the Council retained Dr. Bonnie J. McCay of Rutgers University to prepare a background document (McCay *et al*. 1993). This research covered ports from Chatham, Massachusetts, to Wanchese, North Carolina and was largely based on two data sources, 1992 NMFS landing statistics and information about the ports obtained from interviews with key informants. The quality of the port descriptions, therefore, partially depends on the information supplied by the informants. More recently, McCay and Cieri (2000) provided updated port descriptions for the states from New York to North Carolina based on 1998 landings and personal interviews. The port descriptions that follow for Massachusetts to Connecticut were taken from McCay *et al*. 1993. The port descriptions for the states from New York to North Carolina were condensed from McCay and Cieri (2000). Since the port descriptions provided here are brief summaries of the material contained in McCay *et al*. (1993) and McCay and Cieri (2000), readers requiring more detailed information are encouraged to obtain the original reports. Information on how to obtain these and other Council documents referred throughout this specifications package can be obtained from the MAFMC office.

Stonington, Connecticut

The Long Island sound and its estuaries and rivers are the major foci of Connecticut fisheries. There is a small traditional haul seine fishery for alewives and other fishes (unspecified, for "industrial" uses). Dip-nets are used for blue crabs (and a few alewives). Drift gillnets are used for menhaden, bluefish, weakfish, black sea bass, alewife, Atlantic mackerel, and other species. There is a specialized drift gillnet fishery for American shad. Quahogs (hard clams) are very important, and over 70 percent of Connecticut's landed value comes from oysters cultivated in Long Island Sound. Second to oysters are lobsters, most of which are caught inshore, in the sound. Third in value is a mixed species otter trawl fishery, most of which is based in the port of Stonington.

Stonington is the principal port in Connecticut. The main fishing fleet is out of Stonington. Stonington is the only off-shore port with a fleet consisting of trawlers, lobster boats, ocean scallopers. People are mostly going for groundfish such as cod, haddock, and flounder.

Species of importance in the area include lobster, quahog, summer flounder, winter flounder, and squid. The major species of fish caught in Stonington are flounder, summer flounder, squid, whiting and some codfish during the winter months. Over the past five years (1988-1993) the fishermen have caught an increasing number of monkfish. The three large scallop boats have landed the majority of the monkfish.

There is a small drift gillnet fishery which takes a minimal amount of black sea bass, and a mixed species trawl fishery whose landings include large amounts of summer flounder and a small amount of scup and sea bass. “As soon as the summer flounder fishery is open, fishers will go for it exclusively until the quota is filled.” In the past, summer flounder was the most important species caught by fishermen in Stonington. However, squid is increasing in importance as a result of the summer flounder quotas. During the summer of 1993, one boat attempted to specialize in dogfish but he discontinued this.

Although local otter trawlers may catch incidental tilefish in the winter, no boats specialize in catching tilefish in Stonington. Scup accounted for 0.9 percent of the landed value of all species in Other New London in 1992, and is caught in the spring fall and winter primarily by otter trawlers in Stonington. Black sea bass contributed with less than 0.1 percent (1992) of the total landed value Other New London. Before the quota system was implemented, summer flounder was the major species caught by Stonington fishermen. Summer flounder accounted for 6.53 percent of the landed value of all species in Other New London in 1992. Summer flounder was the most important species for draggers in terms of landed value in Other New London in 1992. Contributing with over 36 percent of the total landed value of all species. Squid is becoming increasingly important as a result of the summer flounder quotas.

The number of boats in Stonington is stable. Most fishers are of Portuguese descent, and family status is of moderate importance in crewing a vessel. The share system is typically used. There are several fish dealers, who sell to markets in Baltimore, Philadelphia, Boston and New York, or directly to local fish markets.

Newport/Other Washington County, Rhode Island

“Three ports make up the bulk of the landings in Rhode Island: Point Judith, Quonset Point, and Newport. Point Judith is generally a “wetfish” port, where the fish is most often landed on ice and packaged at port. Newport is similar. Quonset Point is strictly a large factory freezer vessel port.”

Newport traditionally landed groundfish and lobster, but in the early 1990s began targeting squid, mackerel, butterfish, scup and dogfish. "Groundfishing boats, a few scallopers, gill-netters, and draggers make up the range of boats in Newport. While Newport's fish potters rely almost entirely on scup, they also catch a little tautog, small amounts of black sea bass, bluefish, and summer flounder, among other species." The dragger fishery mainly targets northeastern groundfish, as well as *Loligo* squid. Scup is a minor component of this fishery. In the summer time there is a scup pot fishery in Newport. The future of this fishery is in question given declines in scup landings. Sea bass are an incidental catch for these draggers. Scup is one of the half dozen or so species targeted by the floating trap fishery. Scup is also important to the small handline fishery in the area. The total landed value for all species in Newport in 1992 was $14.5 million. Lobster ranked first accounting for 44 percent of the total landed value. Summer flounder ranked fourth and scup fifth. In 1992, lobster pots accounted for about 50 percent of the landings in Newport. About 33 percent of the landings were associated with otter trawls.

The value of the landings at Other Washington County communities including Quonset Point in 1992 was around $20 million. Other Washington County including Quonset Point includes both traditional and innovative fisheries. Processing facilities for squid in the region have resulted in the dominance of both *Loligo* and *Illex* squid in terms of landed value, but lobster and bay quahogging and oystering remain important, as well as other inshore activities such as eel potting, trapping striped bass, and an unusual spearfishery for tautog (blackfish). There is some handlining for bluefin tuna and trolling for inshore species such as striped bass and summer flounder as well as yellowfin tuna. Atlantic mackerel, butterfish, scup, summer flounder, and angler are among the top ten species landed by value, and they figure importantly in the catch of the otter trawl vessels. The gillnet fishery for cod and tautog includes a small amount of angler and Atlantic mackerel. The fish pots are predominantly for scup, but some black sea bass, summer flounder, bluefish, and *Loligo* squid are caught in them too. Virtually all of the angler, butterfish, weakfish, Atlantic mackerel, and squid landed here are brought in by draggers. A major fishing location in Washington County is located at Quonset Point, an abandoned Navy Base which houses several isolated industrial developments, including a major offloading facility for car imports.

Point Judith has a large fishing fleet of trawlers, gillnetters and lobster boats. Estimates on the number of boats in the area vary. However, about 200 commercial boats dock in Point Judith, including 80 trawlers, 30 gillnetters, and approximately 100 lobster boats.

The total value of fish landed in Point Judith in 1992 was $37 million. The top 10 species by percent landed value in 1992 were: lobster (28 percent), *Loligo* squid (15 percent), silver hake (10 percent), angler (10 percent), summer flounder (8 percent), scup (5 percent), butterfish (4 percent), winter flounder (4 percent), yellowtail flounder (2 percent), and cod (2 percent). Black sea bass ranked 19th with less than 0.5 percent. Point Judith boats mainly target whiting, fluke, and monkfish. The commercial importance of monkfish is increasing. It is the second most available finfish after fluke. In 1992, six million dollars worth of monkfish was caught. Squid is also increasing in economic importance in the area.

Otter trawls accounted for 67 percent of the total landed value of all gear, while lobster pot fishing accounted for 28 percent of the total landed value in 1992. Of the total landed value by species caught with otter trawlers, *Loligo* squid was first with 23 percent of the total. Summer flounder ranked fourth with 12 percent of the total, and scup ranked fifth with 7 percent of the total. Black sea bass contributed less than 1 percent of the total.

Point Judith’s boats are described by an informant as being diverse in their approach to the fisheries. The diverse approach to fisheries combined with full-time experienced fishermen means the fishermen are fishing year round even if they may switch fisheries and boats during the year.

Overall, the role of other types of gear in Point Judith is minor in all cases. Among these the highest levels are: fish pots which caught approximately 8 percent of the value of scup and 3.5 percent of the value of black sea bass. Gill-nets contributed with 7 percent of the value of anglers and 3 percent of the value of bluefish.

Point Judith draggers target whiting, summer flounder, and monkfish. There is also an established pot fishery in Newport and Point Judith which targets sea bass, scup, and squid, primarily during the summer. Pot fisheries, besides lobster, accounted for 0.48 percent of the total landed value for all gear in 1992. Pot fisheries are heavily dependent on scup. In 1992, scup contributed about 89-96 percent of the total landed value. Some summer flounder, scup, and black sea bass are taken in floating traps. A small amount are also taken by gillnets. The handline fishery relies heavily on black sea bass. Incidental takes of sea bass occur in lobster pots. Fishers from these ports tend to target a broad diversity of species and so are able to fish year round. “Scup, fluke, and sea bass are inside during the summer, offshore during the winter. There is no directed offshore fishery for sea bass in Rhode Island, but they are an incidental catch during the summer ***Loligo*** fishery. The majority of scup landings are in the spring and summer.” Point Judith harbors some minor fisheries. Pot fisheries, besides lobster, are heavily reliant on scup, and pots catch a small percentage of black sea bass, as well as tautog, conger eel, and small amounts of bluefish. Point Judith's small gill net fishery depends heavily on angler, as well as cod, dogfish, tautog, and other species. Bluefish, Atlantic mackerel, summer flounder, black sea bass, weakfish, and butterfish in small quantities are landed in the gill-net fishery. Angler are caught predominantly by draggers, accounting for the bulk of the total landed value for the dragger fishery in 1992. Bluefish, butterfish, summer flounder, scup, black sea bass, squids, weakfish, are also landed by draggers.

The people who make up the crews in Newport are not necessarily fishermen from the area. Some crew members come from Point Judith, New Jersey, New York, and New Bedford. The owners of the boats do not typically work the boats. In Point Judith, most boats, are not family run. Most of the inshore boats dock in Point Judith. Newport has several commercial fish packing and distributing firms, but is also heavily oriented to yachting and tourism. Few non-fishing jobs are available, however. Newport is a reasonably large coastal community. The town is known for its colonial history. The town’s water front is mainly occupied by various marinas, hotels, shops, and condominiums. “Point Judith, which is part of the Narragansett, is almost exclusively a fishing community, having a core group of fishermen who fish full-time. During the summers the streets are filled with tourists coming or going on the Block Island ferry. Yet there is little for tourists to do in Point Judith. The town does not have the condominiums, shops, and hotels that other ports such as Chatham, Newport, and Montauk have. Only one hotel stands out in Point Judith, the Dutch Inn, which is circa 1960. The few restaurants, shops, and tourist venues, such as fudge shops, are enough to take care of the summer onslaught of ferry passengers and the year round working population centered around commercial fishing.” The Point Judith coop employed some local labor as well, but is now closed.

New Bedford, Massachusetts

In 1992 the total landed value in New Bedford was over $150 million, with sea scallops contributing 60 percent of the total. Summer flounder contributed 1.2 percent and 2.97 percent of the total with and without scallops, respectively. Scup contributed 0.01 percent and 0.02 percent of the total with and without scallops, respectively. "The dominant gear types in new Bedford are scallop dredges and otter trawls." Angler, summer flounder, spiny dogfish, *Loligo* squid, and scup are among the most important species landed in New Bedford. “Summer flounder (fluke) is mostly a summer fishery, but some fishers are now targeting summer flounder during the latter part of the year. Fluke are mostly caught in Nantucket Sound, especially by smaller boats with 1 or 2 man crews. New Bedford's *Loligo* fleet are those that summer flounder during the summer. They target squid during the spring and fall when they are not going for summer flounder. Scup is targeted during summer months by a few boats. Black sea bass is an incidental catch of scup or squid fishing, and it is caught in Vineyard and Nantucket Sounds by inshore boats. Black sea bass is also caught with pots.”

Chatham, Massachusetts

"Chatham is a seasonal resort community. It is a wealthy community, and property values are very high. Sportfishing and commercial fishing are important to the community. However, they do not seem to be the mainstays of the community’s economy. Chatham’s fishing community is divided between two ports, Chatham Harbor on the east coast of town, and Stage Harbor on the south side of town. Scup, fluke, sea bass, mackerel, butterfish, weakfish, and bluefish are caught as miscellaneous fish by Chatham Harbor boats. Squid, butterfish, mackerel, and scup landings in Chatham come almost exclusively from Stage Harbor.” Summer flounder, scup, and black sea bass are caught primarily with pots. There is also some traditional handlining for sea bass and scup. The sea bass fishers are really not concentrated in any one port, however.

The total landed value of fish in Chatham in 1992 was around $11 million. Groundfish and shellfish --bay scallops, quahogs, and mussels-- comprise the majority of the landed value for Chatham, accounting for over 80 percent of the landed value. Scup, black sea bass and summer flounder contributed 1.15 percent (harvested by fish pots, 73.5 percent; draggers, 5 percent; and bottom long-line, 4 percent), 0.28 percent (harvested by fish pots, 98 percent), and 0.10 percent (harvested by fish pots, 65 percent; and draggers, 27 percent) of the total landed value for all species in Chatham in 1992, respectively.

By gear type, scup, black sea bass contributed with 10.74 percent, 0.01 percent of the total landed value of all species landed with pound nets in 1992. Scup, black sea bass and summer flounder contributed with 29.73

percent, 9.75 percent and 2.37 percent of the total landed value of all species landed with fish pots in 1992, respectively.

Chatham boats are all under 50 feet and are owner-operated. Most crew are paid by the share system, but some are paid by the day or are wage workers.

Freeport, New York

According to NMFS weighout data (Tables NY-FP1, 2), Freeport and neighboring Point Lookout (included in the Freeport port code) are almost entirely dependent on otter trawl landings (over 89% poundage, 87% value), and the major species are loligo squid and silver hake, with smaller amounts of scup, weakfish, bluefish, butterfish, summer flounder, other flounders, Atlantic mackerel. Gill-nets are used for bluefish, angler, and other species, and there are small handline, pot, pound-net and bay shellfisheries associated with these ports.

Table NY-FP1: Landings by Gear, Freeport, NY, 1998.

GEAR TYPE, Freeport, NY	Lbs. %	Value %
Common seine, haul seine	0.3%	0.1%
Gill net, sink, other	7.0%	6.1%
Handline, other	2.5%	3.8%
Pot/trap, lobster, insh nk	0.6%	2.8%
Pot/trap, lobster, offsh	0.0%	0.0%
Pots + traps, blue crab	0.0%	0.0%
Pots + traps, conch	0.0%	0.0%
Pots + traps, fish	0.1%	0.1%
Pound net, fish	0.2%	0.2%
Rakes, other	0.2%	0.0%
Tongs & grabs, clam	0.0%	0.0%
Trawl, otter, bottom, fish	89.3%	86.8%

Total landings, rounded 1998: 1,865,800 lbs
Total value, rounded 1998: $1,504,800 dollars
Note: 0.0 = >0.0% but <0.06%

Table NY-FP2: Landings by Major Species, Freeport, NY, 1998.

MAJOR SPECIES >2%	LBS %	VALUE %
Bluefish	4.6%	2.1%
Butterfish	2.8%	2.6%
Flounder, summer	2.8%	7.9%
Flounder, yellowtail	4.0%	2.3%
Hake, silver	27.4%	16.2%
Mackerel, Atlantic	2.5%	0.8%
Scup	4.4%	8.8%
Squid (loligo)	37.3%	39.3%
Weakfish, squeteague	2.7%	2.8%
Lobster	0.6%	2.8%
Sea bass, black	0.8%	1.9%

Number of species: 62

Other species of MAFMC interest by percentage total value 1998: Tilefish (0.1), and *Illex* squid (0.0). Surf clams are also landed here but are reported as "Other New York."

Other Nassau County, New York

Other Nassau County landings came to about 595,000 pounds, worth about 4 million dollars, in 1998. Over 93% of the landings were of hard clams (quahogs), soft clams, and oysters, taken in the rich "Oyster Bays" of this county. Gill nets, handlines, and lobster pots were also used for striped bass and other species.

Greenport and Mattituck, New York

Although Greenport and Mattituck are very dissimilar ports, we combine landings information from them to protect confidentiality.

Otter trawl landings are by far the most important, over 95%, and the classic Mid-Atlantic complement of species is found, led by silver hake and loligo squid, but including butterfish, summer and winter flounder, scup, striped bass, angler, and other species. There is also pound-net fishing, haul-seining, gill-netting, handlining, pelagic longlining, lobster and conch pot fishing, and raking for clams and dredging for bay scallops. Tables NY-GP1, 2 provide weighout data for Greenport combined with nearby Mattituck.

Over 90% of the weighout landings attributed to Mattituck came from otter trawl fishing, and the full complement of Mid-Atlantic species were major landings (=>2% value in 1998: bluefish (25%), butterfish (12%), summer flounder (14.5%), scup (4.4%), dogfish 3.1%), lobster and striped bass were also significant, among the 37 species landed. Total landings in 1998 were less than 275,000 pounds. But recall that "Other New York" includes lobster and other landings which probably came from places like Mattituck.

Table NY-GP1: Landings by Gear Type, Mattituck and Greenport, NY, 1998.

GEAR TYPE	LBS %	VALUE %
Common seine, haul seine	0.0%	0.0%
Gill net, sink	1.5%	1.4%
Handline	1.1%	2.9%
Longline, pelagic	0.0%	0.1%
Pots + traps, conch	0.0%	0.0%
Pound net, fish	1.8%	3.0%
Trawl, otter, bottom,	95.6%	92.5%

Total landings, rounded 1998: 7,831,400 lbs
Total value, rounded 1998: $4,140,500 dollars
Note: Not including "Other New York" landings; here as elsewhere "0.0%" means more than 0 but less than 0.05%

Table NY-GP2: Landings by Major Species, Mattituck and Greenport, NY, 1998.

MAJOR SPECIES >2%	LBS %	VALUE %
Bluefish	4.2%	3.1%
Butterfish	1.6%	1.9%
Flounder, summer	1.1%	5.1%
Flounder, winter	2.9%	1.2%
Hake, Red	2.3%	1.5%
Hake, silver	63.3%	46.1%
Scup	0.8%	2.6%
Squid (loligo)	21.6%	27.2%
Bass, striped	0.6%	3.0%

Number of species: 62

Other species of MAFMC interest by percentage value 1998: Atlantic Mackerel (0.1), Black Sea Bass (0.9), dogfish, other (0.1), Dogfish, Smooth (0.0), Tilefish (0.3), and *Illex* Squid (0.0).

"Other Suffolk" and Amagansett, New York

The NMFS data are collected for the port of Amagansett and well as unspecified "Other Suffolk" fishing. "Other Suffolk" probably includes landings from the fishermen at Orient/Orient Point, Shelter and Fisher Islands, Southold, Cutchogue, and many other smaller places in Suffolk County on both the north and the south forks of eastern Long Island including Mount Sinai.

Bay clamming (for hard clams, or quahogs) is the major fishery, representing over 71% of the area's value in 1998. Lobstering is next, 14% of the value. Other important shellfisheries are for oysters, soft clams, horseshoe crabs, blue crabs, and green crabs. Harvesting bay scallops is an important fishery for all east end ports, but landings vary widely from one year to the next. There is tremendous diversity in gears used, bespeaking the mixed bay, sound, and ocean nature of these fisheries. They include handlines, longlines, harpoons, seines, otter trawls, gillnets, pound nets, pots for fish, eels, conch, crabs, and lobster, fyke-nets, cast nets, diving gear, crab and oyster dredges, shovels, rakes, tongs, patent tongs, and "by hand".

Montauk, New York

Montauk, the largest fishing port in New York, is situated near the eastern tip of the South Fork of Long Island. Otter-trawls and longlines are the principal gear-types, in terms of pounds landed and value (Table NY-M1). Loligo squid and silver hake are the two most important fin-fish caught in 1998, but tilefish also stand out, and swordfish and tuna landings are important as well. Montauk is the leading tilefish port in the U.S., but this fishery has declined greatly. For the past two years (1998-1999) some of the Montauk-based tilefish boats have been unloading their catches in Rhode Island. Nonetheless, tilefish accounted for 21% of the value of landings in this port in 1998 (Table NY-M2). The number of species landed at Montauk is staggering: 90. The methods used to harvest fish and shellfish are diverse, including pound nets or fish weirs, box traps, haul seines, and spears, along with the more usual pots, lines, and trawl nets.

Table NY-M1: Landings by Gear Type, Montauk, NY, 1998.

GEAR TYPE	LBS %	VALUE %
Box trap	0.0%	0.0%
Common seine, haul	0.0%	0.0%
Gill net, sink	1.2%	1.3%
Handline, other	3.0%	6.6%

Longline, bottom	11.4%	20.9%
Longline, pelagic	3.1%	8.7%
Pot/trap, lobster, insh	0.4%	1.3%
Pot/trap, lobster,	0.1%	0.4%
Pots + traps, conch	0.0%	0.0%
Pots + traps, fish	0.1%	0.3%
Pound net, fish	0.6%	0.6%
Spears	0.0%	0.0%
Trawl, otter, bottom,	80.1%	59.9%

Total landings, rounded 1998: 12,035,700 lbs
Total value, rounded 12,108,800 dollars; 0.0% = <0.06 % rounded

Table NY-M2: Landings by Major Species, Montauk, NY, 1998.

MAJOR SPECIES >2%	LBS %	VALUE %
Bass, striped		5.2%
Bluefish	2.1%	0.8%
Butterfish	3.2%	2.0%
Dogfish, nk	2.4%	0.4%
Flounder, summer	2.8%	6.9%
Flounder, winter	3.8%	5.1%
Hake, red	3.2%	1.1%
Hake, silver	31.2%	15.7%
Scup	1.8%	3.6%
Squid (loligo)	24.2%	19.8%
Swordfish	1.0%	3.4%
Tilefish	11.5%	21.2%

Number of species: 90

Other species of MAFMC interest by percentage 1998 value: Atlantic Mackerel (0.3), Black Sea Bass (1.3), Dogfish, NK (0.0), Smooth Dogfish (0.0), and Illex squid (0.0).

Shinnecock/Hampton Bays, New York

Shinnecock/Hampton Bays is second only to Montauk as a commercial fishing center in New York. The offshore fishing industry in this part of Long Island is concentrated to the west of Shinnecock Inlet, on a barrier island that is just to the south of Hampton Bays. "Shinnecock," as it is known, is part of the town of Southampton. There is a large county-owned dock that is run by the town, where most commercial boats tie-up. The pack-out facilities and their associated docks are on private land, including two private unloading docks and one belonging to the Shinnecock Fishermen's Cooperative. The rest of the land to the east and west of the inlet is a county park. The NMFS codes for this fishery are for Shinnecock and Hampton Bays. We have combined them for this analysis because both refer to the same place (bluefin tuna and other large pelagic landings are collected using the Shinnecock port code, the rest using Hampton Bays).

This is primarily a dragger fishing port, otter trawl landings making up 84% of the poundage and 74% of the value in 1998 (Tables NY-HB1,2). Silver hake (whiting) and Loligo squid made up over 70% of these landings; 66 other species were landed by draggers, including bluefish, butterfish, red hake, and summer flounder. Gill-nets are second in importance, accounting for 12% of the value of landings in 1998. They too had diverse landings, totaling 39 species, led by bluefish (31% of lbs.), angler (28%), and skates (23%)."

Table NY-HB1: Landings by Gear, Hampton Bays and Shinnecock, N.Y., 1998.

GEAR TYPE:	LBS. %	VALUE %
Longline, Bottom	2.9	7.3
Handline	0.1	0.4
Longline, Pelagic	0.3	1.1
Otter Trawl, Bottom	84.3	74.2
Seines, Common and Haul	0.1	0.1
Gillnet, Sink	10.8	11.8
Pound Net, Fish	1.0	1.3
Pots/Traps, Fish	0.1	0.1
Pots/Traps, Eel	0.0	0.0
Pots/Traps, Conch	0.0	0.0
Pots/Traps, Lobster, Offshore	0.0	0.0
Pots/Traps, Lobster, Inshore	0.1	0.3
Shovels	0.0	0.1
By Hand	0.0	0.0
Rakes	0.0	0.0
Pots/Traps, Crab	0.0	0.0
Fyke-Net, Fish	0.0	0.0
Unknown	0.4	3.3

Total Landings by Weight, 1998: 13,143,401 lbs.
Total Landings by Value, 1998: $9,676,293

Table NY-HB2: Landings by Major Species, Shinnecock/Hampton Bays, NY, 1998.

MAJOR SPECIES (>2%)	LBS. %	VALUE %
Angler	3.8	8.3
Bluefish	5.2	3.0
Winter Flounder	1.1	2.2
Summer Flounder	2.1	6.8
Yellowtail Flounder	0.9	2.0
Scup	1.5	3.4
Weakfish	2.5	2.1
Dogfish, NK	7.3	1.5
Skates	3.2	1.4
Tilefish	3.0	7.6
Silver Hake	37.5	23.1
Quahog	0.3	2.9
Loligo Squid	22.9	26.9

Total Number: 93

Other species of MAFMC interest, by percentage value, 1998: Butterfish (1.6), Atlantic Mackerel (0.3), Black Sea Bass (0.9), Smooth Dogfish (0.0), Spiny Dogfish (0.0), and Illex Squid (0.0).

Brooklyn, New York

Commercial fish landings in New York City's boroughs have declined markedly over the years. Today landings in Brooklyn were reported in 1998 as less than 30,000 pounds, from otter-trawls (77%), sink gill nets (16%) and handlines. The principal species, out of 17 landed, were butterfish, bluefish, weakfish, and loligo squid. Sports fishing at Sheepshead Bay and other sites, have become more important than commercial fishing.

Columbia, Duchess, Queens, Greene, Rockland, Ulster, Westchester Counties, New York

NMFS has "other" categories for counties where marine and estuarine fishes are landed. Those for Nassau and Suffolk are treated separately above. We lumped the others together; they largely represent estuarine and riverine fisheries. Most of these fisheries are the riverine ones for American shad (85% of pounds, 94% of value). Small amounts of menhaden, blue back herring, winter flounder, weakfish, scup and other species (totaling 10) were reported. The key gear types were drift and sink gill nets, both used for shad. Other gear types, with minor catches, were otter trawls, fyke nets, handlines, and fish pots/traps. The catches in 1998 were very small, totaling less than 200,000 lbs. or $230,000.

Belford, New Jersey

The fishing port of Belford is on a tidal creek leading out to Raritan Bay and the New York Bays. Its fishery is oriented both to the bay and to the Atlantic Ocean, which is reached by going out around Sandy Hook, a few miles from Belford. Belford and neighboring Port Monmouth were once a large industrial fishing and processing center for menhaden, but the menhaden factory closed in 1982. Menhaden are still caught with small purse-seine boats and pound-nets, primarily for the bait market, and in 1998 they accounted for over 2/3rd of the landings in Belford (Table NJ-B1). Today Belford's fisheries are small-scale and owner-operated; most of the finfish are handled through a fishermen's cooperative, which sells wholesale but also runs a small retail store and restaurant. Lobsters are sold in other ways, including through a local lobster pound. Otter trawl finfishing is the most important activity, accounting for 50% of the landed value in 1998 (Table NJ-B1). It is a multi-species fishery: 42 species were landed in 1998. Major species caught by otter trawlers landing in Belford, by landed value, were summer flounder, Loligo squid, silver hake, winter flounder, spiny dogfish and skates. Lobster pot fishing is third only to purse seining and dragging; it accounted for 17% of landed value in 1998.

In recent years surf clam and ocean quahog vessels have been offloading at Belford, but in 1998 they accounted for less than 4% of the landed value (in contrast to 1992, when ocean quahogs accounted for over 30% of landed value). Crab dredging, in Raritan Bay, is of equal value. The last of New Jersey's pound-nets are in Raritan and Sandy Hook Bays; they accounted for 3.9% of Belford's total landed value in 1998. Some of that was from menhaden but 27 other species were also landed from the pound-nets, notably bluefish, weakfish, summer flounder, and butterfish; small amounts of tuna, skates, shad, tautog. Other fishing techniques used include crab and fish pots, handlining, and diving.

Table NJ-B1: Landings by Gear Type, Belford, NJ, 1998.

GEAR TYPE, BELFORD, NJ	Lbs. %	Value %
Diving Gear	0.0	0.0
Dredge, SCOQ	2.7	3.8
Dredge, Crab	2.3	6.1
Hand Line	0.0	0.1
Pots/Traps, Lobster, Offshore	2.0	17.1
Pots/Traps, Blue Crab	0.0	0.0
Pots/Traps, Fish	0.0	0.2
Pound Nets	3.8	3.9
Purse Seine, Menhaden	65.1	18.6
Trawl, Otter, Bottom, Fish	23.9	50.1

Unknown	0.0	0.1

Note: “0.0" means more than 0 but less than 0.05. The figures for landings from which these percentages are derived are not given because they are confidential.

Other Monmouth County, New Jersey Ports

Highlands (at the mouth of two large tidal rivers coming out into Sandy Hook Bay with access to the Atlantic Ocean) and Neptune (in combination with neighboring municipalities which surround the tidal basin known as Shark River) are primarily small lobstering ports, sequestered within summer resort communities. Data for these ports are confidential. Highlands is also the site of bay clam depuration plants, which serve baymen who clam under state permits in Raritan and Sandy Hook Bays and the Navesink River. A small amount of handlining for finfish and potting for rock crab supplements lobstering. Atlantic Highlands is a center for recreational charter and party boat fishing.

Crabbing constitutes most of the landings for the rest of Monmouth County. The winter dredge fishery for blue crabs in Raritan Bay and its tributaries is significant. Clamming is also important. It takes place in the Sandy Hook and Raritan Bays and tidal rivers and is largely dependent on a "depuration" process, located in Highlands, as well as some "relaying" of clams to cleaner waters in south Jersey. Crabbers and clammers, like those involved in other fisheries, live in and around Belford, Highlands, and various municipalities along the shore of Raritan Bay.

Point Pleasant, New Jersey

The commercial fisheries of Point Pleasant are third in New Jersey to those of the Cape May-Wildwood area and Atlantic City (Table NJ-1). The weigh-out data include some bayman fisheries (i.e. "by hand" and crab dredge gears), but this is primarily an ocean fishing port, with a long history involving ocean pound-nets and fisheries focusing on the offshore 'canyons' of the region. The fishing port is actually Point Pleasant Beach, a borough within the larger town of Point Pleasant. Like so many ports of the Mid-Atlantic region, it is inlet-dependent. Ocean-going fishers must pass through the often dangerous Manasquan Inlet, a challenge shared with the recreational fishing community including the party and charter boat businesses of Point Pleasant and neighboring Brielle. This is a highly developed coastal region. Currently there is a wholesale finfish packing dock at Point Pleasant, a fishermen's cooperative. Another dock is primarily used for offloading surf clams and ocean quahogs although finfish may be handled there as well.

The fisheries are very diverse, the classic situation in the Mid-Atlantic. Two stand out in terms of volume and value: otter trawls and gillnetting, the latter particularly important for spiny dogfish as well as bluefish, weakfish, and other species (Table NJ-PP1). But sea scallop dredging is very important, as are surf clamming/ocean quahogging and offshore lobstering. Landings by major species for Point Pleasant are confidential but one can generalize that the most valuable species, in 1998, was angler or monkfish, which was partly incident to the scallop fishery but also caught by specialized gill-netters both local and migrating from other ports in the northeast and mid-Atlantic. Sea scallops were next in terms of ex-vessel value in 1998, followed by Loligo squid, a major focus of the local dragger fishery in the last decade, summer flounder, also a traditional fishery of the area but sharply cut back by regulations; lobster; spiny dogfish (like monkfish, caught by gill-netters as well as other fishers), and silver hake, or whiting. Whiting was one of the mainstays of this fishery from the 1970s through the 1980s; its availability and abundance have since declined. In terms of pounds landed, menhaden (purse-seined) and surf clams and ocean quahogs were the leading species in 1998, having come to replace the traditional otter trawl finfish fishery in importance over the past decade. Table NJ-PP1 gives landings by gear type.

Table NJ-PP1: Landings by Gear Type, Point Pleasant, NJ, 1998.

GEAR TYPE, POINT PLEASANT, NJ:	Lbs. %	Value %
By Hand	0.0	0.0
	0.0	0.0
Dredge, Sea Scallop	1.2	10.4
Dredge, SCOQ	51.4	49.9
Gill Net, Drift	1.0	0.7
Gill Net, Sink	11.0	13.5
Hand Line	0.1	0.1
Longline, Pelagic	0.1	0.2
Pots/Traps, Lobster Offshore	0.6	3.5
Pots/Traps, Fish	0.0	0.0
Purse Seine, Menhaden	20.9	3.7
Trawl, Otter, Bottom, Fish	13.6	17.7
Troll Line	0.0	0.0
Troll Line, Tuna	0.0	0.0
Unknown	0.2	0.3

Total Landings, rounded, 1998: 31,916,900 lbs.
Total Value, rounded, 1998: $16,715,400 dollars

Point Pleasant Beach, New Jersey

The town of Point Pleasant (pop. 18,177, 1990) is located at the mouth of the Manasquan Inlet at the northern border of Ocean County. The town's economy is geared toward the summer tourist and recreational business. However, it is more than a "beach town”, and has a large resident population. It is close to a larger township, called Brick or Bricktown (pop. 66,473, 1990), and across the Manasquan River from Manasquan (5,369, 1990) and Brielle (4,406). The fisheries are concentrated in an area known as Point Pleasant Beach, along a sandy strip which includes restaurants, a fisherman's supply store, small marinas, charter and party boat docks, and two commercial fishing docks.

One of the Cape May seafood businesses has two fishing properties in Point Pleasant, one of which is now used for offloading and trucking surf clams and ocean quahogs. (Each of these docks had been used for finfish until about 10 years ago). From 6 to 10 boats land clams here, according to company personnel interviewed in Cape May. There are 15 crew at the docks and about 50 on the boats. There is also a new (2000) seafood processing plant, initially shucking surf clams. One existed here two decades ago, part of the early surf clam industry.

A fishermen's cooperative owns two other properties, one for storing and working on gear and some dockage, the other including the coop's offices, gear storage, ice-making, packing house, and a retail store. The cooperative mostly depends on its fourteen or so members, who have older, wooden-hulled vessels, 45-65' in length. They are geared for bottom otter trawling in a mixed-species, diversified fishery. The vessels usually have a two or three man crew, including the captain, who are paid shares of the profits. They are all hired locally. Although there are families with several generations in the fisheries, in recent years crew members are not often related to the captain or owner. Some members of this cooperative and some crew members have been ethnic minorities (Spanish, Portuguese, Chinese, and others). A few women have crewed on these boats. The boats are all owner-operated. They tend to fish in areas of Hudson Canyon called "the Mudhole" or "the Gully." The Mudhole is closer and has a dredged channel, but poor landings, especially of silver hake ("whiting") have forced most to move north into the Gully, where silver hake seem to be more plentiful. The average trip to the Mudhole is one to three days, but for the Gully can last a week.

Most of the draggermen at the cooperative consider themselves loligo squid and whiting specialists, but different species are targeted at different times, depending on the conditions of the ocean, the market, and the preferences of the captain. Squid landings began to overtake silver hake landings in this fleet in 1992 and now account for over 50% of the landed value of Point Pleasant trawlers. At first it was a by-catch while silver hake fishing in the Gully. Now it is targeted by some of the captains. As one captain stated, "You can't help but target squid sometimes, there is so much out there." Squid is sold to local processors. The cooperative is at a disadvantage in marketing squid because members lack freezer boats or refrigerated sea water boats, and thus do not receive the same price that boats so equipped receive, particularly in Cape May.

Summer flounder has long been a mainstay of this fishery, especially in the Mudhole in September and October, as well as other times in New Jersey and New York waters. Because of sharp quota restrictions, it is now a derby-like fishery. It is marketed in the fresh fish markets of New York and Philadelphia, in local restaurants and fish stores, and in the coop's own retail store.

At one time a few trawlers targeted scup (also called porgies), partially because doing so took pressure off a supply-burdened whiting market. (There was also a significant offshore summer flounder fishery in the winter months, for a few boats). Today no vessels target scup but may encounter large schools in the winter. Marketing is similar. Spiny dogfish have emerged as a very important fishery for the draggers and even more so for a gill-net fleet, both local and visiting, which has grown in recent years. Gill-netters have used "runaround" nets for species such as bluefish, Spanish mackerel, little tuna, scup, and weakfish, although this gear did not appear in the 1998 NMFS data. They use drift and sink nets for dogfish, angler, bluefish, weakfish, and other species. Angler, or monkfish, are particularly important. In 1998 local fishermen using sink gill nets caught almost 17 million pounds of monkfish as well as over 8 million pounds of spiny dogfish.

Barnegat Light (Long Beach Island), New Jersey

The fishing port of Long Beach Island is mostly located in the small bayside municipality of Barnegat Light, on this long, densely-developed barrier island on the central New Jersey coast. The commercial fishery has been undergoing a transition from over 20 years of specializing in offshore, deep-water and distant-water longlining. That tradition remains in the importance of bottom and pelagic longline gear (18% of total landed value) and of species such as tilefish, swordfish, and tunas (including big eye, yellowtail, blackfin, and skipjack in 1998) (Table NJ-LBI). (Handlines are also used for big eye tuna as well as for bluefish and other species; troll lines for yellowfin tuna). However, the physical perils of the inlet has kept this a relatively small-boat longliner fleet, and natural and regulatory changes in the species sought have forced people to look for alternatives. An alternative developed over the past decade is sea scalloping and the attendant by-catch of angler. Another is for expansion of the species sought with bottom and pelagic longlines, including sharks and dogfish among others. In 1998 the pelagic longline gear of Long Beach Island caught fully 23 different species, and bottom gear caught 17 species.

Whether transitional adaptation or old stand-by, the gill-net fisheries of Long Beach Island are the most substantial, representing 76% of poundage and 45% of landed value in 1998 (Table NJ-LBI1). The number of species involved is equally impressive: 61 for the drift gill-nets, including mackerel, dogfish, flounders, tunas, weakfish, shad, sharks; 23 for the sink gill-nets. In contrast, otter trawl dragging is minor and only 10 species were landed. Spiny dogfish are a recent focus, representing over one-third of the total landings in 1998.

Table NJ-LBI1: Landings by Gear Type, Long Beach Island, NJ, 1998.

GEAR TYPE: LONG BEACH ISLAND, NJ	LBS. (%)	VALUE (%)
Dredge, Sea Scallop	5.7	28.6
Gill Net, Drift	64.0	34.9
Gill Net, sink	11.8	9.8
Handline	0.1	0.1
Longline, Bottom	7.0	6.1
Longline, Pelagic	11.2	19.9

Rakes	0.0	0.2
Otter Trawl	0.2	0.3
Troll Line, Tuna	0.0	0.0
Unknown	0.0	0.0

Total Landings, rounded, 1998: 10,032,800 lbs.
Total Value, rounded, 1998: $10,194,400 dollars

Other Ocean County, New Jersey

Ocean County, New Jersey, covers a large region, ranging from Point Pleasant Beach in the north to Long Beach Island and beyond to the south. The "Other Ocean" category encompasses the bayman fisheries in this region, which is made up of barrier islands and a large complex known as Barnegat Bay. It also includes some offshore fisheries from places other than Long Beach Island and Point Pleasant. The bayman fisheries are, as always, for blue crabs and for hard clams (quahogs). Pots are the major way blue crabs are caught; clams are caught with rakes, tongs and "By hand". Fyke nets are minor, for flounders and eels (they are increasingly restricted by regulation). NMFS 1998 weighout data on substantial longline and drift gill-net fisheries and on angler, scallop, tilefish, and bluefin tuna refer to offshore fisheries comparable to and probably associated with those of Long Beach Island.

Atlantic City and Other Atlantic County, New Jersey

Atlantic City is better known for casino gambling and its boardwalk than for its status as a fishing port. The fishing port is on the backbay side of the city and is almost entirely given over to surf clam and ocean quahog dredge fishing (Table NJ-AC1). Atlantic City has long been a favored port for this fishery because of ready access to dense beds of clams off the central coast of New Jersey. Ocean quahogging has moved to more northern ports, especially New Bedford, Massachusetts, in recent years; it represented only 11% of the value of Atlantic City's landings in 1998. Other fisheries in Atlantic City are minor. Gears include sink gill-nets, and handlines, and bluefish, black sea bass, weakfish, jonah crab, lobster, and conch predominate.

Table NJ-AC1: Landings by Gear Type, Atlantic City, NJ, 1998.

GEAR TYPE: ATLANTIC CITY, NJ	LBS. (%)	VALUE (%)
Dredge, SCOQ	99.9	99.7
Gill Net, Sink	0.0	0.0
Handline	0.0	0.0
Pots & Traps, Conch	0.0	0.0
Pots & Traps, Fish	0.1	0.2

Total Landings, rounded, 1998: 37,338,500 lbs.
Total Value, rounded, 1998: $17,867,000 dollars

Atlantic County, like the other coastal New Jersey counties, has numerous small-scale bay and estuary fisheries as well. By far the most important for this county is the hard clam (quahog) fishery (34% of the landings, 70% of the value for "other Atlantic" in 1998), using rakes, tongs, and "by hand" techniques such as treading. Some of this takes place through clam aquaculture. The other significant species is the blue crab, harvested with pots and dredges (50.5% landings, 25% value). Haul seines, fyke nets, gill nets, handlines, eel pots, and turtle traps are also used for white perch, menhaden, American shad, and many other bay and tidal river species.

Cape May, New Jersey

Cape May is New Jersey's largest commercial fishing port in terms of landings and value. When combined with neighboring Wildwood (the fishing port is often referred to as "Cape May/Wildwood"), its landings exceeded 93 million lbs., worth over $29 million in 1998.

Draggers, or vessels using bottom otter trawls, account for 69% of Cape May's landings and 70% of its value (Table NJ-CM1). Most are used for a wide variety of finfish species (56). Some are also used for scallops; Cape May has a long history of combined or alternating fin-fishing and scalloping. Squid is very important: In 1998 17% of Cape May's landed value came from Illex squid and another 22% from Loligo squid (Table NJ-CM2). Much of the squid is processed locally as is Atlantic mackerel, caught with draggers and midwater pair trawls. Summer flounder has been a major species but regulations have severely reduced catches (4% landed value in 1998). Scup is another dragger-caught species of historic importance in Cape May; in 1998 it represented 6% of landed value. Cape May is also the home of one of the very few vessels allowed to use purse seines for bluefin tuna in U.S. waters; this vessel lands its catch in Gloucester, MA. The only purse seine landings in Cape May in 1998 were for menhaden, using smaller vessels. Fishing for large pelagics is also done with longlines and troll lines.

Although sea scallop management measures have reduced opportunities for many Cape May fishermen, scalloping remains important. In addition to scalloping with otter trawls, scallop dredges are used, accounting for 15% of the total value of Cape May's landings in 1998. Angler (monkfish) are caught with scallop dredges as well as gill-nets, otter trawls, and scallop otter trawls (1.8% of landed value). Dogfish catches are now relatively small (0.3% of total landings in 1998).

Table NJ-CM1: Landings by Gear Type, Cape May, NJ, 1998.

GEAR TYPE: CAPE MAY, NJ	LBS. (%)	VALUE (%)
Handline	0.0	0.0
Longline, Pelagic	0.0	0.3
Otter Trawl, Fish	68.9	61.9
Otter Trawl, Scallop	0.5	7.7
Troll Line, Tuna	0.0	0.0
Gill Net, Sink	0.2	0.5
Gill Net, Drift	0.1	0.1
Purse Seine, Other	0.0	0.0
Purse Seine, Menhaden	23.9	6.7

Dredge, Scallop	0.9	15.4
Menhaden Trawl	3.4	0.6
Pots & Traps, fish	0.1	0.7
Pots & Traps, Conch	0.1	0.4
Pots & Traps, Lobster Offshore	0.2	2.6
Dredge, Crab	0.1	0.3
Dredge, SCOQ	1.4	2.9
Unknown	0.0	0.0

Total Landings, rounded, 1998: 87,244,700 lbs.
Total Value, rounded, 1998: $25,757,200 dollars

Table NJ-CM2: Landings by Major Species, Cape May, NJ, 1998.

MAJOR SPECIES: CAPE MAY, NJ	LBS. (%)	VALUE (%)
Atlantic Herring	2.9	1.0
Summer Flounder	0.9	3.9
Lobster	0.2	2.5
Atlantic Mackerel	20.9	8.2
Menhaden	24.1	6.8
Sea Scallop	1.1	21.9
Scup	1.7	6.1
Squid, Illex	34.1	16.9
Squid, Loligo	8.3	22.0
Surf Clam	1.4	2.9
Black Sea Bass	0.4	2.2

Number of Species: 69

Other species of MAFMC interest, by percentage of total value, 1998: Bluefish (0.2), Butterfish (0.5), Smooth dogfish (0.0), Spiny dogfish (0.1), Tilefish (0.0).

Wildwood, New Jersey

The fishing port of Wildwood is connected to a very popular tourist beach community. Resident and migratory draggers and clam boats are found in Wildwood. The largest landings come from surf clams and ocean quahogs, both harvested offshore with hydraulic dredges. A processing factory is in Wildwood. The otter trawl fleet accounts for 7% of Wildwood's landings, bringing in summer flounder, Loligo squid, butterfish, Atlantic croaker, black sea bass, weakfish, and other species (Table NJ-WW1). Wildwood also has a small pot fishery, including offshore lobster, conch, and fish pots (6% of value). The fish pots are used mainly for black sea bass. Gill-netting is done for weakfish, black sea bass, and other species. Wildwood also had some pelagic longline landings in 1998, notably swordfish and yellowfin tuna. Other species of Mid-Atlantic Fishery Management Council interest landed in 1998, in small quantities (less than 2% landed value) were bluefish, butterfish, Atlantic mackerel, scup, and dogfish.

Table NJ-WW1: Landings by Gear Type, Wildwood, NJ, 1998.

GEAR TYPE: WILDWOOD, NJ	LBS. (%)	VALUE (%)
Crab Dredge	0.4	0.5
Surf Clam/Ocean Quahog Dredge	86.5	79.0
Gill Net, Drift	1.9	0.8
Gill Net, Sink	0.5	0.4
Handline	0.1	0.1
Longline, Pelagic	0.9	3.9
Pots & Traps, Offshore Lobster	0.8	1.7
Pots & Traps, Conch	0.5	2.0
Pots & Traps, Fish	1.1	2.8
Otter Trawl	7.2	8.6
Unknown	0.0	0.1

Total Landings, rounded, 1998: 6,193,40
Total Value, rounded, 1998: $3,492,900 dollars

Sea Isle City, New Jersey

Sea Isle City is north of Wildwood, one of the small fishing ports of the coast that is dependent on a dynamic and often problematic inlet for access to the sea. The fishery here is small. In 1998 fewer than 750,000 pounds, and $1.2 million dollars, were reported in the weighout data. There is a small offshore longliner fishery for tunas (mostly big eye, albacore and yellowfin) and swordfish. Otter trawl fishing includes spiny dogfish, skates, angler, and fluke but only 4% of the landed value. More significant are pot fisheries for offshore lobster (6% of value), conch (12%), and fish (12%, mostly black sea bass). Gill-netting represents 12% of the value, particularly for angler (monkfish). We did not visit Sea Isle City for this report but can report that it is primarily a summer beach town.

Other Cape May County, New Jersey

In the creeks and bays along the Atlantic coast of Cape May and around the cape to the Delaware Bay side are numerous small fisheries, coded as "other Cape May." These are the classic baymen or watermen fisheries, based on crustaceans and shellfish: blue crabs and hard clams dominate (66% and 23.5% of landed value, respectively). Horseshoe crabs are also harvested (12% of the 1998 poundage although only 1.6% of the value). There is a small gill-net fishery for species such as weakfish, American shad, and numerous other estuarine and anadromous species. Very small amounts of bluefish, butterfish, and summer flounder were landed in 1998. This fishery is very similar to and intertwined with the "Other Cumberland County" fishery discussed below.

Table NJ-OCM1: Landings by Gear Type, Other Cape May, 1998.

GEAR TYPE: OTHER CAPE MAY, NJ	LBS. (%)	VALUE (%)
By Hand	17.9	23.6
By Hand, Oyster	0.1	0.8
Dredge, Crab	1.1	0.7
Gill Net, Drift	2.6	0.6
Gill Net, sink	0.0	0.0
Handline	0.5	0.5
Longline, Pelagic	0.3	0.3
Pots & Traps, Crab	74.8	65.3
Pots & Traps, Eel	2.2	4.0
Pots & Traps, Fish	0.0	0.0
Rakes	0.4	1.5

Total Landings, rounded, 1998: 1,190,800 lbs.
Total Value, rounded, 1998: $3,492,900 dollars

Other Cumberland, New Jersey

The two big fisheries for this region, the center of New Jersey's Delaware Bay fisheries, are for oysters and blue crabs (Tables NJ-CC1, CC2). 1998 was one of the few years in the past decade when oysters were harvested, due to problems with oyster diseases (there is no harvest in 2000 due to the disease ‘dermo’). Oysters were taken with dredges, and represented 48% of the landed value. Blue crabs are caught with dredges and pots, and represented 46% of the value in 1998. Both horseshoe crabs and menhaden are also taken in large quantities (4.8% and 11.6% of poundage, respectively), and are the focus of controversy in this area due to their alleged roles for migratory birds and as bait for other fishes.

Table NJ-CC1: Landings by Gear Type, Cumberland County, NJ, 1998.

Cumberland County Landings by Gear Type	Percent Lbs.	Percent Value
Handline	0.9	0.6
Gill-net, Sink	2.6	0.9
Gill-net, Drift	5.3	1.4
Pots/Traps, Eels	0.8	1.3
By Hand	11.6	1.4
Dredge, Oyster	15.8	48.0
Dredge, Crab	2.4	1.5
Pots/Traps, Blue Crab	60.6	45.0

Total Landings, rounded, 1998: 4,444,900 lbs
Total Value, rounded, 1998: $5,573,300

Table NJ-OCM2: Landings by Major Species, Pounds and Value, Other Cumberland County, NJ, 1998.

Cumberland County, Major Species, 1998	Percent Lbs.	Percent Value
Menhaden	4.6	0.5
Weakfish	2.6	1.5
Blue Crab	62.9	46.4

Horseshoe Crab	11.6	1.4
Oysters	15.8	48

Total Species: 19, including MAFMC-managed Bluefish (0.0% value, 1998), Butterfish (0.0), and Summer Flounder (0.0).

Other New Jersey

Surprisingly, some commercial fishing is reported from the heavily urbanized, industrialized areas of northeastern New Jersey. There is a substantial amount of squid, both *Illex* and *Loligo*, as well as some summer flounder landed in (and trucked into) heavily urbanized Essex County, the site of a packing and processing company. Crab pot fishing is found with small landings in urbanized Bergen and Middlesex Counties. At the other side of the state, commercial fishing extends upbay and upriver from Cumberland County, into rural Salem and Hunterdon Counties. Hunterdon is the site of one of the last of the river shad seine fisheries (and an annual shad festival). Salem is the home of small-scale waterman fisheries which involve gill-netting for shad, weakfish and other species, harvesting eels and snapper turtles.

Ocean City/West Ocean City, Maryland

Ocean City, on the Atlantic Coast, is the only major port in Maryland engaged in the inshore and EEZ ocean fisheries. It accounts for 18.1% of the pounds landed and only 9.5% of the value landed in 1998 (Table MD1).

The major commercial fishing gears used for landings in Ocean City in 1998 (Table MD-OC1) were:
--gill-netting, heavily dependent on angler and spiny dogfish, but engaged in a very diversified fishery;
--surf clam and ocean quahogging, with small by-catches of angler and scallops;
--bottom dragging with otter trawls, a highly diversified fishery, with strong foci on summer flounder and loligo squid, but also landing 48 other species.

In terms of value, other gear types also emerge as important, namely fish traps and pelagic longlining. Traps are also used for lobster and conch.

Table MD-OC1: Landings by Gear Type, Ocean City, MD 1998.

GEAR TYPE: OCEAN CITY, MD	Lbs. %	Value %
By hand	0.0	0.0
Dredge, SCOQ	56.3	55.8
Gill net, sink	28.1	13.7
Handline	0.0	0.0
Harpoon	0.0	0.0
Longline, pelagic	2.1	11.1
Pots, Lobster Offshore	0.1	0.7
Pots/Traps, Conch	0.9	1.4
Pots/Traps, Fish	2.9	7.4
Otter Trawl, Bottom, Fish	9.5	9.9
Unknown	0.0	0

Total Landings, rounded, 1998: 11,073,123 lbs. (of state total)
Total Value, rounded, 1998: $6,356,802 (of state total)

The major species caught commercially in Ocean City (Table MD-OC2), ranked by 1998 landed value, are:

-surf clams and ocean quahogs
--black sea bass caught mostly with fish traps but also gillnets and draggers;
--angler, caught primarily with sink gillnets but also by the draggers and the clam boats;
--spiny dogfish, caught primarily by the gillnet fleet and also by draggers.
--summer flounder, mostly a dragger fishery
--swordfish, among the species caught with pelagic longlines from this port (tunas are also caught, and big eye and yellowfin tuna each represented over 2% of the total landed value in 1998).

Other species of significance (using the criterion of at least 2% of poundage or value) are:

-- Atlantic croaker and Atlantic mackerel, each caught by draggers and gill-netters
-- striped bass, also caught by draggers and gill-netters
-- lobster, an offshore pot fishery.

Table MD-OC2: Major Species, Landed, Ocean City, MD, 1998.

Major Species: Ocean City, MD	Lbs (%)	Value (%)
Dogfish, Spiny	21.6	5.6
Angler	3.8	6.0
Clam, Surf	**	**
Quahog, Ocean	**	**
Sea Bass, Black	2.8	7.1
Flounder, Summer	1.6	5.0
Swordfish	0.7	4.5
Tuna, Big Eye	0.5	2.7
Tuna, Yellowfin	0.5	2.3

Total Species Landed: 69

Note: ** indicates confidential data because fewer than 3 federally permitted dealers involved.

Other species landed of MAFMC relevance (by % value): Bluefish (0.3%), Butterfish (**), Atlantic Mackerel (0.5%), Scup (**), Tilefish (**), Loligo Squid (0.8%), Illex Squid (**).

Chesapeake Bay, Maryland

Virtually all of the other fishing activity in Maryland centers on the Chesapeake Bay and its tributaries. It is based in numerous small and dispersed landing areas, and focuses on the classic bay fisheries with blue crabs and oysters taking the lead (Table MD-OM1). This is the home of the Chesapeake Bay "watermen." For all ports in Maryland excluding Ocean City, blue crabs represented 71.5% of the value and oysters 12.6% of the value. The only other sizeable fishery in 1998 was for striped bass (5.9% of the value), thanks to the recovery of that species after a long moratorium. True to the tradition of watermen and baymen in the Mid-Atlantic, the diversity of species caught is extremely high: 57 species, ranging from terrapin and snapper turtles, crappies, carp, bullheads, and alewives, to name a few of the brackish water and anadromous species, to soft clams, horseshoe crabs, eels, lobsters, sturgeons, sunfishes, and sharks.

Table MD-OM1: Major Species, Other Maryland Ports, 1998.

MAJOR SPECIES (>2%): MARYLAND OTHER THAN OCEAN CITY	Lbs (%)	Value (%)
Bass, Striped	5.6	5.9
Crabs, Blue	61.6	71.5
Croaker, Atlantic	2.4	0.7
Menhaden	8.9	0.7
Oysters	4.9	12.6
Gizzard Shad	3.5	0.9
White Perch	2.9	1.5
Soft Clam	0.4	2.1
Catfish	4.7	1.6

Total Species Landed: 57
Total Landings, 1998: 50,094,300 lbs.
Total Value, 1998: $60,832,500

Species Relevant to MAFMC according to value in 1998: Bluefish (0.1%), Butterfish (0.0%), Summer Flounder (0.2%), Atlantic Mackerel (0.0%), Scup (0.0%), Black Sea Bass (0.0%, Smooth Dogfish (0.0%), Spiny Dogfish (0.0%).

Virginia Beach/Lynnhaven, Virginia

Most of the commercial fishing activity in Virginia Beach occurs in the Lynnhaven section, along Long Creek, which empties into Lynnhaven Bay and eventually Chesapeake Bay. Two active federally permitted dealers in this port also operate as packing houses for two out-or-town dealers. In the past, there also was significant activity at Rudee Inlet on the Atlantic side of the city, but now there are only 3 or 4 commercial boats that work out of there.

The commercial fishery at Virginia Beach/Lynnhaven is inlet-dependent and pressured by competition for waterfront from tourist-related development and recreational boaters and fishers. The major gear type used as reported to the NMFS is the sink gill-net, used to catch a large number of species including bluefish, striped bass, Atlantic croaker, summer flounder, shad, dogfish, weakfish and spot (Table VA-VB1). Drift and stake gill nets are also used, the latter for spiny dogfish and bluefish among other species. This is also a center of pot fishing, for blue crabs, eels, conchs (whelks) and fish. The fish catches were mainly black sea bass and tautog. Handlines accounted for 9% of the landed value in 1998, mostly from black sea bass and summer flounder catches, but also striped bass, tautog, tilefish, tunas, and others. Pound nets accounted for 3.3% of the value in 1998; species included striped bass, bluefish, butterfish, Atlantic croaker, summer flounder, Spanish mackerel, spot, and weakfish.

Table VA-VB1: Landings by Gear Type, Virginia Beach/Lynnhaven, 1998.

GEAR TYPE: VIRGINIA BEACH/LYNNHAVEN	LBS. (%)	VALUE (%)
By Hand	0.0	0.0
Common Seine, Haul Seine	0.7	0.7
Dredge, conch	0.3	0.9
Dredge, Crab	0.8	1.0
Gill Net, Drift	1.3	1.0
Gill Net, Sink	70.1	43.3
Gill Net, Stake	0.2	0.1
Handline	2.0	9.2
Pots & Traps, Blue Crab	12.9	18.3
Pots & Traps, Conch	3.7	14.1
Pots & Traps, Eel	0.1	0.2
Pots & Traps, Fish	2.8	7.8
Pound Net	5.1	3.3
Tongs & Grabs, Clam, Patent	0.0	0.0

Total Landings, rounded, 1998: 7,812,000 lbs.
Total Value, rounded, 1998: $4,272,800 dollars

Note: "0.0" means some activity but less than .06%

By species blue crab represented the highest value (19%). Next was black sea bass, which comprised 16% of 1998 landed value, mostly from handlining and fish pots (Table VA-VB2). Gillnetting for dogfish is another very important fishery. Atlantic croaker and striped bass are significant catches from the gill-net, handline, and pound-net fisheries, as is spot. Channeled whelk, caught in conch pots, made up 11% of value. The total number of species, though, is as always in this region very large: 65.

Table VA-VB22: Landings by Major Species, Virginia Beach/Lynnhaven, 1998.

MAJOR SPECIES: VIRGINIA BEACH/LYNNHAVEN	LBS. (%)	VALUE (%)
Striped Bass	4.4	11.0
Blue Crab	13.7	19.1
Atlantic Croaker	**	**
Spiny Dogfish	**	**
Black Sea Bass	4.2	15.6
Spot	14.1	8.8
Channeled Whelk	2.8	11.2
Conch	1.4	5.3
Other Fish, Industrial	2.2	0.3

Number of Species: 65

Note: ** indicates confidential data due to small number of businesses involved.

Other species of MAFMC interest by percentage value, 1998: Bluefish (0.7), Butterfish (0.7), Summer Flounder (0.3), Atlantic Mackerel (**), Scup (**), Dogfish, Other (0.3), Dogfish, Smooth (**), Tilefish (**), Loligo Squid (**).

Newport News, Virginia

Sea scalloping is the principal fishery of Newport News, accounting for 72% of landed value in 1998. Scallopers use both dredges and bottom otter trawls (Table VA-NN1). Another fishery is finfish dragging (8.2% of value, 24.5% of landings) for a large variety of species. Summer flounder, angler, and black sea bass are landed in significant quantities (Table VA-NN2). Small scale inshore and bay fisheries are part of the waterman complex. They include clamming (hard clams or quahogs) and oystering using dredges, patent tongs, tongs and rakes; drift and sink gill-netting; pot-fishing and dredging for crabs (blue crabs were 28% of landings, 7% of value) and oysters; pot fishing for conch and eels and seining.

Table VA-NN1: Landings by Gear Type, Newport News, VA, 1998.

GEAR TYPES, NEWPORT NEWS	LBS. (%)	VALUE (%)
Common Seine, Haul Seine	0.0	0.0
Dredge, Clam	0.0	0.0
Dredge, Crab	1.4	0.4
Dredge, Oyster	0.0	0.0
Dredge, Sea Scallop	32.9	59.7
Gill Net, Drift	0.0	0.0
Gill Net, Sink	1.0	0.3
Handline	0.0	0.0
Pots/Traps, Blue Crab	26.4	7.1
Pots/Traps, Conch	0.0	0.0
Pots/Traps, Eel	0.1	0.0
Tongs/Grabs, Oyster	0.5	0.6
Tongs/Grabs, Clam	2.4	6.0
Otter Trawl, Bottom, Fish	26.4	10.3
Otter Trawl, Bottom, Other	0.0	0.0
Otter Trawl, Bottom, Scallop	8.7	15.5

Total Landings, rounded, 1998: 5,742,500 lbs.
Total Value, rounded, 1998: $15,945,700 dollars

Table VA-NN2: Landings by Major Species, Newport News, VA, 1998.

MAJOR SPECIES: NEWPORT NEWS, VA	LBS. (%)	VALUE (%)
Crab, Blue	27.7	7.3
Flounder, Summer	19.8	8.6
Quahog	2.4	6.1
Scallop, Sea	34.4	72.1
Sea Bass, Black	2.4	0.9
Angler	7.0	3.0

Number of Species: 59

Other species of MAFMC interest, by percentage value 1998: Bluefish (0.2), Butterfish (0.0), Scup (0.0), Smooth Dogfish (0.0), Tilefish (0.0), Loligo Squid (0.4).

Norfolk, Virginia

The commercial fishery of Norfolk, VA today is actually typical of the more rural waterman communities. Only a few fish houses are left to buy from local fishers; other docks and wholesalers have closed down, and one wholesaler has changed to a retail store and restaurant. The fishery is a small inshore and bay fishery. Principal gears used are crab pots (55% of value), crab dredges (10%), clam patent tongs and rakes (4%), handlines (10%) and sink gill-nets (12%). Other gears are haul seines, conch dredges, and eel and fish pots. Striped bass (10% of value) are caught with gill-nets, handlines and seines, as are Atlantic croaker (4% of value) and other estuarine and anadromous species. The small black sea bass fishery here (2.2% of value) is carried out with handlines, as is the summer flounder fishery (2.1%). Blue crabs make up two-thirds of the value of Norfolk's catch (64%); hard clams or quahogs account for 4%, and conch 4% as well.

Hampton and Seaford, Virginia

For purposes of discussing fishery landings and preserving confidentiality, we have combined weighout data for Hampton (within the Metropolitan Statistical Area depicted above) and Seaford (within York County, census and employment data for which are offered below). Gear-type data (Table VA-H1) show that sea-scalloping with dredges is the single-most important fishery by value; otter-trawl dragging for finfish is highest for poundage. Some draggers are also used for scalloping. Gill-netting, crab potting and dredging, seining, and tonging for clams are other techniques used in these two ports (Seaford is almost entirely devoted to scalloping, but scalloping is also important in Hampton).

Like Newport News, Hampton and Seaford are important sea scalloping ports near the mouth of Chesapeake Bay. Scallops accounted for 69% of landed value in 1998. In Hampton, a significant portion of the scallops are caught with otter trawls rather than scallop dredges. The sea scallop fleet of Seaford relies entirely on dredges and accounts for virtually all of the landings and landed value there. Besides scallops these dredge-equipped vessels caught large amounts of angler as well as a small amount of summer flounder.

Finfish dragging is also important in Hampton. Species diversity is extremely high. The otter trawl fleet of Hampton takes Illex and Loligo squid, black sea bass (a substantial amount is also caught with handlines); Atlantic mackerel; Atlantic croaker (a large portion was caught by haul seines as well as pound nets and sink gill nets); and angler (although most was landed by scallop dredges and scallop otter trawls). A small amount of pelagic longlining is also done from Hampton, for black tip, mako shortfin and thresher sharks and tuna (big eye, yellowfin, albacore)

The inshore and bay fisheries of Hampton include the pound-net and seine fisheries for Atlantic croaker, gill-netting and handlining, blue crabs, (caught with dredges, pots, and scrapes) and hard clams or quahogs (harvested with patent tongs and crabs). We have combined the weighout data for Hampton and Seaford to preserve the confidentiality of data for fisheries with few businesses involved. Species diversity in the landings at Hampton and Seaford is extremely high, 79 in 1998 (Table VA-H2). Fourteen had either poundage or value at or above 2% in 1998, led by sea scallops, summer flounder, Illex squid, Atlantic croaker, blue crab, and angler.

Table VA-H1: Landings by Gear Type, Hampton and Seaford, VA, 1998.

GEAR TYPE: HAMPTON & SEAFORD	LBS (%)	VALUE (%)
Common Seine, Haul Seine	4.6	0.7
Dredge, Crab	1.6	0.8
Dredge, Scallop, Sea	16.6	57.2
Gill Net, Drift	0.7	0.2
Gill Net, Sink	8.2	2.1
Handline	0.3	0.2
Longline, Pelagic	0.1	0.1
Pots & Traps, Blue Crab	9.2	3.9
Pots & Traps, conch	0.0	0.0
Pots & Traps, Eel	0.0	0.0
Pots & Traps, fish	0.0	0.0
Scrapes	0.0	0.0
Tongs & Grabs, Clam, Patent	0.7	3.4
Otter Trawl, Bottom, Fish	53.5	16.5
Otter Trawl, Bottom, Scallop	4.4	14.7
Otter Trawl, Bottom, Shrimp	0.0	0.0
Pound Nets	0.0	0.0

Total Landings, rounded, 1998: 9,089,500 lbs.
Total Value, rounded, 1998: $13,311,000 dollars

Table VA-H2: Major Species Landed, Hampton and Seaford, VA, 1998.

MAJOR SPECIES: HAMPTON & SEAFORD	LBS (%)	VALUE (%)
Angler	3.6	3.1
Crab, Blue	10.8	4.7
Croaker, Atlantic	13.2	2.1
Flounder, Summer	11.1	9.4
Mackerel, Atlantic	**	**
Scallop, Sea	17.3	68.8
Sea Bass, Black	2.9	2.6
Squid, Illex	**	**
Squid, Loligo	3.2	0.9
Other Fish, Industrial	2.1	0.1
Striped Bass	4.8	1.1
Herring, NK	**	**
Herring, Atlantic	**	**
Quahog	1.3	4.2

Number of Species: 79

Note: ** indicates confidential data due to small number of businesses involved.

Other species of MAFMC interest, by percentage value, 1998: Bluefish (0.4), Butterfish (0.1), Scup (0.1), Spiny Dogfish (0.0), Tilefish (0.0).

Northampton County, Virginia

Northampton County is at the southernmost tip of the Delmarva peninsula. Among its fishing ports are Oyster, inside the barrier islands of the Atlantic coast, and Cape Charles, at the entrance to the Chesapeake Bay, but most of the landings come from smaller sites coded as "Other Northampton" in NMFS weighout data. The fisheries are inshore and estuarine, dominated by blue crabs, Atlantic croaker, hard clams, and horseshoe crabs (Table VA-N2). Weakfish/squeteague and striped bass are among the 45 other species landed commercially in this area of Virginia.
Reflecting the importance of blue-crabs, the most important single gear-type is the blue crab pot (Table VA-N1). Pots are also used for conch, eel, and fish (the 1998 catches of the fish pots were Atlantic croaker and northern puffer, the latter a most unusual specialty). Dredges are used for hard clams, conch, horseshoe crabs, and blue crabs. Scrapes are used for crabs and eels; clams are harvested with patent tongs and "by hand."

Pound-nets are also important, both for crab and for fish. The fish pound nets catch Atlantic croakers, striped bass, summer flounder, weakfish and others, totaling 32 species. Otter trawl and "unknown" constitute the next largest gear types, totaling 8% of value; both were almost entirely horseshoe crab harvests in 1998. Gill-nets are used for a large variety of species; drift gill nets for 30 species, including striped bass, Atlantic croaker, and spot; sink gill nets for 25 species, including American shad and weakfish. The NMFS dealer weighout data used for landings do not completely reflect the active, inshore fishery of Virginia, which is recorded by the State of Virginia. On the other hand, they do indicate the variety of techniques and fisheries.

Table VA-N1: Landings by Gear Type, Northampton County, VA, 1998.

GEAR TYPE: NORTHAMPTON CO., VA	LBS (%)	VALUE (%)
By Hand	0.3	2.3
By Hand, Oyster	0.0	0.0
Common, Haul Seine	0.0	0.0
Dredge, Clam	0.3	3.4
Dredge, Conch	0.1	0.3
Dredge, Crab	6.4	7.9
Dredge, Other	0.3	0.1
Gill Net, Drift	6.1	4.9
Gill Net, Sink	4.7	4.4
Gill Net, Stake	0.1	0.1
Handline	0.2	0.4
Pots & Traps, Blue Crab	28.7	33.6
Pots & Traps, Conch	0.4	1.6
Pots & Traps, Eel	0.0	0.0
Pots & Traps, Fish	0.1	0.2
Pound Net, Crabs	0.2	0.6
Pound Net, Fish	24.0	14.7
Scrapes	0.0	0.1

Tongs & Grabs, Clam, Patent	0.0	0.3
Otter Trawl, Bottom, Fish	16.7	13.9
“Unknown” (Horseshoe Crab)	11.4	11.1

Total Landings, rounded, 1998: 8,468,400 lbs.
Total Value, rounded, 1998: $5,001,400 dollars

Note: "0.0" indicates some activity but less than 0.06%

Table VA-N2: Landings by Major Species, Northampton County, VA, 1998.

MAJOR SPECIES: NORTHAMPTON CO., VA	LBS. (%)	VALUE (%)
Bass, Striped	1.3	3.1
Crab, Blue	34.9	41.2
Crab, Horseshoe	28.2	25.2
Croaker, Atlantic	21.4	13.1
Quahog	0.5	2.9
Spot	2.4	1.4
Conch	0.8	2.9
Clams, Bloodarc	0.2	2.9
Weakfish	5.1	2.5

Number of Species: 49

Other species of MAFMC interest, by percentage value 1998: Bluefish (0.6), Butterfish (0.1).

Accomack County and Chincoteague, Virginia

The visiting otter trawl fishery accounts for almost half of Chincoteague's 1998 landed value; summer flounder predominates in this fishery and is the leading species for landed value (39%). Like other Mid-Atlantic otter trawl fleets, this one is highly diverse, landing 19 species in 1998, led by summer flounder, black sea bass, and Loligo squid. There is a small drift gill-net fishery for striped bass, Atlantic croaker and other species and a large sink gill-net fishery (27% of Chincoteague's value), mainly for angler, but also spiny dogfish, Atlantic mackerel, and other species. Angler was almost as valuable as fluke in 1998. Some handlining and longlining for tunas and sharks takes place, and in1998 16% of the value came from fish pots, mainly black sea bass. Less than 5% of Chincoteague's fishing activity, in terms of value, came from clamming, crabbing and other estuarine and bay fisheries, which otherwise predominate in the Virginia and Maryland region.

Table VA-AC1 shows 1998 landings and value, broken down by percentage for gear type and major species, combining Chincoteague's landings with those of the many small waterman fisheries of Accomack County, as well as the port of Wachapreague. Seventy-two species were landed in 1998, primarily blue crabs. Crabs are caught with dredges, pots, scrapes, and trot-lines. There is also oystering and hard-clamming. Angler and summer flounder, mainly from Chincoteague's gill-net and otter trawl fisheries, account for 2.2% and 3.8% of the county's total value. Striped bass, Atlantic croaker, and conch are other important species.

The major gear types are crab pots (52.2% of value) and conch and fish pots (4.9%); crab scrapes and dredges. Also important are gillnets (19.8% of value); otter trawls; and "by hand" referring to treading, hand rakes, and other techniques used to harvest hard clams, oysters and horseshoe crabs.

Table VA-CH1: Landings by Gear Type, Accomack County, VA, 1998.

GEAR TYPE: CHINCOTEAGUE & OTHER ACCOMACK CO, VA	LBS. %	VALUE %
By Hand	0.5	2.4
By Hand, Oyster	0.0	0.0
Dredge, clam	0.1	0.5
Gill Net, Drift	15.0	7.9
Gill Net, Sink	19.5	11.8
Gill Net, Stake	0.1	0.1
Handline	0.0	0.1
Longline Pelagic	0.0	0.0
Pots & Traps, Blue Crab	45.9	52.2
Pots & Traps, Conch	1.5	3.1
Pots & Traps, Fish	1.2	1.8
Rakes, Other	0.0	0.1
Trawl, Otter, Bottom, Fish	3.3	4.4
Cast Nets	0.1	0.1
Seines	0.7	0.3
Dredge, Conch	1.9	1.5
Dredge, Crab	4.4	4.3
Dredge, Oyster	0.1	0.3
Pots & Traps, Eel	0.0	0.0
Pound Net, Crab	0.1	0.3
Pound Net, Fish	3.2	0.8
Scrapes	2.1	7.3
Tongs & Grabs, Patent	0.1	0.7
Trot Line	0.1	0.1

Total Landings, rounded, 1998: 11,077,100 lbs.
Total Value, rounded, 1998: $8,485,000 dollars

Table VA-AC2: Landings by Major Species, Accomack County, VA, 1998.

MAJOR SPECIES: ACCOMACK CO, VA	LBS. (%)	VALUE(%)
Crab, Blue	52.2	63.9
Flounder, Summer	2.4	3.8
Angler	**	**
Bass, Striped	1.5	2.7
Croaker, Atlantic	**	**
Dogfish, Spiny	**	**
Quahog	0.6	3.4

Horseshoe Crab	2.5	1.5
Conch	1.6	3.3
Menhaden	2.8	0.3
Spot	8.2	4.1

Number of Species: 72

Note: ** indicates confidential data due to the small number of businesses involved.

Other Species of MAFMC interest, by percentage value, 1998: Bluefish (0.5), Butterfish (0.1), Atlantic Mackerel (0.1), Scup (0.0), Black Sea Bass (1.7), Tilefish (**), Loligo Squid (**).

Carteret County, North Carolina (includes fishing centers of Morehead City, Beaufort, Bettie, Harker's Island, Davis, Stacy, Sea Level, Atlantic, Cedar Island)

Carteret County has the largest fishery in terms of poundage and second largest in terms of value in North Carolina (Table NC1). Total 1998 landings were over 80 million lbs, but value was little more than 21 million lbs., largely due to the low value of species such as menhaden and thread herring caught by purse-seining. Other important fisheries were crab-potting, shrimp trawling, fluke trawling, hard-clamming, and the use of pound-nets, sink gill nets, longlines, and other gears for a large variety of finfishes (the total number of species landed was 69) (Tables NC-CC1, 2).

Table NC-CC1: Landings by Gear Type, Carteret County, North Carolina, 1998.

GEAR TYPE	LBS. %	VALUE %
Beach seine	0.0%	0.0%
By hand	0.1%	2.0%
Cast net	0.1%	0.0%
Channel net	0.1%	0.5%
Clam dredge (hydraulic)	0.0%	0.7%
Clam trawl, kicking	0.1%	2.2%
Common seine	0.0%	0.0%
Crab pot	6.0%	13.4%
Crab trawl	0.6%	1.4%
Fish pot	0.0%	0.2%
Flounder trawl	2.4%	9.1%
Flynet	0.6%	0.7%
Gigs	0.0%	0.1%
Gill net (drift)	0.1%	0.1%
Gill net (runaround)	0.5%	1.1%
Gill net set (float)	0.4%	1.1%
Gill net set (sink)	3.7%	5.4%
Haul seine	1.7%	2.9%
Longline bottom	0.0%	0.1%
Longline surface	0.1%	0.9%
Other (including conf.)	78.7%	22.8%
Oyster dredge	0.0%	0.1%
Peeler pot	0.0%	0.1%
Pound net	1.0%	5.5%

Purse seine	0.0%	0.0%
Rakes bull	0.0%	0.5%
Rakes hand	0.2%	3.8%
Rod-n-reel	0.8%	5.0%
Scallop dredge (bay)	0.1%	1.1%
Scallop dredge (sea)	0.0%	0.0%
Scallop scoop	0.0%	0.0%
Scallop trawl	0.0%	0.0%
Shrimp trawl	2.4%	16.7%
Skimmer trawl	0.1%	1.1%
Swipe net	0.0%	0.0%
Tongs, hand	0.0%	0.8%
Trolling	0.1%	0.4%

Total landings, rounded, 1998: 80,417,400 lbs.
Total value, rounded, 1998: 21,332,100 dollars

Table NC-CC2: Landings by Major Species, Carteret County, NC, 1998.

MAJOR SPECIES >2%	LBS. %	VALUE %
Unclassified shrimp	1.9%	16.7%
Crabs, blue, hard	7.1%	15.4%
Croaker, Atlantic	2.7%	3.0%
Flounders, fluke	2.0%	14.0%
Other (including conf.)	78.7%	22.8%
Spot	1.5%	2.4%
Weakfish (seatrout, grey)	1.6%	2.8%
Clam, hard (meats)	0.4%	9.2%
Groupers	0.2%	1.9%

Number of species: 69

Pamlico County, North Carolina

Pamlico County (pop. 11,372, 1990) had impressive total landings in 1998 of over 10 million pounds, worth over 9 million dollars. Important fishing centers include Bayboro, Vandemere, Hobucken and Oriental. Fishing takes place in the sounds and tidal rivers as well as coastal marine waters. Crab-potting, shrimp trawling, and flounder trawling are the major fisheries. Blue crabs accounted for 62% of the value in 1998, shrimp 13%, and fluke 19%. Fluke were caught mainly in trawls ("flounder trawls") but also in crab pots, crab trawls, drift or runaround gill-nets, set gill nets (float and sink), haul seines, pound nets, shrimp trawls, and swipe nets. Like other Mid-

Atlantic areas, this is a very diversified fishing region, 46 species being landed by 19 different techniques or gears (Tables NC-PC1, 2).

Table NC-PC1: Landings by Gear Type, Pamlico County, NC, 1998.

GEAR TYPE	LBS. %	VALUE %
By hand	0.0%	0.0%
Crab pot	72.0%	57.2%
Crab trawl	7.3%	5.5%
Eel pot	0.0%	0.0%
Flounder trawl	8.5%	16.6%
Flynet	0.0%	0.0%
Gill net (drift)	0.0%	0.0%
Gill net (runaround)	2.7%	1.7%
Gill net set (float)	2.5%	3.2%
Gill net set (sink)	0.5%	0.4%
Haul seine	0.0%	0.0%
Other (including conf.)	1.1%	1.4%
Oyster dredge	0.1%	0.3%
Peeler pot	0.0%	0.0%
Pound net	0.0%	0.0%
Rod-n-reel	0.0%	0.0%
Scallop trawl	0.0%	0.3%
Shrimp trawl	5.3%	13.5%
Swipe net	0.0%	0.0%

Total landings, 1998, rounded: 10,502,300 lbs.
Total value, 1998, rounded: 9,271,800 dollars

Table NC-PC2: Landings by Major Species, Pamlico County, NC, 1998.

MAJOR SPECIES >2%	LBS. %	VALUE %
Unclassified shrimp	4.9%	13.1%
Crabs, blue, hard	78.5%	60.1%
Flounders, fluke	9.4%	19.3%
Mullets	3.0%	1.6%
Crabs, blue, peeler	0.9%	2.1%

Number of species: 46

Beaufort County, North Carolina

Beaufort County (pop. 42,283, 1990) is an important fishing county, accounting for over 10 million lbs. and 8 million dollars in 1998 (Tables NC-BC1,2). Bellhaven is the principal fishing port. Blue crabs, caught with pots, trawls, trotlines, and other methods, comprise almost all of the landings and value. Fluke made up over 3% of the value. Shrimp is also important although not shown below because of confidentiality.

Table NC-BC1: Landings by Gear-Type, Beaufort County, NC, 1998.

GEAR TYPE	LBS. %	VALUE %
Crab pot	85.6%	82.9%
Crab trawl	10.0%	10.0%
Eel pot	0.1%	0.2%
Fish pot	0.0%	0.0%
Flounder trawl	0.0%	0.0%
Fyke net	0.0%	0.0%
Gigs	0.0%	0.0%
Gill net (runaround)	0.0%	0.0%
Gill net set (float)	1.4%	1.1%
Gill net set (sink)	1.2%	1.9%
Other (including conf.)	1.5%	3.7%
Oyster dredge	0.0%	0.0%
Peeler pot	0.0%	0.0%
Pound net	0.0%	0.0%
Rod-n-reel	0.0%	0.0%
Shrimp trawl	0.1%	0.1%
Trolling	0.0%	0.0%
Trotline	0.0%	0.0%

Total landings, rounded, 1998: 10,147,000 lbs.
Total value, rounded,1998: 8,035,100 dollars

Table NC-BC2: Landings by Major Species, Beaufort County, NC, 1998.

MAJOR SPECIES >2%	LBS. %	VALUE %
Crabs, blue, hard	94.4%	89.8%
Flounders, fluke	1.4%	3.1%
Other (including conf.)	1.5%	3.7%

Number of species: 38

Hyde County, North Carolina

Hyde County (pop. 5,411 in 1990) although small in population (reportedly there is only one traffic light in the county) is the third largest fishing county of North Carolina, with total landings over 16 million lbs. and value over 10 million dollars in 1998 (Tables NC-HC1,2). Fishing centers include Swan Quarter, Engelhard and Ocracoke. Blue crabs and fluke are the two most important species in terms of value; dogfish, and Atlantic croaker are also significant, and 56 other species are caught. Gears used are the full array of estuarine and inshore techniques, particularly crab pots and trawls, sink and float set gill nets, shrimp trawls, pound nets, and flounder trawls.

Table NC-HC1: Landings by Gear Type, Hyde County, NC, 1998.

GEAR TYPE	LBS. %	VALUE %
By hand	0.0%	0.0%
Cast net	0.0%	0.0%
Crab pot	63.0%	58.4%
Crab trawl	4.4%	3.8%
Fish pot	0.0%	0.0%
Flounders trawl	1.9%	5.0%
Fly net	0.3%	0.6%

Gill net (runaround)	0.4%	0.3%
Gill net set (float)	2.2%	2.9%
Gill net set (sink)	17.8%	12.5%
Haul seine	0.0%	0.0%
Longline bottom	0.0%	0.0%
Longline shark	0.0%	0.0%
Other (including conf.)	5.7%	3.2%
Oyster dredge	0.1%	0.9%
Peeler pot	0.0%	0.0%
Pound net	1.5%	3.6%
Rakes bull	0.0%	0.0%
Rakes hand	0.0%	0.0%
Rod-n-reel	0.0%	0.0%
Shrimp trawl	2.5%	8.5%
Swipe net	0.0%	0.0%
Tongs, hand	0.0%	0.0%
Trolling	0.2%	0.4%

Total landings, rounded, 1998: 16,079,800 lbs.
Total value, rounded,1998: 10,921,600 dollars

Table NC-HC2: Landings by Major Species, Hyde County, NC, 1998.

MAJOR SPECIES >2%	LBS. %	VALUE %
Unclassified shrimp	2.3%	8.2%
Crabs, blue, hard	66.2%	58.5%
Croaker, Atlantic	8.3%	4.1%
Flounder, fluke	5.9%	16.0%
Other (including conf.)	5.7%	3.2%
Sharks, dogfish	3.8%	0.8%

Number of species: 62

Dare County, North Carolina

Dare County (pop. 22,746, 1990) saw over 36.6 million pounds and 23.5 million dollars from fish and shellfish (and turtle) landings in 1998, the second highest county in the state in terms of pounds and first in terms of dollars (Tables NC-DC1,2). Fishing centers include Wanchese, Hatteras, and Mann's Harbor. Fluke (15%) was second to crabs (40%) in terms of value, but a much wider range of products were significant than in other North Carolina counties, because of the importance of ocean as well as estuarine fisheries. These included bluefish, dogfish, squid, weakfish, anglerfish, king mackerel, sharks, and tuna. The fisheries range from estuarine fisheries (crab-pots, pound-nets, turtle pots, fyke nets, etc.) to offshore longlining.

Table NC-DC1: Landings by Gear Type, Dare County, NC, 1998.

GEAR TYPE	LBS. %	VALUE %
Beach seine	1.5%	1.3%
By hand	0.0%	0.0%
Cast net	0.1%	0.0%
Crab pot	30.6%	33.0%

Crab trawl	0.6%	0.5%
Eel pot	0.0%	0.1%
Fish pot	0.1%	0.2%
Flounder trawl	3.3%	7.5%
Flynet	13.2%	7.7%
Fyke net	0.0%	0.0%
Gigs	0.0%	0.0%
Gill net (runaround)	1.0%	1.0%
Gill net set (float)	0.7%	0.8%
Gill net set (sink)	36.4%	22.5%
Haul seine	0.7%	0.5%
Longline bottom	0.0%	0.0%
Longline shark	1.5%	0.8%
Longline surface	2.7%	5.8%
Other (including conf.)	0.6%	0.4%
Oyster dredge	0.0%	0.0%
Peeler pot	1.1%	5.6%
Pound net	2.1%	3.4%
Rakes bull	0.0%	0.0%
Rakes hand	0.0%	0.0%
Rod-n-reel	0.6%	1.4%
Shrimp trawl	0.4%	1.2%
Trolling	2.8%	6.1%
Turtle pot	0.0%	0.0%

Total landings, rounded, 1998: 36,625,800 lbs.
Total value, rounded, 1998: 23,511,500 dollars

Table NC-DC2: Landings by Major Species, Dare County, NC, 1998.

MAJOR SPECIES >2%	LBS. %	VALUE %
Anglerfish (goosefish)	1.8%	1.9%
Bluefish	6.4%	2.6%
Crabs, blue, hard	30.1%	27.8%
Croaker, Atlantic	18.9%	9.4%
Flounders, fluke	5.2%	15.0%
Mackerel, king	2.0%	4.7%
Sharks	2.7%	1.4%
Sharks, dogfish	10.9%	2.3%
Squid	2.4%	2.0%
Tuna	2.6%	5.2%
Weakfish (seatrout, grey)	4.7%	3.9%
Crabs, blue peeler	0.7%	2.2%
Crabs, blue, soft	1.6%	9.2%

Number of species: 69

Other North Carolina Counties

Commercial fishing is important in many other North Carolina counties as well. Following are profiles of counties for which landings were reported in 1998, in rough geographical order, from southwest to northeast. Counties where landings were very small in 1998 are signified by full indentations and italics. Population figures for 1997 are from Diaby (1999:35), based on the

July 1997 estimate from the Office of State Planning, Office of the Governor. Estimates of fishing income were derived from various sources described in Diaby (1999: 35).

Brunswick, Pender, and related Inland Counties, North Carolina

Brunswick County (pop. 65,200, 1997), at the southwestern end of the coast, has a diversified estuarine and inshore fishery, which yielded almost 3 million lbs and over 4.8 million dollars in 1998 (Tables NC-BC1,2). Shrimp trawls and rod-n-reel account for most of the landings by value; shellfish techniques ("by hand, bull rakes, hand rakes, hand tongs"), crab pots, trolling, and other techniques are also found. The major species by value was shrimp (48%); it was followed by a fairly even representation of porgies, snappers, groupers, hard clams, oysters, spot, triggerfish, and swordfish. In 1990 89 white men and 36 black men, plus 12 white women, claimed the occupation of fisher, and 23 white men were captains and other officers on the census. According to Diaby (1999: 35), there were 688 ETS issued in 1997, and the average fishing income that year was $11,572, compared with an average annual wage per worker of $23,860.

Pender County (pop. 37,208, 1997), up the Cape Fear River from Wilmington, is the site of estuarine and ocean fisheries, amounting to about $770,000 worth, for 535,000 lbs. in 1998. 19 gear types were used that year, ranging from shrimp trawls and four different kinds of gill-nets to a variety of shell-fishing techniques and small scale nets (butterfly net, cast net, channel net). Shrimp, clams, crabs, and oysters were major. Fluke made up 2.1% of value and porgies 3.2% of value. Other ocean fishes are king mackerel, spot, snappers, and groupers. In 1990 66 white males declared fishing as their occupation. Diaby (1999: 35) reports 239 ETS issued in 1997, with average fishing income of $8,599 compared with an average annual wage of $19,329.

Bladen County, up the Cape Fear River, was the site of a gill-net fishery, plus a little oystering, haul-seining and crab potting in 1998. Species caught included crabs, spot, shad, croaker, and other bay and estuarine species. The 1990 census showed 8 black men as fishers. Robeson County, far inland up the same river, had a few landings in 1998 as well.

Columbus County, between Brunswick and Bladen Counties and on the Cape Fear River, had a small fishery, mainly oysters but also small amounts of spot, shad, fluke, bluefish, and crabs. It was valued at less than $70,000 in 1998. Techniques include crab pots, gill nets, gigs, and "by hand." The 1990 census showed no fishers as occupational types.

Other North Carolina locations

This section further describes the general characteristics of fishing activities in North Carolina. The descriptive information that follows is excerpted and paraphrased from a report prepared by Griffith (1996) and is based on visits to fishing centers around the state, surveys, and in depth-interviews.

The information presented in this section is based on the following visited locations: Swan Quarter, Englehard, Rose Bay, Germantown, and Ocracoke in Hyde

County; Belhaven and Aurora in Beaufort County; Hatteras, Wanchese, and Alligator River in Dare County; Atlantic, Stacey, Beaufort, and Salter Path in Carteret County; Vandamere and Paradise in Pamlico County; Sneads Ferry, and Hampstead in Oslow County; and Varnumtown in Brunswich County.

The following are the seven most notable general characteristics of fishing activities in North Carolina according to Griffith (1996).

"First, most obviously, the busiest fishing season for almost all sites visited begins in the spring and lasts through summer, with December through February being relatively quiet in most locations. Exceptions to this are the fisheries of the Outer Banks, which tend to be net-based and to target winter species. Second, despite the fact that we find a number of extremely large vessels in the state, crews on most vessels tend to be small (<45'). Most crews consist of between one and three fishermen and many interviewed fishermen fish alone. The menhaden fishery, of course, is an exception to this (Garrite-Blake 1995). Third, relatively few sites we visited specialize in only one species, one type of gear, or one type of vessel. Crab pots and shrimp or otter trawls rank high among the principal gears used in the state, but others tend to be found in use alongside these either by the same fishermen or by others using the same docking and other facilities. Fourth, few full-time, owner-operator North Carolina fishermen rely on a single species or single gear for their livelihood, and many operate from more than one vessel; indeed, this diversity and flexibility constitutes one of the central defining characteristics of a full-time fishermen in North Carolina. Small crew sizes, especially those based on family and community relations, are adaptive under these conditions, where shifting among fishing gears and locations does not depend on mobilizing large numbers of crewmen. Fifth, this diversity and flexibility has some implications for managing the fisheries of the state. Although fishermen tend to be defined by the *primary* species they target and gear they use to capture those species, such as shrimpers using otter trawls or crabbers using crab pots, North Carolina fishermen become more alike one another, often, in the *secondary* species they target and, in particular, the gears they use for those species. Sixth, North Carolina fisheries are highly localized. Those sites with access to both inland and off-shore waters, such as fishermen based in Wanchese or the Outer Banks or Carteret County, have more options available to them to switch among fisheries and even between recreational and commercial sectors (such as operating as charter boat fishermen) than fishermen based along the Pamlico River or Albemarle Sound. Some fishermen, recognizing the advantages to these different locations, dock boats at more than one location or utilize more than one launching facility. However, several fishermen we interviewed had little or no idea about the character of fisheries fewer than fifty to sixty miles away. Seventh, regional differences occur among the fisheries as we move from north to south, yet are more pronounced as we move from east to west. For example, those fishermen who fish in the Albemarle Sound are more like fishermen of the Pamlico River than they are like those who operate out of Wanchese. Urban and rural distinctions also figure into these differences; fishing strategies of around the Nags Head/Manteo are more similar to Morehead City and Wilmington fishing strategies than they are toward those of Eastern Dare further down the Outer Banks. Finally, with the exception of crab processing plants, most shore sites are staffed by relatively few people on land; most of the work of off-loading, icing, and other handling of the catch is done by fishermen."

Regarding the present aspects of the fishery in the area, it was found that "North Carolina's principal fisheries have changed considerably through time, yet certain historical continuities thread through the fishing lifestyles we find on the coast from prehistoric and colonial times to the present." Some families in the Tidewater area (Hyde County) still depend on combining commercial crabbing, eeling, gill net fishing, trapping, hunting, and hiring out as guides to hunters and sportfishermen. Individuals around the upper reaches of the Albemarle Sound still string together seasonal work in the herring fishery, hunting, logging, and from time to time, farming. "Two of the earliest fisheries in North Carolina provided an organizational template for fisheries that continue, in altered form, today. The early herring fisheries on the Chowan River and the Albemarle Sound were highly capitalized fisheries in which harvesting and processing were as tightly integrated as today's menhaden fishery."

Due to the lack of a license for sampling purposes, saltwater recreational fishing in North Carolina is hard to track and monitor. In order to assess recreational and other non-commercial (e.g. subsistence) fishermen, a structured interview with 178 individuals in these fisheries was conducted in order to address this lack of information. Interviewed fishermen were overwhelmingly white males (95 percent) between 21 to 79 years of age (average of 48 years). Twenty-five percent were between 20 to 41 years of age, 25 percent were between 40 to 48 years of age, 25 percent were between 47 to 59 years of age, and the remaining 25 percent were over 59 years of age. The majority (89 percent) were North Carolina residents; only 7 percent had not finished high school, and over 60 percent had some training or education after high school. About 77 percent were married at the time of the interview, with 11 percent never having married and the remainder either divorced/separated (7 percent) or widowed (4 percent). About forty-two percent lived in households with more than two children, and only 13 percent were retired. Influenced by the sampling methodology, 41 percent of the interviewed fishermen fish most frequently from manmade structure, 34 percent from private boats, 19 percent from the beach or bank, and the remainder from other places such as charter boats or a combination of the previous fishing modes. About 79 percent of those interviewed primarily fish in state waters (rivers, sounds, or less than 3 miles from shore), with 13 percent fishing more than 3 miles from shore, and the majority (83 percent) rarely fishing in freshwater. "Anglers interviewed fish from one to 330 days per year. Average fishing effort is around 42 days/year, which would be 80 percent of the weekend, yet this varies widely within the sample. When they do fish, although slightly more than a third of the population has no target species (35 percent), the most commonly sought species include: King mackerel, flounder, trout, spot, bluefish, and Spanish mackerel. They catch these species, of course, primarily with hook and line...around one third eat 100 percent of their catch and 3 percent eat none of their catch. Around three-fourths give their catch away (usually half what they catch), and under 10 percent sell their catch. Boat ownership is relatively common among those interviewed, with 58.4 percent reporting that they owned boats."

Regarding fishermen carrying passengers for hire, "charter boat captains occupy a position between recreational and commercial fishermen and, in fact, often move between winter commercial fishing and running charter during the summer. A few we interviewed for this study come from long family traditions of fishing, both commercially and as recreational boat captains, and maintain strong social links with commercial fishing centers in the state. Of course, nearly all of their business as charter boat operators occurs during the summer months and most of their clients are tourists, but charter boat captains reported fishing heavily into the fall and beginning in the late spring."

4.2 Analysis of Permit Data/Human Environment

Federally Permitted Vessels

This analysis estimates that as of September 5, 2000, there were 1,969 vessels with one or more of the following three commercial or recreational Federal Northeast permits: summer flounder (FLK), black sea bass (BSB), and scup (SCP). A total of 1033, 977, and 831 Federal commercial permits for FLK, SCP, and BSB, respectively, had been issued to Northeast region fishing vessels. For party/charter operators a total of 613, 498, and 528 Federal permits were issued for FLK, SCP, and BSB, respectively.

These three fisheries (FLK, SCP, and BSB) have vessels permitted as commercial, recreational, or both. Of the 1,969 vessels with at least one Federal permit there were 1,303 that held only commercial permits for FLK, SCP, or BSB while there were 546 vessels that held only a recreational permit. The remaining vessels(120)held some combination of recreational and commercial permits. Whether engaged in a commercial or recreational fishing activity vessels may hold any one of seven combinations of FLK, SCP, and BSB permits. The total number of vessels holding any one of these possible combinations of permits by species and commercial or recreational status are reported in Table 11.

Table 11. Summary of number of vessels holding federal commercial and/or recreational permit combinations for summer Flounder (FLK), scup (SCP) and black sea bass (BSB).

Comm. Permit Combinations	Recreational Permit Combinations								
	No. Rec. Permit	FLK Only	SCP Only	FLK/ Scup	BSB Only	FLK/ BSB	SCP/ BSB	FLK/ SCP/ BSB	Row Total
No. Comm. Permit	0	54	12	34	9	66	15	356	546
FLK Only	286	5	4	1	2	0	1	5	304

SCP Only	69	3	0	1	0	3	0	7	83
BSB	96	1	0	0	0	0	1	1	99
FLK/ SCP	178	3	0	6	3	5	2	8	205
FLK/ BSB	40	0	0	0	0	2	1	0	43
SCP/ BSB	172	8	0	1	0	1	2	24	208
FLK/ SCP/ BSB	462	3	1	1	0	0	0	14	481
Column Total	1303	77	17	44	14	77	22	415	1969

Row sums in Table 11 indicate the total number of vessels that have been issued some unique combination of commercial permits. For example, there were 304 vessels whose only commercial permit was for FLK. By contrast, there were 481 that held all three commercial permits. Column totals in Table 11 indicate the total number of vessels that have been issued some unique combination of Federal recreational permits. For example, there were 17 vessels whose only recreational permit was for scup while 415 vessels held all three recreational permits. Each cell in Table 11 reports the total number of vessels that have the unique combination recreational and commercial permits by species. For example, the cell entry of 5 in row 2 column 2 indicates that there were 5 vessels that held the unique combination of only a FLK commercial permit and only a FLK recreational permit. Note that each cell entry in row one corresponds to vessels that held no commercial permit for FLK, SCP or BSB, while each cell entry in column 1 corresponds to vessels that held no such recreational permit.

In addition to FLK, SCP, and BSB there are a number of alternative commercial or recreational fisheries for which any given vessel might possess a Federal permit. The total number of vessels holding any one or more of these other permits is reported in Table 12.

Table 12. Other permit year 2000 federal northeast region permits held by FLK, SCP, and BSB commercial and recreational vessels.

	Commercial Only (n= 1,303)		Party/Charter Only (n= 546)		Commercial and Party/Charter (n= 120)	
Northeast Permits	Vessels (No.)	Percent of Total	Vessels (No.)	Percent of Total	Vessels (No.)	Percent of Total
Surfclam	620	47.6	84	15.4	24	20

Ocean Quahog	574	44.1	80	14.7	19	15.8
Scallop	253	19.4	0	0	4	3.3
Non-trap Lobster	594	45.6	8	1.5	10	8.3
Lobster Trap	355	27.2	43	7.9	24	20
Party/ Charter Lobster	2	0.2	14	2.6	2	1.7
Party/ Charter Multi-Species	433	33.2	440	80.6	52	43.3
Comm. Multi-species	711	54.6	63	11.5	52	43.3
Party/ Charter Squid/ Mackerel/ Butterfish	4	0.3	423	77.5	76	63.3
Comm. Squid/ Mackerel/ Butterfish	1071	82.2	220	39.6	86	71.7
Comm. Bluefish	1062	81.5	425	77.8	100	83.3
Party/ Charter Bluefish	14	1.1	84	15.4	88	73.3

Of the vessels that hold at least one Federal permit for FLK, SCP, or BSB the largest number of commercial permit holders (Table 13) are held by Massachusetts vessels, followed closely by New York and New Jersey, then Rhode Island, and North Carolina. The fewest permits are held by Florida vessels, followed by Delaware. In terms of average tonnage, the largest commercial vessels are found in Florida, followed by Virginia, Massachusetts, Maine, and North Carolina. These rankings by state are similar for average length as well. The smallest vessels are found in Delaware, followed by New Hampshire and New York.

Table 13. Permit year 2000 descriptive data from northeast region permit files for commercial vessels.

	CT	DE	FL	MA	MD	ME	NC	NH	NJ	NY	PA	RI	SC	VA	WV	Other

No. of Permits by Mailing Address State	26	17	3	370	18	46	134	20	181	184	3	172	1	125	0	3
No.of Permits by Home Port State	15	14	4	429	15	33	117	13	152	212	22	133	1	137	2	4
No.of Permits by Principal Port State	28	8	2	383	23	44	125	18	181	184	0	171	1	133	1	1
Average Length by Principal Port	57.9	38.3	82.0	58.9	52.1	57.9	60.6	51.6	56.5	44.2	NA	56.9	47.0	63.3	NA	NA
Average Tonnage by Principal Port	74.1	16.0	127.0	82.6	37.6	75.1	79.0	44.8	69.3	40.0	NA	69.8	33.0	93.0	NA	NA
Percent Home Port Equal Principal Port	53.6	50.0	25.0	87.4	65.2	75.0	81.6	72.2	77.9	84.9	0	74.9	100	81.8	0	NA

For party/charter vessels (Table 14), the largest number of permit holders are found in New Jersey, followed by New York and Massachusetts. The fewest permits are in Florida, followed by North Carolina. As might be expected, recreational vessels are smaller on average than commercial vessels. In terms of overall length, the largest party/charter vessels operate out of principal ports in the states of Florida and Maryland, followed by Pennsylvania, Connecticut, New York, and New Jersey; while the smallest are in New Hampshire.

Table 14. Permit year 2000 descriptive data from northeast region permit files for party/charter vessels.

	CT	DE	FL	MA	MD	ME	NC	NH	NJ	NY	PA	RI	VA	Other
No. of Permits by Mailing Address State	25	7	4	119	8	23	12	18	153	101	6	39	31	0
No. of Permits by Home Port State	15	10	6	125	6	23	13	18	121	111	25	35	34	4
No. of Permits by Principal Port State	22	7	2	116	6	25	15	18	155	96	3	46	34	1
Average Length by Principal Port	45.0	38.6	60.5	37.0	58.8	36.0	38.8	30.9	45.7	47.0	52.3	36.8	39.0	NA
Average Tonnage by Principal Port	26.8	11.7	68.5	19.2	45.5	20.2	20.2	9.1	31.1	34.1	44.7	19.1	22.2	NA
Percent Home Port Equals Principal Port	68.2	70.0	16.7	90.4	66.7	88.0	80.0	94.4	76.8	79.3	4.0	76.1	88.2	NA

For vessels that hold a combination of commercial and party/charter permits most vessels operate out of ports in the states of New York followed by Massachusetts and New Jersey (Table 6). Like the vessels that hold only party/charter FLK, SCP, or BSB, permits, these vessels are generally smaller than commercial vessels and are smaller, on average, than party/charter vessels in Massachusetts and New York but are larger than New Jersey party/charter vessels.

Table 15. Permit year 2000 descriptive data from northeast region permit files for combination commercial/recreational vessels.

	CT	DE	FL	MA	ME	NC	NH	NJ	NY	PA	RI	VA	Other
No.of Permits by Mailing Address State	3	3	1	20	1	3	2	17	47	0	10	13	0
No. of Permits by Home Port State	3	3	1	26	4	1	14	49	2	2	5	12	0
No.of Permits by Principal Port State	2	2	0	20	1	4	2	14	48	2	12	12	1
Average Length by Principal Port	33.5	59.0	NA	34.8	46.0	41.3	33.5	53.1	37.9	66.5	41.8	46.7	36.0
Average Tonnage by Principal Port	7.0	55.0	NA	15.1	48.0	19.8	4.0	42.6	22.2	101.5	29.2	35.8	17.0
Percent Home Port Equal Principal Port	66.7	66.7	0	73.1	0	75.0	50.0	78.6	95.9	0	41.7	91.7	NA

Summer flounder permits are allocated per state, though vessels are not constrained to land in their home state. It can be useful, therefore, to examine the degree to which vessels from different states make it a practice to land in states other than their home state. With the exception of South Carolina, commercial vessels in Massachusetts and Maryland vessels were most likely to list the same state as both the vessel owner’s declared principal port of landing and the identified port of their home (Table 13), followed closely by Florida, New Jersey, Connecticut, New York, and New Hampshire. Vessels in Delaware were the least likely to land in their home port state followed by Virginia, North Carolina, and Rhode Island. Among recreational vessels (Table 14), New Hampshire vessels are the most likely to list the same state as both principal of landing and home port, followed equally by Delaware, Florida, Massachusetts, and Pennsylvania. For vessels that have a combination of commercial and party/charter permits, every such vessel operating out of Connecticut and North Carolina declared the same landing and home port (Table 15) on their year 2000 Federal permit application. Those vessels which have generally made it a practice to land in their home state may have less inherent flexibility in altering their landing state to adjust to smaller quotas in their home state.

To examine landings patterns 1999 data are used, since that is the last full year from which data are available and partial year data could miss seasonal fisheries. The top commercial landings ports for FLK, SCP, and black sea bass by pounds landed are shown in Table 16. Related data for the recreational fisheries are shown in Table 17, though the nature of the recreational database (MRFSS) means that it is inappropriate to desegregate to less than state levels. Thus port-level recreational data are not shown.

Table 16. Top ports of landing (in pounds), based on NMFS 1999 weighout data. Since this table includes only the "top ports," it may not include all of the landings for the year.

Port	Pounds FLK	# FLK Vessels	Pounds SCP	# SCP Vessels	Pounds BSB	# BSB Vessels
STONINGTON, CT	188397		52799		257537	
CHATHAM, MA	23898	17	340579	27	162493	32
NEW BEDFORD, MA	303655	138	262697	30	734681	41
BARNSTABLE, MA	120954	31	45835	25	187743	27
OTHER DUKES, MA	155538	30	337168	23	117317	29
OTHER MASS,	4045	4	458196	5	131968	7
OCEAN CITY, NJ	165336	21	401	C	974640	27
BEAUFORT	573944	25	0	0	616500	13
ENGELHARD	739086	17	0	0	16719	13
ORIENTAL	625331	19	0	0	783	6
WANCHESE	2115152	52	0	0	85447	56
BELFORD	356503	19	362198	15	2540	28
CAPE MAY	722729	72	643548	27	1910788	55
PT. PLEASANT	1420675	39	118352	24	29906	43
HAMPTON BAY	309483	57	153578	45	587216	48
MONTAUK	293859	74	656330	68	100281	103
LITTLE COMPTON	59577	13	202159	10	281785	13
NEWPORT	186317	45	817693	28	15441	35
POINT JUDITH	2985971	129	665315	104	129189	142

TIVERTON	294220	30	35643	17	4432	22
CHINCOTEAGUE	853483	28	323	5	83615	23
HAMPTON	1669505	38	27796	C	219334	32
NEWPORT NEWS	1835918	58	4	C	72101	42
VIRGINIA BEACH	7924	C	363719	C	355792	22

Table 17. MRFSS preliminary estimates of 1999 recreational harvest and total catch (in numbers of fish).

State	FLK Harvest	FLK Catch	SCP Harvest	SCP Catch	BSB Harvest	BSB Catch
CT	215311	717740	373943	647073	1583	175312
MA	147720	393316	1209089	1549781	20985	46636
RI	432087	872254	718660	998039	25290	145934
DE	180562	613297	492	11498	41462	253967
MD	226912	1239079	2105	2105	159527	1646599
NJ	1502689	10723182	251821	351894	449134	2177475
NY	759640	4020124	874539	1071762	88880	820126
VA	378283	2561235	0	3890	536489	1778424
NC	236791	236791	0	0	88493	712993

Dealers

There were 199 dealers who bought summer flounder, scup and/or black sea bass in 1999. They were distributed by state as indicated in Table 18. Employment data for these specific firms are not available. In 1999 these dealers bought $16,259,534 worth of summer flounder; $3,686,648 worth of scup; and $4,793,747 worth of black sea bass.

Table 18. Dealers reporting buying FLK, BSB, and/or SCP, by state (from NMFS commercial landings database).

	DE, ME, NH, CT	MD	MA	NJ	NY	NC	RI	VA
Number of Dealers	5	3	43	23	44	27	37	17

Threatened and Endangered Species

The impacts of the summer flounder, scup and black sea fisheries upon endangered and threatened species and marine mammal populations are described in detail by the Council in the FMP amendments that instituted fishery management measures for these fisheries (Amendments 2, 10 and 12, summer flounder; Amendments 8 and 12, scup; Amendments 9 and 12, black sea bass). Impacts of this action are further summarized in section 6.2, Impacts of Alternatives upon Endangered or Threatened Species or Marine Mammal Populations, of this document.

5.0 Description of Fisheries

5.1 Summer Flounder

The commercial and recreational fisheries for summer flounder are outlined by principal port in section 4.1 of the EA, and additional information is found in Amendments 2, 10, and 12 (information on how to obtain these and other Council documents referred throughout this specifications package can be obtained from the MAFMC office).

In recent years, the commercial fishery has been managed under a quota system. In 1993, the first year that a coastwide quota was implemented, commercial landings were 12.59 million lb (5.71 million kg), slightly in excess of the quota of 12.35 million lb (5.60 million kg). Commercial landings in 1994 and 1995, were 14.56 and 15.42 million lb (6.58 and 6.97 million kg), respectively. In 1996, landings declined to 12.95 million lb (5.85 million kg) which were about 16 percent in excess of the initial quota of 11.11 million lb (5.04 million kg) for that year. In 1997, landings were approximately 8.81 million lb (4.08 million kg) which were about 5 percent in excess of the initial quota of 8.38 million lb (3.8 million kg) for that year. Commercial landings were 10.72 million lb (4.86 million kg) in 1999. Relative to previous years, annual commercial landings from 1993 to 1999 were less than the 16.59 million lb (7.52 million kg) landed in 1992, the year before quota implementation, but with the exception of 1997, were substantially larger than the 9.25 million lb (4.19 million kg) landed in 1990.

Recreational landings have fluctuated since Amendment 2 regulations were implemented in 1993. Landings increased to 8.83 million lb (4.0 million kg) in 1993 from the 1992 level of 7.15 million lb (3.24 million kg). In 1994, recreational landings increased again to 9.33 million lb (4.23 million kg) and then declined to 5.42 million lb (2.46 million kg) in 1995. In 1996 and 1997, landings were 9.82 million lb (4.45 million kg) and 11.87 million lb (5.38 million kg), respectively. In 1998, recreational landings increased to 12.48 million lb (5.66 million kg) and then dropped to 8.37 million lb (3.80 million kg) in 1999.

5.1.1 Status of the Stock

The status of the summer flounder stock is re-evaluated annually. The most recent assessment, completed in June, 2000 indicates that the summer flounder stock is overfished and overfishing is occurring with respect to the overfishing definition. The complete assessment is detailed in the "31st Stock Assessment Review Committee Consensus Summary of Assessment."

The latest assessment indicates that the stock is overfished and overfishing is still occurring relative to the Amendment 12 overfishing definitions. However, the fishing mortality rate estimated for 1999 is 0.32, a significant decline from the 1.31 estimated for 1994. In addition, total stock biomass has increased substantially since 1991 and spawning stock biomass has increased each year since 1993 to 64.8 million pounds, the highest value in the time series. Projections indicate that if the TAL in 2000 is not exceeded, total stock biomass will exceed the biomass threshold in January, 2001. At this level, the stock will no longer be overfished.

Year-class estimates indicate that the 1996, 1997 and 1998 year classes were about average size at 32 to 38 million fish. The assessment estimated the 1999 year class to be the smallest since 1988 at 19 million fish. However "retrospective analysis shows that the VPA tends to underestimate recent year-classes."

5.1.2 Stock Characteristics and Ecological Relationships

The stock characteristics and ecological relationships of summer flounder are fully described in section 5.3 of Amendment 2. Additional information can be found in the SAW-31 documents. The following is taking from the "Advisory Report on Stock Assessment."

An analytical assessment (VPA) of commercial and recreational total catch at age (landings plus discard) was conducted. The natural mortality rate (M) was assumed to be 0.2. Indices of recruitment and stock abundance from NEFSC winter, spring, and autumn, Massachusetts spring and autumn, Rhode Island, Connecticut spring and autumn trawl, Delaware, and New Jersey trawl surveys were used in VPA tuning. In addition, recruitment indices from surveys conducted by the states of North Carolina, Virginia, and Maryland were used in VPA tuning in an ADAPT framework. The uncertainty associated with the estimates of fishing mortality and spawning stock biomass in 1999 was evaluated with respect to research survey variability.

Fishing mortality calculated from the average of the currently fully recruited ages (3-5) summer flounder has been high, varying between 0.9 and 2.2 during 1982-1997 (55%-83% exploitation), far in excess of the revised FMP Amendment 12 overfishing definition, $F_{threshold} = F_{target} = F_{max} = 0.26$ (21% exploitation). The fishing mortality rate has declined substantially since 1997 and was estimated to be 0.32 (25% exploitation) in 1999, but is still 23% higher than the overfishing definition. The annual partial recruitment of age-1 fish decreased from near 0.50 during the first half of the VPA series to 0.25 since 1994; the partial recruitment of age-2 fish has decreased from 1.00 in 1993 to 0.72 in 1998-1999. These decreases in partial recruitment at age are in line with expectations given recent changes in commercial and recreational fishery regulations.

The NEFSC spring survey stock biomass index (1968-1999) peaked during 1976-1977, and in 1999 was 90% of that peak. Total stock biomass on January 1, estimated by VPA (1982-1999) reached 48,300 mt in 1983, before falling to 16,100 mt in 1989. Total stock biomass has increased since 1991, has been stable since 1994 at about 41,000 mt, and in 1999 was estimated to be 41,400 mt, which is 39% of the biomass target of B_{MSY} = 106,400 mt, and 78% of the biomass threshold of one-half B_{MSY} = 53,200 mt.

The arithmetic average recruitment from 1982 to 1999 was 40 million fish at age 0, with a median of 38 million fish. The 1982 and 1983 year-classes are the largest in the VPA time series, at 74 and 80 million fish, respectively, at age 0. Recruitment declined from 1983 to 1988, with the 1988 year-class the weakest at only 13 million fish. Recruitment since 1988 has generally improved, and the 1995 year-class, at 47 million fish, was above average. The 1996-1998 year-classes, ranging between 32 and 38 million fish, are estimated to be about average. The 1999 year-class, at 19.2 million fish, is estimated to be below average. Recent recruitment per unit of SSB has been lower than that estimated at a comparable abundance of SSB during the early 1980s.

Spawning stock biomass declined 72% from 1983 to 1989 (18,800 mt to 5,200 mt), but has since increased with improved recruitment and decreased fishing mortality to 29,300 mt in 1999. The age structure of the spawning stock has expanded, with 78% at ages 2 and older, and 10% at ages 5 and older. Under equilibrium conditions at F_{max}, however, about 85% of the spawning stock biomass would be expected to be ages 2 and older, with 50% at ages 5 and older.

5.1.3 Economic and Social Environment

A general description by principal port of the commercial and recreational importance of scup, summer flounder and black sea bass is given in section 4.1 of the EA.

Since 1993 the commercial fishery has been managed under a quota system. The value of commercial landings of summer flounder in 1993 were estimated at $19.1 million. In 1994 and 1995 commercial exvessel value increased to $24.0 and $28.3 million, respectively. Estimated exvessel value for 1996, 1997, and 1998 was $20.8 million and $15.5 million, and $18.7 million respectively. In 1999, summer flounder commercial landings were valued at $19.4 million and average exvessel price for summer flounder was estimated at $1.81 per pound. In general, summer flounder landings for smaller tonnage vessels were higher in the summer months, while landings for larger tonnage vessels were higher in the winter months. Monthly price fluctuations were evident. On average, higher prices tended to occur during the summer months. This price fluctuation is likely associated with supply responses.

Summer flounder continues to be an important component of the recreational fishery. Estimation of primary species sought as reported by anglers in recent intercept surveys indicates that summer flounder has increased in importance in the U.S. North Atlantic and Mid-Atlantic subregions, while decreasing in the South Atlantic subregion. The number of recreational anglers indicating that summer flounder is their primary species sought in the North Atlantic and Mid-Atlantic subregions in 1999 was 3.1 million and 3.8 million, respectively. The number of recreational anglers indicating that summer flounder is their primary species sought decreased by about 2 percent from 1998 to 1999 of both regions combined.

Japan continues to be the most important export market for summer flounder. Exports of summer flounder are difficult to determine as summer flounder gets lumped under a variety of export codes and it is impossible to identify in the U.S. export data (B. Ross pers. comm. 1997). However, export of US summer flounder to Japan has been reported to vary from approximately 800 to 1,800 mt in 1993-1997 (Asakawa pers. comm.). Fresh whole U.S. fluke or summer flounder (Paralichthys dentatus) is generally exported to Japan for raw (sashimi) consumption. Fresh U.S. summer flounder is used as a substitute for Japanese "hirame" (bastard halibut -- *Paralichthys olivaceus*), and normally imported whole fresh and sold through seafood auction markets to restaurants. They are usually consumed raw for sashimi or sushi toppings in Japan. While U.S. summer flounder is well established in some major action markets, daily prices may fluctuate depending on the total quantity of domestic and imported hirame (including U.S. summer flounder) delivered to auction on a given day. Depending on quality, auction prices for fresh U.S. summer flounder may vary from around 1,000 to 3,000 yen/kilo ($3.13 to 9.40/lb at 145 yen/$ 1.00) depending on size, quality and market conditions (Asakawa pers. Comm.). Frozen summer flounder may not be considered to be of the same quality, and is unlikely to become substitute for unfrozen summer flounder. Nevertheless, properly handled frozen summer flounder may receive wholesale prices of 400-900 yen/kilo ($1.73-3.90/lb) or higher (Asakawa pers. comm.). The recent economic crisis in Japan could potentially hamper exports of seafood commodities to that country. Furthermore, future devaluation of the yen would result in reduced revenues for exporters of summer flounder to Japan.

Imports of flounders (all species combined) were 5.92 million lb ($4.54 million) in 1996, 5.39 million lb ($4.44 million) in 1997, and 7.23 million lb million lb ($4.67 million) in 1998. In 1999, 7.87 million lb of flounders valued at $5.28 million entered the country for consumption (NMFS). Importers generally tend to import flounders when domestic exvessel prices reach $2 per pound. South Atlantic flatfish (e.g., Argentina) are imported to the US when domestic prices are high. However, frozen imports may not make the grade for some restaurants and retail buyers that demand fresh flounder (National Fishermen, 1998).

The commercial and recreational fisheries for summer flounder are fully described in sections 8.1 and 8.2 of Amendment 2.

5.2 Scup

The commercial and recreational fisheries for scup are fully described in section 7.1 and 7.2, respectively of Amendment 8, and are outlined by principal port in section 4.1 of the EA. In the last 18 years (1981 to 1998) there has been a downward trend in scup commercial landings. Commercial scup landings, which had declined 60 percent from 21.73 million lb (9.85 million kg) in 1981 to 8.77 million lb (3.71 million kg) in 1989, increased to 15.61

million lb (6.86 million kg) in 1991 and then dropped to the lowest value in the time series, 3.32 million lb (1.51 million kg), in 1999.

The recreational landings declined steadily from a 1986 value of 11.61 million lb (5.26 million kg) to 1.34 million lb (0.61 million kg) in 1995, and then increased to 2.16 million lb (0.98 million kg) in 1996. In 1997, recreational landings were 1.2 million lb (0.54 million kg) and then dropped to 0.88 million lb (0.40 million kg) in 1998, the lowest value in the time series. However,, recreational landings rebounded to 1.89 million lb (0.86 million kg) in 1999.

5.2.1 Status of the stock

The most recent assessment on scup, indicates that scup are overfished and overfishing is occurring(SARC 31). The SARC concluded that “the current index of spawning stock biomass is low (1998-2000 average =0.10 SSB kg/tow) and less than 5% of the biomass threshold (2.77 SSB kg/tow).” The SARC also stated that “fishing mortality should be reduced substantially and immediately. Reduction in fishing mortality from discards will have the most impact on the stock, particularly considering the importance of the 1999 and all future good recruitment to rebuilding the stock.”

The current assessment does indicate an increase in stock abundance in 1999 and 2000 based on NEFSC spring survey results. Spring survey results indicate that spawning stock biomass increased each year since 1998 and the NEFSC autumn survey results (kg/tow) for 1999 are the highest in the time series since 1985. These survey results reflect the effects of a strong 1997 year class and a moderate to strong 1999 year class on the stock.

Commercial and recreational landings also indicate that the 1997 year class was strong and has persisted over time to support landings in both 1999 and 2000. Recreational catch per trip increased substantially in 1999. Increased abundance of larger fish has also been noted by commercial fishermen who have suggested that more than the 1997 year class accounts for the availability of larger fish. However, ageing studies conducted by CT DEP personnel suggest that scup from the 1997 year class have grown at a faster rate than previous year classes. As such, the 1997 year class probably accounts for most of the larger fish in the commercial and recreational catches.

Estimates of fishing mortality rates for scup are uncertain. The SARC conducted several analyses that indicated that F was at least 1.0 for ages 0-3 scup for the 1984 to 2000 time series. The SARC could not estimate F’s on older fish because they are not well represented in the surveys. However, the SARC did note that it was likely that the current F was “significantly higher than the reference point.” The SARC noted that the truncation in lengths and ages in the surveys and landings suggest that the stock has experienced high fishing mortality rates.

Although the magnitude of the mortality rates is unknown, relative exploitation rates have changed over the period. Relative exploitation rates based on total landings and the spring survey suggest a general increase in exploitation from 1981 to 1995. Since then, relative exploitation rates have declined; the 1999 value is almost half of the 1997 value.

5.2.2 Stock Characteristics and Ecological Relationships

The stock characteristics and ecological relationships of scup are fully described in section 5.3 of Amendment 8. The most recent assessment on scup, completed in June 2000, indicates that scup was last assessed at SAW-27 in 1998. Reliable estimates of commercial fishery discards are not available due to limited sample size and uncertainty as to their representative nature of the sea sampling data for scup. VPA and production models were not undertaken. Stock status was estimated from survey abundance indices. Standardized indices of abundance from the NEFSC autumn survey and the MRFSS (recreational) catch per tow show similar patterns over time (1981-1999). Total mortality rates were estimated from survey based calculations using both annual and cohort catch curves. Fishing mortality rates were then estimated by subtracting the assumed natural mortality rate of 0.2.

Catch curve analyses of survey indices indicate that F for ages 0-3 greatly exceeded the fishing mortality rate threshold (Fmax = 0.26) during 1984 – 1998. F could not be estimated on older animals because they are currently absent from the NMFS spring and autumn surveys. A relative exploitation index (landings/relative biomass) indicates that exploitation reached a time series (1981-1999) high in 1995 and has declined each subsequent year.

Age 0 indices from the NEFSC, MADMF, RIDFW, and CTDEP autumn trawl surveys indicate a moderate to strong 1999 year-class. Commercial catches indicate that the 1997 year-class was exceptionally strong in 1999. The 1996 index of age 0 abundance from the NEFSC autumn survey (inshore and offshore strata) was the lowest of the 1984-1999 series. The 1996 index of age 1 abundance from the NEFSC spring survey (inshore and offshore strata) was the second lowest in the 1984-1997 series.

Indices of stock biomass and abundance for 1999 were slightly higher than the time series lows seen in 1995-1996 in the NEFSC, MADMF, CTDEP, RIDFW, and NJBMF research survey time series.

5.2.3 Economic and Social Environment

The socioeconomic characteristics of the various ports and communities along the Atlantic Coast that are involved in the scup fisheries were described and assessed by McCay and Cieri (2000), McCay *et al*. (1993) and Finlayson and McCay (1994). A general description by principal port of the commercial and recreational importance of scup, summer flounder and black sea bass is given in section 4.1 of the EA.

Commercial scup landings were about 3.32 million lb (from ME to Cape Hatteras, NC) and valued at $4.23 million in 1999. The average price per pound was $1.27 in 1999. The overall degree of reliance on scup for ports described in Section 4.0 of the EA is low. Scup values and landings were higher for ports located in the northern part of the coast.

A detailed description of the economic aspects of the commercial and recreational fisheries for scup was presented in sections 8.1 and 8.2 of Amendment 8.

5.3 Black Sea Bass

The commercial and recreational fisheries for black sea bass are fully described in section 7.1 and 7.2, respectively of Amendment 9, and are outlined by principal port in section 4.1 of the EA. Commercial black sea bass landings have varied without trend since 1981, ranging from a low of 2.04 million lb (0.93 million kg) in 1994 to a high of 4.33 million lb (1.96 million kg) in 1984. The 1999 landings of 2.97 million lb (1.35 million kg) were below the average for 1981-1999 of 3.14 million lb (1.42 million kg). Currently, landings are substantially below the peak landings of 21.80 million lb (9.89 million kg) estimated for 1952.

Recreational landings ranged from a low of 1.15 million lb (0.52 million kg) in 1998 to a high of 12.39 million lb (5.62 million kg) in 1986. Recreational landings in 1999 were about 1.7 million lb (0.77 million kg) less than the average for 1981-1999.

5.3.1 Status of the Stock

The most recent assessment on black sea bass, completed in June 1998, indicates that black sea bass are over-exploited and at a low biomass level (SAW 27). Fishing mortality for 1997, based on length based methods, was 0.73. The complete assessment is detailed in the "Report of the 27th Northeast Regional Stock Assessment Workshop."

The NEFSC has provided spring survey results for 2000. Amendment 12 to the Summer Flounder, Scup and Black Sea Bass FMP, which was partially approved by NMFS in 1999, established a biomass threshold based on this survey. Specifically, the biomass threshold is defined as the maximum value of a three-year moving average of the NEFSC spring survey catch-per-tow (1977-1979 average of 0.9 kg/tow).

Survey results indicate black sea bass biomass has increased in recent years; the 1999 value was the highest value in the series since 1979. However, the 1999 index is large because of a single tow that caught a large number of black sea bass in an area slightly north of Cape Hatteras. If that tow is removed from the estimate, the index drops from 0.433 to 0.093 for 1999.

Because of the potential influence of extremely small or large number for a single tow, Gary Shepherd (pers. comm.) has suggested that the survey indices be log transformed to give a better indication of stock status. The transformed series indicates a general increase in the exploitable biomass since 1993. The preliminary index for 2000 of 0.322 is the highest in the time series since 1976 and would substantiate fishermen's observations that black sea bass have become more abundant in recent years. The three-year moving average for 1998-2000 of .2011 is a 42% increase relative to the 1997-1999 average.

The spring survey can also be used as an index of recruitment. The survey indicates good year classes were produced from 1988 to 1992 (0.2 to 0.76 fish per tow), with a moderate year class in 1995, and poor year classes in 1993, 1994, 1996 and 1997. The 1999 index was about three times the average for the period 1968-1998 and the fourth largest value since 1968. Preliminary results for 2000 indicate a strong year class; the index is 1.135, the highest in the time series.

Relative exploitation based on the total commercial and recreational landings and the moving average of the transformed spring survey index indicates a significant reduction in mortality in 1998 and 1999 relative to 1996 and 1997 levels. Based on length frequencies from the spring survey, and assuming length of full recruitment at 25 cm, the average F based on two length based methods was 0.75 (48% exploitation rate) in 1998 (G. Shepherd pers. comm.). Length based estimates are very sensitive to changes in the length used for full recruitment; average F's were 0.51 (37% exploitation) or 1.25 (66% exploitation) if a length of 23 or 27 cm was used in the calculations. Based on the relative index, exploitation rates in 1999 were nearly identical to those estimated for 1998.

Given the lack of information on stock status, a coordinated tagging study conducted by NMFS and the states could provide additional information on black sea bass mortality and migration (Shepherd pers. comm.). The study design would be simple, relatively inexpensive, and require minimal effort by state personnel. The Council and Commission should consider implementing such a study in 2001.

5.3.2 Stock Characteristics and Ecological Relationships

The stock characteristics and ecological relationships are fully described in section 5.3 of Amendment 9. In addition, the advisory report on black sea bass from SAW-27 states that "recent catches are well below the historical average, age and size structure is truncated, and survey biomass indices since the late 1980s have been one-tenth of those observed in the late 1970s. Average annual fishing mortality, estimated from length-based analyses, ranged from 0.56 to 0.79 during 1984-1997 and was 0.73 (48 percent exploitation) in 1997. Recruitment in 1997, as indicated by survey indices, was well below the 1972-1996 average." Additional, detailed information is available in the SAW-27 documents.

5.3.3 Economic and Social Environment

The socioeconomic characteristics of the various ports and communities along the Atlantic Coast that are involved in the black sea bass fisheries were described and assessed by McCay and Cieri (2000), McCay *et al*. (1993) and Finlayson and McCay (1994). A general description by principal port of the commercial and recreational importance of scup, summer flounder and black sea bass is given in section 4.1 of the EA.

In 1999, black sea bass landings (from ME to Cape Hatteras, NC) were valued at $5.04 million and average exvessel price for black sea bass was estimated at $1.69 per pound. The overall degree of reliance on black sea bass for ports described in Section 4.0 of the EA is low. Black sea bass values and landings were higher for ports located along the southern part of the coast.

A detailed description of the economic aspects of the commercial and recreational fisheries for black sea bass was presented in sections 8.1 and 8.2 of Amendment 9.

6.0 Environmental Consequences of Preferred and other Alternatives

This EA analyzes the impacts of the alternatives considered for the year 2001 specifications for summer flounder, scup, and black sea bass. The nature of the management programs for these three fisheries was examined in detail in the Environmental Impact Statement (EIS) prepared for each of the three fisheries (Amendment 2 for summer flounder (1992), Amendment 8 for scup (1996), and Amendment 9 for black sea bass (1997)). Those analyses included considerations of the impacts of the overall management measures on stock health and abundance, spawning stock biomass, and protected species, as well as on the economy and affected fishermen.

Cumulative Impacts

Although the measures that are the subject of this EA are for the year 2001 fisheries, the annual specification process for these fisheries could have potential cumulative impacts. The extent of any cumulative impacts from measures established in previous years is largely dependent on how effective those measures were in meeting their intended objectives and the extent to which mitigating measures compensated for any quota overages.

The management schemes established by the Council for summer flounder, scup, and black sea bass in the FMP, as previously analyzed in each species' respective EIS, recognize that management measures and fishery specifications established in one fishing year have implications for the measures that follow in subsequent years. In order to end overfishing and remedy the overfished status of these stocks, the Council developed rebuilding programs that have stock biomass targets. To achieve rebuilding, the Council recommends annual specifications that are intended to have a reasonable likelihood of not exceeding the specified target F's for the coming fishing year. Because of the nature of the fisheries (e.g., the landing of these species over in a large number of coastal states) and the inherent time lags encountered in collecting landings that are necessary to make final determinations of actual landings, there is always the possibility that some harvest quotas may be unintentionally exceeded before the information necessary to close that portion of the fishery is available. On the other hand, other sectors of the fishery (e.g., certain states, in the case of summer flounder) may under-achieve their allowable harvest levels in a given year.

To compensate for any over-harvests, and to preserve the conservation intent of the management regime, the FMP includes provisions that require that any commercial landings that exceed the specifications in one year or quota period be deducted from the commercial quota that would otherwise have been allowed for that portion of the fishery in the following year. Similarly, overages in the recreational fishery are addressed by way of changes in management measures to reduce the harvest in the following year to the specified level.

Thus, the FMP and the annual specifications anticipate the possibility that landings may exceed targets in any given year and provide a remedy that at least partially compensates for such occurrences in terms of maintaining the conservation goals of the FMP and the rebuilding programs, thus mitigating the impacts of those overages. The annual nature of the management measures is intended to provide the opportunity for the Council and NMFS to assess regularly the status of the fisheries and to make necessary adjustments to ensure that there is a reasonable expectation of meeting the objectives of the FMP and the targets associated with any rebuilding programs under the FMP.

The rebuilding programs under the FMP began in 1993, 1997, and 1998 for summer flounder, scup, and black sea bass, respectively. Because each year’s measures build upon the previous year’s measures, the cumulative effects of the management program on the health of the stocks and the fishery are assessed from year to year. As described above, the regulation implementing the FMP require that any commercial fishery overages in a given year be subtracted from the initial quota for a given state (summer flounder) or season (scup and black sea bass) the following year. An exception to this requirement occurred when a court ruling added 3.05 million pounds (1.4 million kg) to the commercial fishery for 1995 (February 16, 1995, 60 FR 8958). In the recreational fisheries for these species, projected landings in a given year are used by the Council in recommending recreational management measures for each species in the following year. The Council and NMFS consider angler effort and success, stock availability and the target harvest limits in establishing recreational measures for the upcoming year, including size limits, seasons, and bag limits. The recreational fisheries have target harvest levels, which do not require the fishery to be closed when attained, as compared to the commercial fishing quotas, which do require the fishery to be closed when the quota is attained.

Harvest limits, total landings, and total overages for each of the three fisheries have been as follows (weights are in thousands of pounds):

<u>Summer Flounder</u>

Commercial Quotas (millions of pounds)

Year	Quota	Commercial Share	Adjusted Commercial Quota	Commercial Landings	Overage
1993 -	20.73	12.44	N/A	12.59	N/A
1994 -	26.68	16.00	N/A	14.52	N/A
1995 -	19.40	14.7 (add on)	N/A	15.38	0.68
1996 -	18.52	11.11	10.43	12.72	2.29
1997 -	18.52	11.11	8.81	8.97	0.16
1998 -	18.52	11.11	10.95	11.21	0.26
1999 -	18.52	11.11	10.73	10.62*	N/A
2000 -	18.52	11.11	10.91**	10.09*	

*-Preliminary

** Although there was not an overall overage in 1999, several individual states exceeded their 1999 allocation thus requiring a 2000 adjustment.

Recreational Harvest Limits (millions of pounds)

	Harvest Limit	Landings	Overage
1995 -	7.8	5.50	N/A
1996 -	7.41	10.37	2.96
1997 -	7.41	11.86	4.45
1998 -	7.41	12.53	5.12
1999 -	7.41	8.37	0.96

	Scup^			Black Sea Bass^		
	TAL	Landings	Overages	TAL	Landings	Overages
1997 -	7.947	6.034	N/A	-	-	-
1998 -	6.125	5.042	N/A	6.173	3.69	N/A
1999 -	3.772	5.209	1.437	6.173	4.67	N/A
2000 -	3.772			6.173		

^-Includes both commercial and recreational harvest limits.
Note - 2000 landings not yet available for scup and black sea bass.

Of the three fisheries, the summer flounder and scup commercial fisheries have experienced annual total overages. The summer flounder and scup commercial overages total approximately 3.39 and 0.80 million pounds, respectively. However, the total overage, even though the recreational overage cannot be deducted, factors into the cumulative impact on the stocks. Since the inception of the rebuilding, the total overage for summer flounder and scup are 16.88 million lb and 1.44 million lb, respectively. The black sea bass fisheries has experienced quota overages in individual periods but neither the overall commercial or recreational specifications have been exceeded to date.

Quota overages in a given year or period have two expected impacts. First, the overages result in harvest levels in the following year or period for that portion of the fishery that are lower than would otherwise have been allowed, given the condition of the stock. In commercial fisheries, the overages result in a direct reduction in the next year’s quota, which impacts fishery participants by decreasing potential revenues for the fishing year or period in which the overages are deducted. However, the fishery participants have already realized revenues from the landings that exceeded the allowable harvest level in the year they occurred. Thus, from an economic perspective, the timing of revenues is altered and there may be impacts on some fishermen caused by unexpected reductions in their opportunities to earn revenues in these fisheries in the year during which the overages are deducted. In the recreational fisheries, overages in one year may result in lower bag limits, larger minimum size limits, and/or shorter seasons than would otherwise have been allowed, had the overages not occurred. Increased harvests in one year are thus “paid back” by decreased harvest opportunities the next year. Recreational fishing opportunities for those fishermen not desiring to keep their catch of these species would be affected little, if any, by such occurrences.

The second possible result of overages is the potential that the annual F targets of the FMP will not be met and/or that the rebuilding schedule will be delayed. The significance of any such delays depends on the magnitude of the overages and their resultant impact on the stock size and age structure. While it is not possible to quantify those effects precisely, the fact that the FMP’s management regime takes into account the overages and the current status of the stocks in setting the specifications for the next year mitigates any such impacts. For summer flounder, the actual F has been higher than the target for several years, thus, the rate of rebuilding may have been slowed compared to the amount of rebuilding that might have occurred had F not exceeded the target. Nevertheless, the spawning stock biomass for summer flounder has increased substantially during the rebuilding period and the age structure of the summer flounder stock has expanded. Thus, the summer flounder stock is healthier and more robust than before rebuilding was initiated. Fishing mortality targets have generally been achieved for scup and black sea bass, so overages in individual periods or quarters are not likely to result in impacts on stock rebuilding for those stocks.

The Council and NMFS recognize that overages in any of the fisheries in 2000 could have additional negative impacts on the rate of rebuilding. Given the history of the summer flounder fishery, the mitigating influence of annual overage adjustments, and the fact that the stock has shown continued improvement during the rebuilding period, despite the overages that have occurred, the cumulative impacts of overages are not considered to be significant. Likewise, the impacts of any overages that might occur in 2000 as a result of these fishery specifications are also not considered to be significant.

6.1 Impacts of Alternatives upon the Affected Environment

The environment in which these fisheries are prosecuted was described in detail by the Council in the FMP amendments that instituted fishery management for these fisheries (Amendments 2, 10, and 12 for summer flounder; Amendments 8 and 12 for scup; and Amendments 9 and 12 for black sea bass). The fishery management plans for black sea bass and scup regulate the fishery from Maine to Cape Hatteras, North Carolina, while the summer flounder fishery is regulated from Maine to the southern border of North Carolina. The fisheries are prosecuted by vessels throughout the range, though the geographic focus of the fishery varies somewhat from year to year.

The principal gear used to harvest summer flounder, scup and black sea bass is the bottom otter trawl with other major gears including scallop dredge (for summer flounder) and fish pots and traps (for scup and black sea bass). There are potential impacts of otter trawling on the ocean bottom habitat. However, quantification of specific gear types on various bottom types is poorly understood. However, whatever the consequences for habitat, it can be assumed that increased trawling effort would tend to have greater negative consequences. Conversely, any action which acts to reduce fishing effort, would tend to reduce the negative impacts of trawling on the physical environment. There is no way to establish that one quota alternative will have fewer impacts on the environment relative to another. For instance, it could be concluded that a larger quota would result in a larger number of or longer fishing trips, and, therefore, the potential for greater habitat impacts. However, this is not necessarily the case. A larger quota could mean a state establishes a higher trip limit, thereby resulting in an equal number of fishing trips. Also, catch-per-unit-effort could correspondingly increase resulting in the same number of tows landing a larger volume of fish.

Given this uncertainty, the various alternatives discussed in this document cannot be analyzed individually for impacts on the affected environment.

In addition to the issue of general habitat degradation, several habitats within the summer flounder management unit are protected under the National Marine Sanctuaries Act of 1973. National marine sanctuaries are allowed to be established under the National Marine Sanctuaries Act of 1973. Currently, there are 11 designated marine sanctuaries that create a system that protects over 14,000 square miles (National Maine Sanctuary Program 1993).

There are two designated national marine sanctuaries in the area covered by the FMP: the Monitor National Marine Sanctuary off North Carolina, and the Stellwagen Bank National Marine Sanctuary off Massachusetts. There are currently five additional proposed sanctuaries, but only one, the Norfolk Canyon, is on the east coast. The Monitor National Marine Sanctuary was designated on January 30, 1975, under Title III of the Marine Protection, Research and Sanctuaries Act of 1972 (MPRSA). Implementing regulations (15 CFR 924) prohibit deploying any equipment in the Sanctuary, fishing activities which involve “anchoring in any manner, stopping, remaining, or drifting without power at any time” (924.3(a)), and trawling (924.3(h)). The Sanctuary is clearly designated on all National Ocean Service (NOS) charts by the caption “protected area.” This minimizes the potential for damage to the Sanctuary by fishing operations. Correspondence for this sanctuary should be addressed to: Monitor, NMS, NOAA Building 1519, Fort Eustis, VA 23604.

NOAA/NOS issued a proposed rule on February 8, 1991 (56 FR 5282) proposing designation under MPRSA of the Stellwagen Bank National Marine Sanctuary, in Federal waters between Cape Cod and Cape Ann, Massachusetts. On November 4, 1992, the Sanctuary was Congressionally designated. Implementing regulations (15 CFR 940) became effective March 1994. Commercial fishing is not specifically regulated by the Stellwagen Bank regulations. The regulations do however call for consultation between Federal agencies and the Secretary of Commerce on proposed agency actions in the vicinity of the Sanctuary that “may affect” sanctuary resources. Correspondence for this sanctuary should be addressed to: Stellwagen Bank NMS, 14 Union Street, Plymouth, MA 02360.

Details on sanctuary regulations may be obtained from the Chief, Sanctuaries and Resources Division (SSMC4) Office of Ocean and Coastal Resource Management, NOAA, 1305 East-West Highway, Silver Spring, MD 20910.

6.2 Impacts of Alternatives upon Endangered or Threatened Species or Marine Mammal Populations

Numerous species of marine mammals and sea turtles occur in the Northwest Atlantic Ocean. A comprehensive study of this areas was completed from 1979-1982 by the Cetacean and Turtle Assessment Program (CETAP), at the University of Rhode Island, covering the area of Cape Sable, Nova Scotia, to Cape Hatteras, North Carolina, from the coastline to 5 nautical miles seaward of the 1,000 fathom isobath.

Four hundred and seventy one large whale sightings, 1,547 small whale sightings and 1,172 sea turtles were encountered in this survey. CETAP concluded that both large and small cetaceans were widely distributed throughout the study areas in all four seasons, and grouped the 13 most commonly seen species into three categories, based on geographical distribution. The first group contained only the harbor porpoise, which is distributed only over the shelf and throughout the Gulf of Maine, Cape Cod, and Georges Ban, but probably not southwest of Nantucket. The second group contained the most frequently encountered baleen whales (fin, humpback, minke and right whales) and the white-sided dolphin. These were found in the same areas as the harbor porpoise, and also occasionally over the shelf at least to Cape Hatteras or out to the shelf edge. The third group indicated a "strong tenancy for association with the shelf edge" and included the grampus, striped, spotted, saddleback and bottlenose dolphins, and the sperm and pilot whales.

Loggerhead turtles were found throughout the study area, but appeared to migrate north to about Massachusetts in summer and south in winter. Leatherbacks appeared to have had a more northerly distribution. CETAP hypothesized a northward migration of both species in the Gulf Stream with a southward return in continental shelf waters nearer to shore. Both species usually were found over the shoreward half of the slope and in depths less than 200 feet. The northwest Atlantic may be important for sea turtles feeding or migrations, but the nesting areas for these species generally are in the South Atlantic and Gulf of Mexico.

This problems may become acute when climatic conditions result in concentrations of turtles and fish in the same area at the same time. These conditions apparently are met when temperatures are cool in October, but then remain moderate into mid-December and result in a concentration of turtles between Oregon Inlet and Cape Hatteras, North Carolina. In most years, sea turtles leave Chesapeake Bay and filter through the areas a few weeks before the fall fisheries become concentrated. Efforts are currently under way (by VIMS and U.S. Fish and Wildlife Service refuges and Back Bay, Virginia and Pea Island, North Carolina) to more closely monitor these mortalities due to trawls. Fisherman are encouraged to carefully release turtles captured incidentally and to attempt resurrection of unconscious turtles, as recommended in the 1981 Federal Register (pages 43976 and 43977).

The only other endangered species occurring in the northwest Atlantic is the shortnose sturgeon (*Acipenser brevirostrom*). The Councils and NMFS urge fishers to report any incidental catches of this species to the Regional Administrator, NMFS, One Blackburn Drive, Gloucester, Massachusetts 01930, who will forward the information to persons responsible for the active sturgeon database.

As for protected marine mammals, species that may be potentially impacted by these fisheries included bottlenose dolphin, pilot whale, fin whale, humpback whale, right whale, harbor porpoise, harbor seal and four species of beaked whales. For detailed discussions of these species, please refer to Amendments 2, 8, 9, 10, and 12 to the Summer Flounder, Scup and Black Sea Bass FMP.

The gears managed under this FMP are all in the third category or not listed at all for the final List of Fisheries for 1998 for the taking of marine mammals by commercial fishing operations under section 114 of the Marine Mammal Protection Act (MMPA) of 1972 (63 FR 5784). Section 114 of the MMPA establishes an interim exemption for the taking of marine mammals incidental to commercial fishing operations and requires that NMFS publish an annual update to the List of Fisheries, along with the marine mammals and the number of vessels or persons involve in each fishery, arranging the according to the following categories: 1) The fishery has a frequent incidental taking of marine mammals; 2) The fishery has an occasional incidental taking of marine mammals; or 3) The fishery has a remote likelihood, or no known taking, of marine mammals.

The range of the species discussed above and the species managed under this FMP overlap, and there always exists a potential for an incidental kill. Except in unique situations, such incidental catches should have a negligible impact on marine mammal or abundances of endangered species, and NMFS has concluded in the previous consultations that implementation of this FMP will not have any adverse impact upon these populations.

The measures in the alternatives do not revise existing management measures and would not result in any increases in effort for these fisheries. As such, it is concluded that the preferred alternative will not have any negative impact on any endangered or threatened species or marine mammal populations.

6.3 Impact of Alternative 1 (Preferred Alternative) on the Environment

This alternative examines the impacts on the environment that would result from a total allowable landing limit (TAL) of 17.912 million lb for summer flounder (10.748 million lb commercial; 7.165 million lbs recreational); a total allowable catch of 8.37 million lbs for scup (which results in a TAL of 4.44 million lbs commercial; 1.77 million lbs recreational), and a TAL of 6.17 million lbs for black sea bass (3.02 million lbs commercial; 3.15 million lbs recreational).

6.3.1 Impact of Preferred Summer Flounder Measures upon the Environment

The preferred alternative would set the coastwide limit at 17.912 million lb (8.125 million kg). Based on this limit, 10.748 million lb (4.875 million kg) would be allocated to the commercial fishery and 7.165 million lb (3.250 million kg) to the recreational fishery in 2001.

In order to comply with a court order issued on April 25, 2000, NMFS has implemented an emergency rule to amend the regulations that the implement the TAL for summer flounder for 2001. Specifically, the rule revises the regulations to specify a biomass target for December 31, 2001 of 148.8 million pounds (67.5 million kg) instead of the fishing mortality target of F_{max}. The biomass target to be achieved in 2001 is the same biomass that would have resulted if the target fishing mortality targets had been achieved in 1999, 2000, and 2001. Specifically, if F_{max} was achieved in 1999, 2000, and 2001 then the estimated biomass, based on the new assessment information, would be 148.8 million pounds (67.5 million kg) on December 31, 2001. Based on the current status of the stock and the catches estimated for 1999 and 2000, a TAL of 17.91 million pounds has a 50% probability of achieving this biomass in 2001.

The Commission has measures in place to decrease the level of discards in the commercial fisheries in 2001. Specifically, the Commission established a system whereby 15% of each states quota would be set-aside each year to reduce discards after the closure of the directed commercial fishery. In order for fishermen to land the 15% bycatch allowance in a state, the Commission recommended that states implement trip limits that were sufficiently restrictive to allow the bycatch fishery to remain open for the entire year without exceeding the state's overall quota. This system was introduced for the first time in 1999, and no data as to its effectiveness are yet available. However, the program would continue in 2001. In addition, the Commission recommended that states implement programs to collect additional data on discards in the commercial fishery. As such, the states are required to submit plans to meet these requirements so that the plans are approved before the beginning of the commercial fishery in 2001.

These measures would decrease discards of sublegal fish as well as reduce regulatory discards that occur as the result of landing limits in the states. A decrease in the amount of discards would increase the likelihood that the target biomass would be achieved in 2001, because true incidental catch would now be landed and apply to the quota reducing the amount of fish killed by commercial fishermen.

The summer flounder measures should not result in any negative impacts on other fisheries. The commercial fishery for summer flounder is primarily prosecuted with otter trawls and often harvests a mixed fishery, including summer flounder, scup, black sea bass, squid, Atlantic mackerel and silver hake. Given the mixed fishery nature of the summer flounder fishery, incidental catch of other species does occur. Because these measures will result in a reduction of effort in the directed summer flounder fishery, the incidental catch rates of other species should also decrease.

This TAL and a reduction in discards in 2001, will increase the likelihood that a landing limit of 17.912 million lb (8.125 million kg) will achieve the biomass target in 2001. In addition, this TAL of 17.912 million lb (8.125 million kg) is only slightly less than the TAL implemented in 1999. Stable landings from one year to the next are desirable from both a management and industry perspective. Drastic reductions in the quota from one year to the next could lead to increased levels of noncompliance by both commercial and recreational fishermen. Under reporting and high grading, as well as landings in excess of recreational possession limits, could increase as fishermen attempted to maintain levels of income or personal satisfaction. In addition, a stable landings pattern would allow fishers, processors, party/charter boat operators, equipment and bait suppliers to make business decisions.

A recreational harvest limit of 7.165 million lb (3.25 million kg) in 2001 is only slightly less than the harvest limit for 1997, 1998, 1999 and 2000 and about 1.201 million lb (0.54 million kg) below the recreational landings for 1999. As such, it is likely that more restrictive limits (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) would be required to prevent anglers from exceeding the recreational harvest limit in 2001. At the present time there are neither behavioral or demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. It may be possible that, given the popularity of summer flounder among anglers as the most frequently sought species in the Mid-Atlantic, and fourth in the North Atlantic in 1999 (MRFSS), more limiting regulations could affect the demand for party/charter boat trips. However, party/charter activity for most of the 1990s have remained relatively stable, so the effects may be minimal.

6.3.2 Impact of Preferred Scup Measures upon the Environment

The preferred alternative considered in this document for the 2001 scup specifications would allow for a TAC of 8.37 million lb (3.80 million kg). This TAC for 2001 is 41% larger than the TAC established for 2000. The TAC is allocated to the commercial and recreational fisheries based on the proportions of commercial and recreational catch (landings plus discards) for the years 1988-1992. Based on this data, 78 percent of the TAC is allocated to the commercial fishery and 22 percent to the recreational fishery. As such, based on a TAC of 8.37 million lb (3.80 million kg), 6.53 million lb (2.96 million kg) would be allocated to the commercial fishery and 1.84 million lb (0.83 million kg) to the recreational fishery for 2001.

Amendment 8, which was approved by NMFS on July 29, 1996, established a recovery schedule to reduce overfishing on scup over a 7 year time frame. The target exploitation rate was 47% for scup from 1997 to 1999. In 2000 and 2001, the target exploitation rate is 33% and in 2002 and subsequent years, the target exploitation rate is based on F_{max}. Currently, the exploitation rate associated with F_{max} is 21%. Recently, NMFS disapproved this schedule as "unacceptably risk-prone." As such, exploitation rates may be reduced in future years to allow for more rapid stock rebuilding.

A recommendation on the TAC for 2001 is complicated by a lack of information on discards and mortality estimates for the fully recruited fish. SARC-31 spent considerable time discussing the problems associated with the limited discard data and concluded that "discarding of scup has been high through the time series approaching or exceeding landings." However, "high" was not defined and the exact magnitude of the discards is unknown.

Estimates of mortality for ages 0-3 scup were close to 2.0 based on survey data suggesting that discard mortality has been high. However, the estimates are uncertain and do not account for availability of scup to the trawl gear or the fact that natural mortality is higher on smaller scup. The SARC concluded that F's on ages 0-3 scup were at least 1.0.

The relative exploitation index may offer some clue as to current levels of mortality for older fish. Because the index is based on mostly landings of scup larger than 9" TL (the commercial minimum fish size and the recreational minimum fish size in MA and RI) and SSB, the index may indicate fishing mortality rates on the larger fish has declined in recent years.

Based on current information, scup abundance is likely to increase in 2001. Survey information indicates that regulations may have protected the 1997 year class and also indicate a large 1999 year class. If the 1999 year class is large and mortality of undersized fish is reduced, substantial biomass could be added to the stock by 2001.

In fact, deterministic projections of the NEFSC spring survey SSB based on year 2000 index values and mean recruitment from the 1993 to 2000 survey indicate that the SSB index could increase from .10 in 1999 to .24 in 2001 if the F on ages 0-4 was 1.0 (M. Mitro pers. comm.). Assuming an F=1.0 (exploitation rate of 58%) for 1999 and a biomass that is equivalent to the SSB index of 0.21 in 2001 (a value that is higher than the 0.15 measured in 2000 but slightly less than the 0.24 projected for 2001), then exploitation rates could drop to 33% if the landings do not exceed 6.22 million pounds in 2001. Assuming the same discard estimates used in 2000 for the commercial and recreational fisheries (commercial discards for 2000 of 2.084 million lb (0.946 million kg) and recreational discards of 0.07 million lb (0.0029 million kg), the TAC for 2001 would be 8.37 million pounds.

Based on a TAC of 8.37 million pounds, the commercial TAC would be 6.53 million pounds (78%) for 2001. The recreational TAC would be 1.84 million pounds (22%). Based on the commercial and recreational discard estimates used for the year 2000 specifications, the commercial TAL would be 4.44 million pounds and the recreational harvest limit would be 1.77 million pounds for 2001. The allocation of the commercial TAC and the discards to each period and the associated quota for each period is presented in Table 19.

Table 19. Scup TAC, discard and quota distribution by period (million lb), for 2001.

Period	% Allocation	TAC	Discards	Quota
Annual	100.00	6.529	2.084	4.445
Winter I Jan-April	45.11	2.945	0.940	2.005
Summer May-Oct	38.95	2.543	0.812	1.731
Winter II Nov-Dec	15.94	1.041	0.332	0.709

The Council and Commission recommended scup landing limits for the two winter periods in 2001. For the first winter period (Jan-Apr), they recommended a landing limit of 10,000 pounds. When 75% of the landings are reached, the landing limit will drop to 1,000 pounds. For the second winter period (Nov-Dec), a 2,000 pounds landing limit was adopted. The recommended landing limit for the Winter I period is the same as the landing limit implemented in year 2000, with the exception that in 2001 the landing limit will drop to 1,000 pounds when 75% of the landings are reached, instead of the 85% used in 2000. The 75% landing trigger in 2001 is expected to decrease landings from 10,000 pounds to 1,000 pounds early enough to allow for the equitable distribution of the quota over the Winter I period. It is not expected that the change in the landing trigger during the Winter I period will have a negative effect on landings during this period. The recommended landing limit for the Winter II period is 50% smaller than the landing limit originally implemented in year 2000. Due to overages in the Winter II period in 1999, the 2000 quota was only about 107 thousand pounds and the fishery will close 0001 hours November 3, 2000, 2 days after opening. Implementation of reduced landing limits for the Winter II fishery will help ensure the equitable distribution of the scup quota over this period. Furthermore, due an to ASMFC emergency rule action, the originally implemented landing limit for the 2000 Winter II period was reduced from 4,000 pounds to 500 pounds. As a result, the proposed 2001 trip limit for this period is actually an increase from the 2000 trip limit.

Amendment 8 to the Summer Flounder and Scup FMP contains provisions that allow for changes in the minimum fish size and minimum net mesh provisions each year. Current regulations require a 9" TL minimum fish size in the commercial fishery and a 4.5" minimum mesh in the codend of the net for vessels possessing more than 200 pounds of scup from November through April and 100 pounds from May through October. The minimum fish size went into effect on September 23, 1996 with a minimum mesh size of 4.0". The minimum mesh size increased to 4.5" on April 14, 1997. The minimum fish size, mesh requirements, and threshold may be changed annually based on the recommendations of the Monitoring Committee.

As stated in the 2001 Specification document, the proposed scup quota for 2001 increases scup landings relative to the quotas specified for 2000. At the same time, the 2001 Specification document contains measures to reduce scup discards.

Over the years, there has been considerable discussion regarding the threshold level used to trigger the minimum mesh requirements. The appropriate threshold level would allow the bycatch of legal sized fish harvested in small mesh fisheries to be landed while at the same time discouraging the use of small mesh by directed scup fishermen. In 1999, the Council and Commission dropped the threshold to 200 pounds in the winter and 100 pounds in the summer to encourage the use of 4.5" mesh and protect the 1997 year class. In 1998, when the thresholds were 4000/1000 pounds, 39% of the scup landings and 91% of the discards were associated with mesh less than 4.5".   In 1999, 25% of the landings and 37% of the discards were associated with mesh less than 4.5". After consideration of this information, the Council and Commission recommended that the threshold increase to 500 lbs for the winter period and remain at 100 lbs for the summer period.

The other management measure addressed in this alternative is the gear restricted areas to reduce scup discards. This management measure is detailed below in section 6.3.4 below.

These scup measures should not result in any negative impacts on other fisheries. The commercial fishery for scup is primarily prosecuted with otter trawls and pots/traps and often harvests mixed species, including summer flounder, scup, black sea bass, squid, Atlantic mackerel and silver hake. Given the mixed species nature of the scup fishery, incidental catch of other species does occur. Because these measures will result in a reduction of effort in the scup flounder fishery, the incidental catch rates of other species should also decrease.

The preferred alternative would implement a recreational harvest limit of 1.77 million lb (0.80 million kg). In 1999, scup recreational landings were estimated at 1.89 million lb (0.86 million kg). As such, this harvest limit would decrease recreational landings by about 6 percent relative to the landings estimated for 1999. Recreational landings of scup have declined in recent years; from 1991 to 1998 recreational landings dropped by approximately 89 percent. This decrease occurred before the implementation of the coastwide harvest limit in 1998 and is probably due largely to a reduction in stock biomass over this time period. Because the recreational harvest limit is nearly identical to the 1999 landings this harvest limit should have minimal impacts in 2000.

6.3.3 Impact of Preferred Black Sea Bass Measures upon the Environment

The preferred alternative would establish a TAL of 6.173 million lb (2.8 million kg) for 2001. This TAL has been implemented each year since 1998, the first year that TALs were set for black sea bass.

Amendment 9, which was approved by NMFS on November 15, 1996, established a recovery schedule to reduce overfishing on black sea bass over an 8 year time frame (the first year was 1996). That same schedule was used in Amendment 12 to meet SFA requirements. The target exploitation rate established by this schedule for 2000 was 48%. In 2001 and 2002, the target exploitation rate is 37%.

The best available information on stock status indicates that stock size has increased in recent years. In fact, the 3-year average for 1998-2000 is 42% larger than the value for 1997-1999. In addition, the recruitment index for 2000 is the highest in the time series, 1968-2000. If protected, this year class should allow for additional stock rebuilding in 2001 and beyond. Although the exploitation rate for 2000 is uncertain, relative exploitation rates have declined in recent years. If the 2001 biomass is at least equal to the 2000 value, and assuming an exploitation rate of 48% in 1998, the TAL could remain the same and the exploitation rate could drop to 35%, very close to the target of 37% for 2001.

Given the potential that exploitation rates may be less than or equal to the target, the Council and Commission did not recommend any changes in the TAL for 2001. As such, the TAL for 2001 be 6.173 million lb.

Based on this TAL, the commercial quota would be 3.02 million lb (1.37 million kg) (49 percent) and the recreational harvest limit would be 3.14 million lb (1.42 million kg) (51 percent) for 2001. The commercial quota and recreational harvest limit would be identical to the 1998, 1999 and 2000 level.

The recreational harvest limit of 3.14 million lb (1.42 million kg) is approximately 85% above the 1999 recreational landings of 1.70 million lb (0.77 million kg). As such, it is not expected that this recreational harvest limit would have a significant impact on the recreational fishery.

The commercial quota is allocated into four periods based on landings data from 1988-1992. Based on these data, the allocation by period would range from 372,951 pounds to 1.17 million pounds (Table 11). Quotas would be adjusted in 2001 to account for overages in 2000.

Table 20. The black sea bass allocation and trips limits by quarter for 2001.

Quarter	% Allocation	Quota (lb)	Trip Limit (lb)
Quarter I, Jan-Mar	38.64	1,168,760	9,000
Quarter II, Apr-June	29.26	885,040	1,500
Quarter III, July-Sept	12.33	372,951	1,000
Quarter IV, Oct-Dec	19.77	597,991	2,000

The current black sea bass regulations specify that trip limits be implemented for each period and that the trip limit does not change over the period. Trip limits would remain in effect until the fishery is closed by NMFS based on projections that the quarterly quota would be taken. The trip limits for 2000 were 9,000; 3,000; 2,000; and 3,000 pounds for quarters 1 through 4, respectively. However, due to an ASMFC emergency rule action, the originally implemented trip limit for 2000 Quarter IV period was reduced from 3,000 pounds to 2,000 pounds.

In 2000, like 1999, the commercial fishery closed prematurely in both the second and third quarters. Because of this closure, and likely increase in stock size and effort, trip limits for each of the quarters were modified to allow for landings over the entire period. The Council and Commission recommended that the trip limits be modified for 2001 to 9,000; 1,500; 1,000; and 2,000 for each quarter, respectively (Table 19). A such, the recommended landing limits for Quarters I and IV periods in 2001 are equal to the landings limits implemented in 2000. However, recommended landing limits for Quarters II and III periods in 2001 are 50% lower than the landings limits implemented in 2000.

The black sea bass measures should not result in any negative impacts on other fisheries. The commercial fishery for black sea bass is primarily prosecuted with otter trawls and pots/traps and often harvests a mixed fishery, including summer flounder, scup, black sea bass, squid, Atlantic mackerel and silver hake. Given the mixed species nature of the black sea bass fishery, bycatch of other species does occur. Because these measures will result in no increase in effort for the black sea bass fishery, the bycatch rates of other species should not increase.

6.3.4 Gear Restricted Areas

In response to the disapproved bycatch provisions in Amendment 12, the Council recommended gear restricted areas (GRAs) for 2000. These GRAs regulate the use of otter trawls with codend mesh less than 4.5 inches in areas and times that were identified as having high scup discards. The Council also proposed an exempted fisheries program that identified exempted fisheries as those small mesh fisheries that discarded less than 10% of the total scup caught (% discards=scup discards/scup catch*100) in the areas and times identified as

GRAs. Specifically, directed small mesh fisheries were identified and the amount of scup caught and discarded were used to determine which fisheries were exempt.

The Council staff described the available discard data for scup in Amendment 12 and a subsequent report. The report also described a study by Kennelly (1999) that identified areas, depths and times of high discard rates for scup based on sea sample data from 1990 to 1994. Both the Council staff report and the Kennelly paper discuss the data limitations for scup as well as the use of area/season closures and gear modifications to reduce scup discards.

The *Loligo* fishery was identified as a primary source of scup discards in the Kennelly report. Although the magnitude of the discards is unknown, it is probable that the areas where scup and *Loligo* are caught at the same time may also be the areas/times where scup discards occur. As such, Council staff examined 1997 and 1998 VTR data to determine possible times and locations for scup/*Loligo* overlap.

The 1997 and 1998 VTR data indicate that significant scup/*Loligo* overlap occurs in areas 537, 539, and 613 in November and December (Tables 21a-b). In fact, area 613 in November and December was the one area and time identified by Kennelly (1999) as having consistently high discard rates from 1990 through 1994. Areas 537 and 539 were also identified in the report as areas of high discards. Kennelly notes that scup spawn in estuaries, bays, and inshore areas south of Cape Cod and in the autumn migrate south to their wintering rounds from southern New Jersey to Cape Hatteras. Catch and discard of scup by small mesh fisheries for *Loligo* would be coincident with this migration. A total of 74% of the *Loligo* landings came from these areas during these months in November/December of 1997. A total of 88% of the scup discards occurred in those areas in those months, or 35% for the entire year.

Table 21a. Otter trawl landings of scup and *Loligo* for statistical areas where scup and/or *Loligo* represented greater than 2% of the total landings and/or discards, based on 1997 VTR data.

Area		Jan	%	Feb	%	Mar	%	Apr	%	May	%	Jun	%	Jul	%	Aug	%	Sep	%	Oct	%	Nov	%	Dec	%
537	Scup landings	271	0.1	8,257	1.7	8,275	2.9	20,743	3.5	23,365	13.1	1,934	7.0	125	1.1	216	4.7	22	0.2	10,157	24.3	138,705	37.6	57,837	4
	Loligo landings	170,545	18.9	217,915	9.4	570,935	30.7	580,393	35.0	131,198	12.4	78,199	16.0	134,999	11.7	102,947	8.4	451,175	20.1	1,087,136	18.7	314,776	10.1	587,662	2
	Scup discards	0	0.0	60	0.6	60	2.1	95	4.1	325	15.3	0	0.0	0	0.0	0	0.0	0	0.0	165	6.3	2,238	22.1	365	
	Loligo discards	415	10.5	650	11.6	1,245	43.5	2,045	70.2	55	3.5	10	0.6	10	0.2	10	0.2	360	3.3	2,450	15.9	135	2.8	325	
538	Scup landings	0	0.0	0	0.0	0	0.0	1,255	0.2	66,920	37.5	19,877	72.2	9,888	86.5	73	1.6	8,442	69.8	13,818	33.0	1,511	0.4	5,400	
	Loligo landings	0	0.0	0	0.0	0	0.0	73,960	4.5	664,938	63.1	163,438	33.4	3,000	0.3	475	0.0	11,000	0.5	31,363	0.5	10,285	0.3	9,200	
	Scup discards	0	0.0	0	0.0	0	0.0	10	0.4	564	26.5	55	47.8	228	93.8	1	0.8	75	64.1	750	28.5	200	2.0	0	
	Loligo discards	0	0.0	0	0.0	0	0.0	0	0.0	320	20.1	50	3.1	0	0.0	0	0.0	0	0.0	55	0.4	0	0.0	0	
539	Scup landings	26	0.0	249	0.1	19	0.0	1,141	0.2	26,736	15.0	2,502	9.1	1,183	10.3	3,887	84.4	2,950	24.4	11,291	27.0	69,575	18.8	8,296	
	Loligo landings	24,653	2.7	4,787	0.2	400	0.0	233	0.0	40,974	3.9	8,081	1.7	7,708	0.7	16,974	1.4	20,643	0.9	199,482	3.4	101,076	3.3	52,353	
	Scup discards	0	0.0	0	0.0	0	0.0	20	0.9	370	17.4	50	43.5	7	2.9	120	95.2	30	25.6	459	17.4	3,547	35.1	171	
	Loligo discards	0	0.0	0	0.0	0	0.0	0	0.0	45	2.8	80	4.9	115	2.7	160	3.4	710	6.5	5,780	37.5	570	11.9	25	
612	Scup landings	8,889	4.3	12,900	2.7	4,558	1.6	1,491	0.3	5,195	2.9	2,180	7.9	219	1.9	12	0.3	37	0.3	398	1.0	812	0.2	135	
	Loligo landings	4,145	0.5	123	0.0	1,485	0.1	5,531	0.3	1,947	0.2	71,603	14.7	550,206	47.7	479,478	39.0	352,048	15.7	31,348	0.5	127,529	4.1	246,747	
	Scup discards	30	2.4	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	8	3.3	5	4.0	10	8.5	1,100	41.8	15	0.1	0	
	Loligo discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	796	18.9	610	12.8	0	0.0	0	0.0	0	0.0	200	
613	Scup landings	4,685	2.3	4,834	1.0	10,074	3.5	61,243	10.3	36,580	20.5	1,043	3.8	17	0.1	419	9.1	635	5.3	5,671	13.6	147,200	39.9	50,553	4
	Loligo landings	34,427	3.8	59,034	2.5	56,951	3.1	45,547	2.7	82,285	7.8	101,087	20.7	154,448	13.4	418,260	34.0	925,371	41.2	2,830,501	48.6	798,356	25.7	532,817	1
	Scup discards	0	0.0	0	0.0	0	0.0	132	5.7	862	40.5	10	8.7	0	0.0	0	0.0	2	1.7	135	5.1	2,731	27.0	4,140	8
	Loligo discards	0	0.0	225	4.0	10	0.3	860	29.5	1,165	73.3	1,485	91.4	3,289	78.1	3,985	83.6	9,855	90.2	7,087	46.0	2,605	54.5	3,109	8
615	Scup landings	28,182	13.7	52,590	11.0	46,707	16.4	12,860	2.2	11,400	6.4	0	0.0	0	0.0	0	0.0	0	0.0	142	0.3	1,104	0.3	442	
	Loligo landings	2,119	0.2	3,940	0.2	15,765	0.8	1,142	0.1	490	0.0	528	0.1	108,610	9.4	53,141	4.3	6,606	0.3	545,864	9.4	334,037	10.7	118,539	
	Scup discards	0	0.0	4,060	39.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
	Loligo discards	0	0.0	100	1.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	320	6.7	0	
616	Scup landings	92,739	45.1	328,241	68.6	189,796	66.6	385,360	64.9	8,397	4.7	0	0.0	0	0.0	0	0.0	0	0.0	20	0.0	10,253	2.8	1,983	
	Loligo landings	491,586	54.4	671,300	28.8	557,910	30.0	770,092	46.4	72,588	6.9	114	0.0	38,703	3.4	3,025	0.2	56,694	2.5	415,538	7.1	795,550	25.6	253,097	
	Scup discards	1,135	89.7	4,835	47.1	2,735	93.7	2,070	88.7	10	0.5	0	0.0	0	0.0	0	0.0	0	0.0	10	0.4	1,375	13.6	280	
	Loligo discards	3,435	87.0	2,135	38.1	1,575	55.0	0	0.0	5	0.3	0	0.0	0	0.0	0	0.0	0	0.0	40	0.3	1,150	24.1	10	

Table 21a(continued). Otter trawl landings of scup and *Loligo* for statistical areas where scup and/or *Loligo* represented greater than 2% of the total landings and/or discards, based on 1997 VTR data.

Area		Jan	%	Feb	%	Mar	%	Apr	%	May	%	Jun	%	Jul	%	Aug	%	Sep	%
621	Scup landings	7,702	3.7	35,544	7.4	16,607	5.8	46,013	7.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo landings	307	0.0	3,920	0.2	504	0.0	1,731	0.1	19,362	1.8	65,680	13.4	155,072	13.5	25,752	2.1	239	0.0
	Scup discards	0	0.0	0	0.0	25	0.9	5	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo discards	0	0.0	0	0.0	10	0.3	10	0.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
622	Scup landings	63,179	30.7	34,215	7.1	3,470	1.2	63,704	10.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo landings	171,407	19.0	917,832	39.4	514,840	27.7	172,331	10.4	35,409	3.4	0	0.0	0	0.0	110,630	9.0	312,366	13.9
	Scup discards	100	7.9	1,300	12.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo discards	100	2.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
626	Scup landings	0	0.0	510	0.1	5,581	2.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo landings	3,775	0.4	433,185	18.6	134,180	7.2	7,861	0.5	4,800	0.5	0	0.0	0	0.0	20,025	1.6	110,000	4.9
	Scup discards	0	0.0	0	0.0	100	3.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo discards	0	0.0	2,500	44.6	25	0.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
632	Scup landings	0	0.0	1,280	0.3	0	0.0	50	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo landings	88	0.0	15,980	0.7	7,850	0.4	800	0.0	100	0.0	0	0.0	0	0.0	0	0.0	500	0.0
	Scup discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ALL	Scup landings	205,673		478,620		285,087		593,860		178,593		27,536		11,432		4,607		12,086	
	Loligo landings	903,052		2,328,016		1,860,820		1,659,621		1,054,091		488,730		1,152,746		1,230,707		2,246,642	
	Scup discards	1,265		10,255		2,920		2,334		2,131		115		243		126		117	
	Loligo discards	3,950		5,610		2,865		2,915		1,590		1,625		4,210		4,765		10,925	

Table 21b. Otter trawl landings of scup and *Loligo* for statistical areas where scup and/or *Loligo* represented greater than 2% of the total landings and/or discards, based on 1998 VTR data.

Area		Jan	%	Feb	%	Mar	%	Apr	%	May	%	Jun	%	Jul	%	Aug	%	Sep	%	Oct	%	Nov	%	Dec	%
148	Scup landings	0	0.0	0	0.0	0	0.0	12	0.0	330	0.3	7,813	43.6	2,244	32.7	881	7.2	611	2.0	126	0.3	61	0.0	5	0.0
	Loligo landings	0	0.0	10	0.0	0	0.0	54	0.0	300	0.1	4,509	1.6	3,468	0.3	2,999	0.6	4,400	0.8	2,945	0.1	277	0.0	4	0.0
	Scup discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	235	22.6	225	40.2	175	24.9	1,640	65.3	0	0.0	5	0.0	0	0.0
	Loligo discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
525	Scup landings	0	0.0	0	0.0	0	0.0	0	0.0	230	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4,402	1.3	0	0.0
	Loligo landings	13,498	0.4	15,170	0.2	122,230	1.9	2,500	0.1	1,000	0.2	0	0.0	0	0.0	0	0.0	8,000	1.5	48,549	2.0	516,704	16.0	384,569	14.9
	Scup discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
526	Scup landings	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	0.0	305	0.1
	Loligo landings	682,991	20.6	233,965	3.6	529,316	8.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	528,986	16.4	688,216	26.7
	Scup discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo discards	0	0.0	800	1.7	20	0.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	9,000	79.5
533	Scup landings	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	10	0.0	0	0.0	0	0.0	0	0.0
	Loligo landings	60,885	1.8	10,110	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	14,600	0.6
	Scup discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo discards	0	0.0	40,000	82.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
537	Scup landings	8,542	1.8	263	0.0	373	0.1	97	0.1	8,986	8.1	144	0.8	42	0.6	6,825	55.7	8,237	26.5	15,278	37.9	155,679	46.8	131,357	38.9
	Loligo landings	1,233,433	37.2	1,410,243	21.6	1,159,218	18.4	464,216	23.8	10,653	2.6	1,864	0.7	7,835	0.8	28,655	5.5	259,006	47.0	828,443	34.6	684,648	21.2	848,644	33.0
	Scup discards	1,265	9.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	6	0.2	350	6.6	5,870	35.3	2,400	56.2
	Loligo discards	585	17.7	1,275	2.6	1,450	23.3	301	14.0	0	0.0	145	7.9	125	5.7	110	4.3	610	28.8	170	4.7	0	0.0	135	1.2
538	Scup landings	600	0.1	0	0.0	0	0.0	1,005	1.2	10,575	9.5	6,350	35.5	2,554	37.2	421	3.4	12,064	38.8	7,192	17.9	276	0.1	900	0.3
	Loligo landings	10,450	0.3	34,100	0.5	36,111	0.6	63,140	3.2	107,854	26.0	6,890	2.4	24	0.0	0	0.0	50	0.0	650	0.0	225	0.0	1,000	0.0
	Scup discards	0	0.0	0	0.0	0	0.0	0	0.0	300	13.4	0	0.0	245	43.8	150	21.3	85	3.4	120	2.3	0	0.0	0	0.0
	Loligo discards	260	7.9	0	0.0	650	10.5	1,150	53.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
539	Scup landings	3,387	0.7	1	0.0	2	0.0	1,219	1.4	36,637	32.8	3,204	17.9	1,977	28.8	3,527	28.8	7,026	22.6	16,208	40.2	114,620	34.4	38,186	11.3
	Loligo landings	65,241	2.0	91,270	1.4	89,900	1.4	19,845	1.0	45,293	10.9	39,563	13.8	6,568	0.6	25,891	5.0	45,674	8.3	108,999	4.5	78,166	2.4	33,797	1.3
	Scup discards	0	0.0	0	0.0	0	0.0	10	0.0	685	30.6	548	52.8	90	16.1	211	30.0	317	12.6	1,829	34.7	8,287	49.9	72	1.7
	Loligo discards	0	0.0	400	0.8	0	0.0	5	0.2	395	27.0	732	39.9	110	5.0	836	32.9	677	31.9	1,080	30.0	1,390	43.9	275	2.4

Table 21b(continued). Otter trawl landings of scup and *Loligo* for statistical areas where scup and/or *Loligo* represented greater than 2% of the total landings and/or discards, based on 1998 VTR data.

Area		Jan	%	Feb	%	Mar	%	Apr	%	May	%	Jun	%	Jul	%	Aug	%	Sep	%	Oct	%	Nov	%	Dec	%
612	Scup landings	70	0.0	0	0.0	0	0.0	4,229	5.0	6,654	6.0	33	0.2	46	0.7	46	0.4	248	0.8	999	2.5	1,958	0.6	3,986	1.2
	Loligo landings	5,644	0.2	2,660	0.0	2,031	0.0	2,599	0.1	2,184	0.5	81,000	28.3	311,387	30.4	260,302	49.8	3,480	0.6	51,327	2.1	78,232	2.4	111,724	4.3
	Scup discards	0	0.0	0	0.0	0	0.0	13	0.0	2	0.1	0	0.0	0	0.0	135	19.2	1	0.0	2,950	56.0	1,530	9.2	520	12.2
	Loligo discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.1	210	9.6	100	3.9	0	0.0	0	0.0	1	0.0	0	0.0
613	Scup landings	59,710	12.3	48	0.0	1,347	0.4	3,662	4.3	19,481	17.5	363	2.0	7	0.1	562	4.6	2,936	9.4	469	1.2	54,790	16.5	67,718	20.0
	Loligo landings	206,185	6.2	340,345	5.2	193,937	3.1	55,734	2.9	48,634	11.7	100,353	35.1	274,021	26.7	202,921	38.8	85,120	15.4	525,903	21.9	241,098	7.5	59,320	2.3
	Scup discards	2,450	18.3	0	0.0	0	0.0	280	0.9	1,254	56.0	255	24.6	0	0.0	32	4.6	463	18.4	17	0.3	915	5.5	837	19.6
	Loligo discards	1,601	48.4	300	0.6	240	3.9	385	17.9	1,070	73.0	957	52.2	1,747	79.7	1,495	58.8	834	39.3	2,325	64.7	1,750	55.3	635	5.6
615	Scup landings	48,131	9.9	240	0.0	11,500	3.1	1,065	1.3	900	0.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	50	0.0	23,020	6.8
	Loligo landings	2,442	0.1	33,095	0.5	53,300	0.8	0	0.0	82	0.0	315	0.1	0	0.0	0	0.0	9,478	1.7	0	0.0	1,937	0.1	3,650	0.1
	Scup discards	440	3.3	10	0.1	0	0.0	100	0.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
616	Scup landings	297,993	61.4	58,965	6.5	19,748	5.3	60,053	70.7	26,060	23.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	940	0.3	72,202	21.4
	Loligo landings	695,693	21.0	3,193,014	48.9	2,184,619	34.6	430,558	22.1	8,933	2.2	3,103	1.1	510	0.0	506	0.1	462	0.1	184,182	7.7	353,220	10.9	268,965	10.4
	Scup discards	9,220	68.9	5,500	32.1	619	12.6	30,245	98.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	445	10.4
	Loligo discards	850	25.7	5,495	11.4	1,860	29.9	305	14.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	20	0.6	20	0.6	70	0.6
621	Scup landings	59,213	12.2	149,471	16.6	15,327	4.1	1,506	1.8	802	0.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	21	0.0	175	0.1
	Loligo landings	2,524	0.1	17,306	0.3	75,964	1.2	1,450	0.1	2,936	0.7	48,135	16.8	30,769	3.0	1,019	0.2	125	0.0	292	0.0	14,762	0.5	16,062	0.6
	Scup discards	0	0.0	1,100	6.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo discards	5	0.2	40	0.1	1,200	19.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	5	0.2	1,200	10.6
622	Scup landings	7,684	1.6	512,575	56.9	267,637	71.6	7,503	8.8	941	0.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	18	0.0	11	0.0
	Loligo landings	311,087	9.4	1,081,830	16.6	1,776,873	28.1	274,443	14.1	184,478	44.5	0	0.0	390,000	38.1	0	0.0	2,348	0.4	31,167	1.3	100,720	3.1	139,316	5.4
	Scup discards	0	0.0	8,020	46.8	4,300	87.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo discards	0	0.0	0	0.0	800	12.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
626	Scup landings	0	0.0	178,416	19.8	54,427	14.6	3,331	3.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo landings	23,872	0.7	12,501	0.2	85,992	1.4	624,247	32.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	24,100	1.0	183,517	5.7	2,575	0.1
	Scup discards	0	0.0	2,500	14.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Table 21b(continued). Otter trawl landings of scup and *Loligo* for statistical areas where scup and/or *Loligo* represented greater than 2% of the total landings and/or discards, based on 1998 VTR data.

Area		Jan	%	Feb	%	Mar	%	Apr	%	May	%	Jun	%	Jul	%	Aug	%	Sep	%	Oct	%	Nov	%	Dec	%
632	Scup landings	0	0.0	1,151	0.1	3,175	0.8	1,272	1.5	6	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	50	0.0
	Loligo landings	134	0.0	51,644	0.8	3,315	0.1	9,780	0.5	1,950	0.5	0	0.0	0	0.0	401	0.1	133,185	24.2	590,032	24.6	446,395	13.8	1,392	0.1
	Scup discards	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Loligo discards	10	0.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ALL	Scup landings	485,330	100	901,130	100	373,536	100	84,954	100	111,602	100	17,907	100	6,870	100	12,262	100	31,132	100	40,272	100	332,818	100	337,915	100
	Loligo landings	3,314,079	100	6,527,263	100	6,312,806	100	1,948,566	100	414,297	100	285,732	100	1,024,582	100	522,694	100	551,328	100	2,396,589	100	3,228,887	100	2,573,834	100
	Scup discards	13,375	100	17,130	100	4,919	100	30,648	100	2,241	100	1,038	100	560	100	703	100	2,512	100	5,266	100	16,607	100	4,274	100
	Loligo discards	3,311	100	48,310	100	6,220	100	2,146	100	1,465	100	1,835	100	2,192	100	2,541	100	2,121	100	3,595	100	3,166	100	11,315	100

A similar analysis indicates that discards of scup could be significant in areas 616 and 622 from January through April. A total of 74% of the scup landings and 63% of the *Loligo* landings came from these areas during these months from January through April in 1997. A total of 73% of the scup discards occurred in those areas in those months, or 33% for the entire year.

Additional analyses by Council staff identified ten minute squares with highest scup discards in statistical areas 537, 539, and 613 in November and December, and statistical areas 616 and 622 from January through April (Table 13a-e; Figure 2). The analyses were based on NMFS sea sample data from January 1989 thru April 1999. Industry representatives also presented information that indicated that in November and December in statistical areas 537, 539, and 613, scup were located in depths of 30 to 50 fathoms, and from January through April in statistical areas 616 and 622, scup were located in depths of 50 to 70 fathoms.

Based on this information, the Council Alternative 1 in the 2000 Specification Package was the preferred alternative for GRAs for the fishing year 2000. This alternative provided the largest reduction in scup discards while minimizing the loss in revenues in other fisheries. However in the proposed rule published January 28, 2000, NMFS proposed Alternative 6, which had the largest reduction of scup discards accompanied by the largest revenue loss associated with small mesh fisheries.

As justification for this action, NMFS cited that the “Council’s recommended areas and times are extremely small and short in duration” and that “it is unlikely that the small, 2-week restricted gear areas ...would coincide with the seasonal migration of scup.” NMFS also stated that the small areas in Alternative 1 “would present a considerable enforcement burden with limited conservation benefits.” MAFMC commented on the Proposed Rule and modified their proposal with a new alternative, Alternative 7. The three restricted areas in Alternative 7 include the ten minute squares identified by Council staff as having high scup discards, using January 1989 - April 1999 sea sample data. However, in the final rule (dated May 24, 2000) NMFS did not accept the Council proposal but did modify their earlier proposal (Alternative 6) with another alternative, Alternative 6a (Figure 3). In addition, NMFS exempted the herring fishery from the gear restricted areas based on MAFMC analyses.

Specifically, based on sea sample data from 1989 to 1999 and the Council definition of an exempted fishery, the herring fishery was the only fishery to qualify as an exempted fishery under Alternatives 6 and 7. This fishery, in these areas and proposed time periods, had associated scup discards that were less than 10% of the scup caught. If trips caught more than 1000 pounds of a given species it was considered a directed trip for that species. If no data were available for a fishery for a given time period it was assumed the fishery would discard more than 10% of the scup caught.

Since the publication of the Final Rule, (1) the remainder of 1999 and 2000 sea sample data through May have become available and (2) the definitions of scup *exempted fishery* and *directed fishery* have been questioned. In a letter dated July 28, 2000 NMFS indicated that:

Table 22a. Scup discards (pounds) by ten minute square for statical area 537, based on sea sample data, Nov-Dec 1989-1999 combined.

Label	10 min square	Discards (lbs)	% of scup discarded in 10 min square	% of total scup discarded in 537	Cumm % of total scup discarded in 537	Number of tows
A	**407142**	**7,051**	**56**	**33.80**	**33.80**	**16**
B	**407151**	**4,256**	**52**	**20.40**	**54.20**	**25**
C	**407135**	**2,400**	**53**	**11.50**	**65.70**	**3**
D	**407161**	**2,073**	**29**	**9.94**	**75.64**	**9**
E	**407152**	**1,035**	**18**	**4.96**	**80.60**	**14**
F	**407133**	**1,005**	**59**	**4.82**	**85.42**	**2**
G	**407145**	**610**	**55**	**2.92**	**88.34**	**1**
H	**407055**	**598**	**54**	**2.87**	**91.21**	**1**
	407021	510	7	2.44	93.65	7
	407035	245	40	1.17	94.82	2
	417035	243	50	1.16	95.98	11
	407045	206	58	0.99	96.97	1
	407136	199	17	0.95	97.92	5
	407011	170	6	0.81	98.73	4
	397131	70	38	0.34	99.07	2
	407012	60	2	0.29	99.36	3
	417045	36	32	0.17	99.53	2
	407146	25	41	0.12	99.65	2
	407132	22	12	0.11	99.76	4
	417156	22	15	0.11	99.87	1
	407162	20	1	0.10	99.97	3
	407144	4	100	0.02	99.99	1
	407165	4	57	0.02	100.01	2
	407134	0	0	0.00	100.01	1
	407156	0	0	0.00	100.01	2
	417036	0	0	0.00	100.01	1
Total	26	20,864		100		125

Table 22b. Scup discards (pounds) by ten minute square for statical area 539, based on sea sample data, Nov-Dec 1989-1999 combined.

Label	**10 min square**	**Discards (lbs)**	**% of scup discarded in 10 min square**	**% of total scup discarded in 539**	**Cumm % of total scup discarded in 539**	**Number of tows**
A	**407141**	**911**	**19**	**43.90**	**43.90**	**39**
B	**417146**	**824**	**69**	**39.71**	**83.61**	**9**
C	**407131**	**270**	**16**	**13.01**	**96.63**	**9**
	417145	38	10	1.83	98.46	5
	417136	28	10	1.35	99.81	4
	417144	3	60	0.14	99.95	1
	417135	1	100	0.05	100.00	1
Total	7	2,075		100		68

Table 22c. Scup discards (pounds) by ten minute square for statical area 613, based on sea sample data, Nov-Dec 1989-1999 combined.

Label	10 min square	Discards (lbs)	% of scup 10 min square	% of total discarded in 613	Cumm % of total discarded in 613	Number of tows
A	**407113**	**17,864**	**47**	**24.31**	**24.31**	**17**
B	**407256**	**6,987**	**60**	**9.51**	**33.81**	**11**
C	**407123**	**6,601**	**66**	**8.98**	**42.79**	**5**
D	**407246**	**6,075**	**71**	**8.27**	**51.06**	**11**
E	**407114**	**5,529**	**52**	**7.52**	**58.58**	**10**
F	**407254**	**5,171**	**77**	**7.04**	**65.62**	**6**
G	**407255**	**4,584**	**57**	**6.24**	**71.86**	**12**
H	**407264**	**4,402**	**36**	**5.99**	**77.85**	**21**
I	**407115**	**3,240**	**74**	**4.41**	**82.25**	**9**
J	**407116**	**2,862**	**76**	**3.89**	**86.15**	**6**
K	**407236**	**2,632**	**76**	**3.58**	**89.73**	**12**
L	**407125**	**2,494**	**56**	**3.39**	**93.12**	**3**
M	**407265**	**1,294**	**60**	**1.76**	**94.88**	**17**
N	**407266**	**1,195**	**53**	**1.63**	**96.51**	**14**
O	**407245**	**938**	**68**	**1.28**	**97.79**	**7**
P	**407263**	**500**	**28**	**0.68**	**98.47**	**3**
	407126	470	61	0.64	99.11	6
	407124	217	26	0.30	99.40	3
	407241	140	39	0.19	99.59	3
	407226	121	56	0.16	99.76	4
	407122	120	53	0.16	99.92	2
	407251	36	29	0.05	99.97	2
	407112	20	100	0.03	100.00	1
	407261	2	17	0.00	100.00	1
	417126	1	100	0.00	100.00	1
Total	26	73,495		100		187

Table 22d. Scup discards (pounds) by ten minute square for statical area 616, based on sea sample data, January - April 1989-1999 combined.

Label	**10 min square**	**Discards (lbs)**	**% of scup 10 min square**	**% of total discarded in 613**	**Cumm % of total discarded in 613**	**Number of tows**
A	**397226**	**9,402**	**68**	**25.84**	**25.84**	**26**
B	**397111**	**5,280**	**93**	**14.51**	**40.35**	**16**
C	**397216**	**4,020**	**66**	**11.05**	**51.40**	**5**
D	**397121**	**3,684**	**40**	**10.12**	**61.52**	**20**
E	**397225**	**3,070**	**26**	**8.44**	**69.96**	**22**
F	**397262**	**1,966**	**26**	**5.40**	**75.36**	**21**
G	**397243**	**1,913**	**14**	**5.26**	**80.62**	**28**
H	**397253**	**1,553**	**41**	**4.27**	**84.89**	**6**
I	**397252**	**1,315**	**19**	**3.61**	**88.50**	**28**
J	**397244**	**1,266**	**68**	**3.48**	**91.98**	**10**
K	**397251**	**907**	**16**	**2.49**	**94.47**	**14**
L	**397242**	**867**	**11**	**2.38**	**96.85**	**15**
	397261	363	73	1.00	97.85	15
	397234	350	8	0.96	98.81	10
	397235	269	3	0.74	99.55	12
	397254	115	95	0.32	99.87	3
	397224	18	56	0.05	99.92	15
	397215	11	44	0.03	99.95	2
	397245	10	100	0.03	99.98	1
	397263	6	55	0.02	99.99	3
	397211	2	12	0.01	100.00	2
	397112	1	17	0.00	100.00	2
	397232	0	0	0.00	100.00	1
	397233	0	0	0.00	100.00	4
Total	26	36,388		100		281

Table 22e. Scup discards (pounds) by ten minute square for statical area 622, based on sea sample data, January - April 1989-1999 combined.

Label	10 min square	Discards (lbs)	% of scup 10 min square	% of total discarded in 613	Cumm % of total discarded in 613	Number of tows
A	**387334**	**7,333**	**79**	**44.49**	**44.49**	**10**
B	**387362**	**3,581**	**76**	**21.73**	**66.22**	**5**
C	**387335**	**2,917**	**74**	**17.70**	**83.92**	**6**
D	**387314**	**873**	**98**	**5.30**	**89.21**	**6**
E	**387313**	**594**	**100**	**3.60**	**92.82**	**2**
F	**387344**	**548**	**100**	**3.32**	**96.14**	**1**
	387333	318	77	1.93	98.07	1
	387325	307	67	1.86	99.93	3
	387343	5	63	0.03	99.96	2
	387351	4	50	0.02	99.99	2
	387352	1	100	0.01	99.99	1
	387361	1	100	0.01	100.00	1
Total	26	16,482		100		40

Figure 2. Scup discard areas in statistical areas 537, 539, and 613 from Nov 1 to Dec 31 and statistical areas 616 and 622 from Jan 1 to April 30. Scup areas are defined as the ten minute squares with discards greater than or equal to 500 pounds and the percentage of scup discarded (lbs. scup discarded/total lbs. scup caught) in the ten minute square is greater than 10 percent.

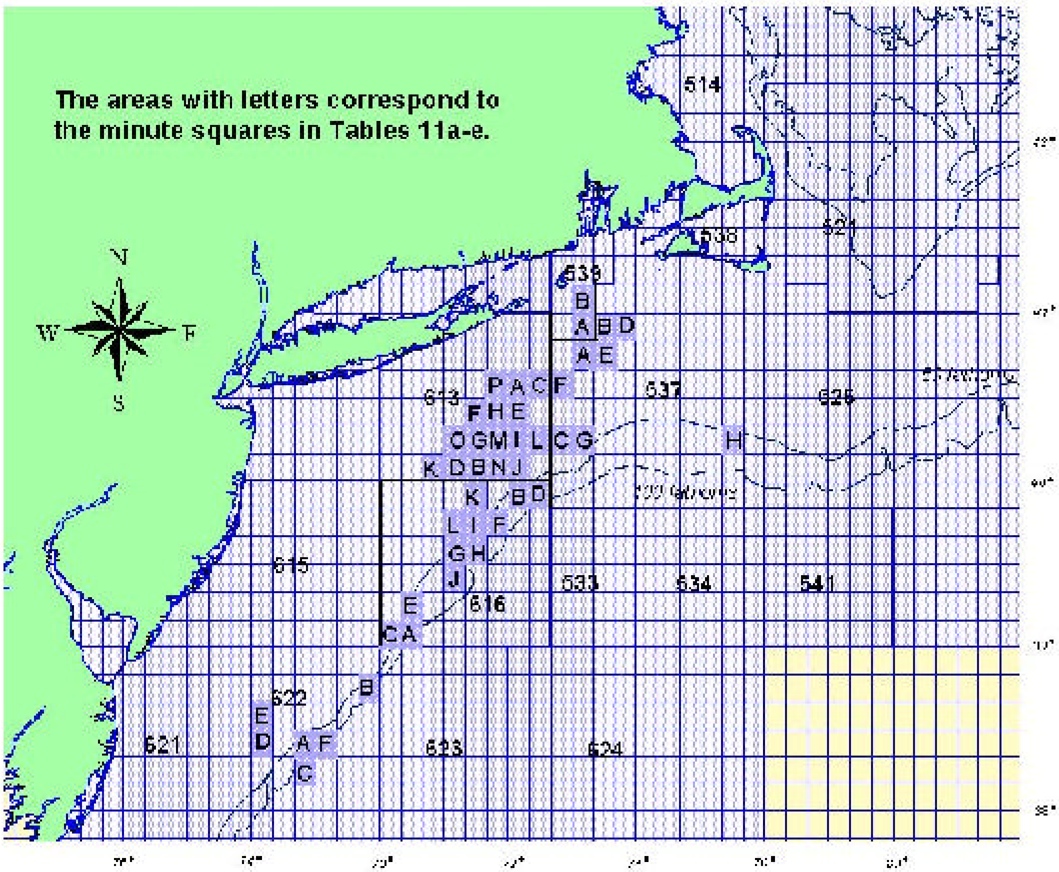
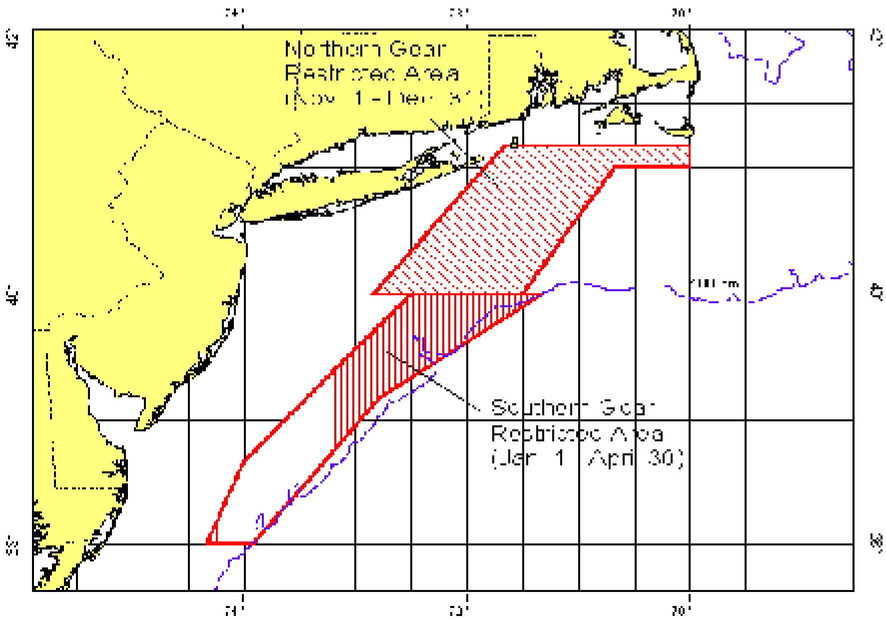


Figure 3. Alternatives 2 and 4 (Alternative 6a adopted by NMFS for 2000). Alternative 2 includes these areas with the directed herring, mackerel, and Loligo fisheries exempt. Each area details the time and location as to when and where codend mesh less than 4.5 inches would be prohibited.

Northern and Southern Gear Restricted Areas



“Section 648.122(d) of the regulations states ‘An exemption may be added in an existing fishery for which there is sufficient information to ascertain the amount of scup bycatch, if the Regional Administrator, after consultation with the MAFMC, determines that the percentage of scup caught as bycatch is, or can be reduced to, less than 10 percent, by weight, of total catch and that such exemption will not jeopardize meeting fishing mortality objectives.’

“The regulations are intended to address the non-directed catch of scup in fisheries that are targeting species other than scup (e.g., whiting, *Loligo*, Atlantic mackerel, black sea bass). The numerator in the criterion ratio should be the total weight of scup caught; the denominator should be the total weight of all fish caught (including any scup). The ratio is not based on landings.”

In response to a Council motion, and general concerns regarding this management measure, and to develop a recommendation for both 2000 and 2001 fisheries, Council staff analyzed the updated 1996-2000 sea sample data (i.e., since the implementation of scup regulations in 1996 to the present).

Analyses of the 1996-2000 sea sample data did not indicate a change in the distribution of scup discards since scup regulations have been in effect. Only 4 trips occurred in Block 1 in November and December in the 1996-2000 sea sample data for otter trawl gear with mesh less than 4.5 inches. This compares to the 37 trips in the 1989-1999 data that were used to develop the 2000 specifications. These 1996-2000 data indicate that only 1 lb of scup discarded
over that last five years in Block 1 of Alternative 7. Blocks 2 and 3 accounted for 5% and 79%, respectively, of the scup discarded in 1996-2000 sea sample data.

Additionally these data indicate that no change has occurred in the mackerel fishery, to make it exempt from the GRAs according to the MAFMC definition of exempted fishery. Sea sample data from 1996-2000 indicate that there were no mackerel trips sampled in Block 1 in November or December, or Block 2 in December and January. These data also indicate that 4 mackerel trips were sampled from January through April in Block 3. Of these four trips, two discarded 74% and 80% of 3,460 lbs and 9,133 lbs of scup caught, respectively. The other two trips caught and discarded 2 lbs of scup and caught and kept 5 lbs of scup, respectively. The scup discards accounted for 2% of the total catch of all species of these 4 trips combined.

Sea sample data from 1989-2000 were analyzed to determine which fisheries would be exempted from gear restricted areas if the percentage of scup caught as bycatch was less than 10% by weight of the total catch of all species (%bycatch=scup catch/total catch of all species). A directed trip was identified for a given species if the total catch of all species for a trip was comprised of more than 50% of that species. Based on these definitions of an exempted fishery and directed trip, the *Loligo,* whiting, herring, and mackerel fisheries would be exempt from the GRAs. In this data set the black sea bass fishery does not have any trips that would qualify as directed.

Therefore, the definition of a directed trip for black sea bass was changed to those trips which caught 1000 lbs or more of black sea bass. Tables 23 and 24 demonstrate that the under the trips that qualify as directed trips for mackerel and herring, respectively, there are no trips which at least 10% of the total catch was scup. However, Tables 25, 26, and 27, indicate that there are directed trips of *Loligo*, whiting, and black sea bass, respectively, in which at least 10% of the total catch are scup. These events account for 10% of scup discarded or 8% of the scup caught in the 1989-2000 sea sample data set.

Based on all the available information the Scup Monitoring Committee recommended that: 1) Alternative 7a, a modification of Alternative 7, replace NMFS Alternative 6A beginning November 1, 2000 (Table 28; Figure 4), and 2) the directed herring and mackerel fisheries be exempted from GRAs. At the August 14, 2000 Council meeting the Council adopted: 1) Alternative 7a to replace Alternative 6a beginning November 1, 2000; 2) the exemption of the herring, mackerel, and *Loligo* fisheries; 3) the implementation of an experimental fishery program to allow small mesh fishermen in closed areas with observers; and 4) the replacement of GRAs with modified gear regulations as soon as practicable.

The alternatives considered in this document include:

Alternative 1(Council's preferred, Alternative 7a with exemptions): This alternative includes Alternative 7a with the directed herring, mackerel, and *Loligo*, fisheries exempt. This alternative includes three GRAs, an area that intersects statistical areas 537, 539, and 613 from November 1 to December 31, an area that intersects statistical areas 616 from December 1 to January 31, and an area that intersects statistical areas 615, 616, 621, 622, and 623 from January 1 to April 30 (Figure 4). The modification of Block 2 in this alternative will allow Block 2 to intersect more of the high scup discard areas relative to the Block 2 in the Council's earlier alternative (Alternative 7).

Alternative 2(implemented by NMFS for 2000, Alternative 6a in the 2000 Specification Package with exemptions): This alternative includes Alternative 6a with the directed herring, mackerel, and *Loligo* fisheries exempt. This alternative includes an area that intersects statistical areas 537, 539, and 613 from November 1 to December 31, and an area intersects statistical areas 615, 616, 621, and 622 from January 1 to April 30 (Figure 3). These areas include the ten minute squares identified by Council staff as having high scup discards using sea sample data from 1989 - April 1999. This alternative is a modification to Alternative 6 (proposed by NMFS in May 2000) in that the seaward edge of the southern area follows the 100-fathom contour and does not extend beyond that contour.

Alternative 3(Alternative 7a without exemptions): This is Alternative 1 (Alternative 7a above) without exemptions. It includes an area that intersects statistical areas 537, 539, and 613 from November 1 to December 31, an area that intersects statistical areas 616 from December 1 to January 31, and an area that intersects statistical areas 615, 616, 621, 622, and 623 from

January 1 to April 30 (Figure 4). These areas include the ten minute squares identified by Council staff as having high scup discards, using January 1989 - April 1999 sea sample data.

Alternative 4(NMFS Alternative 6a in the 2000 specification Package without exemptions): This is Alternative 2 (Alternative 6a) without exemptions. It includes an area that intersects statistical areas 537, 539, and 613 from November 1 to December 31, and the second area intersects statistical areas.

Table 23. Directed mackerel trips* by statistical area in the 1989-2000 sea sample database.

OBS	IDENT	STAT. AREA	CODEND MESH SIZE	LINER USED**	LINER MESH SIZE	TARGET SPECIES CATCH (LBS)	TARGET SPECIES AS % OF TOTAL CATCH	TOTAL CATCH	SCUP DISCARDS (LBS)	SCUP CATCH (LBS)	% SCUP DISCARD MAFMC DEF***	% SCUP BYCATCH NMFS DEF****
1	199005B01	526	4.5	1	2.5	806000	95.1203	847348	.	.	.	.
2	199005B01	537	4.5	1	2.5	806000	95.1203	847348	.	.	.	.
3	199101G03	621	2	0	0	23000	65.025	35371	7	45	15.556	0.12722
4	199102K08	614	2	0	0	139000	98.5753	141009	.	.	.	.
5	199102K09	621	2	0	0	83800	72.8537	115025	.	.	.	.
6	199102K09	622	2	0	0	83800	72.8537	115025	.	.	.	.
7	199102K10	621	2	0	0	248155	93.0605	266660	.	.	.	.
8	199203B95	615	6	1	2	87250	69.3517	125808	.	.	.	.
9	199203B95	621	6	1	2	87250	69.3517	125808	.	.	.	.
10	199403A93	537	5.5	1	0	108600	96.4099	112644	1	5	20	0.00444
11	199403A93	616	5.5	1	0	108600	96.4099	112644	1	5	20	0.00444
12	199403I14	537	6	1	0	63204	74.9227	84359	0	10	0	0.01185
13	199403I14	613	6	1	0	63204	74.9227	84359	0	10	0	0.01185
14	199604A25017	621	1.8	1	1.6	64107	56.1461	114179	3436	4539	75.699	3.97534
15	199604A25017	622	1.8	1	1.6	64107	56.1461	114179	3436	4539	75.699	3.97534
16	199604A25017	626	1.8	1	1.6	64107	56.1461	114179	3436	4539	75.699	3.97534
17	199604A25017	632	1.5	0	0	64107	56.1461	114179	3436	4539	75.699	3.97534
18	199604A31040	622	2	1	1.3	104590	72.3852	144490.8	7309	9133	80.028	6.32082
19	199604A44018	615	2	1	2	60850	57.2507	106287	0	7	0	0.00659
20	199604A44018	616	2	1	2	60850	57.2507	106287	0	7	0	0.00659
21	199604A44018	622	2	1	2	60850	57.2507	106287	0	7	0	0.00659
22	199604A75021	626	2.2	0	0	14536.5	53.7288	27055.3	0.2	4.4	4.545	0.01626
23	199604A75021	631	2.2	0	0	14536.5	53.7288	27055.3	0.2	4.4	4.545	0.01626
24	199604A75021	632	2.2	0	0	14536.5	53.7288	27055.3	0.2	4.4	4.545	0.01626
25	199604A75021	639	2.2	0	0	14536.5	53.7288	27055.3	0.2	4.4	4.545	0.01626
26	199612A04070	612	2.2	1	2.2	115750	58.6685	197295	.	.	.	.
27	199612A04070	613	2.2	1	2.2	115750	58.6685	197295	.	.	.	.
28	199612A04070	621	2.2	1	2.2	115750	58.6685	197295	.	.	.	.
29	199612A31115	612	2	0	0	5340	54.2848	9837	3	3	100	0.0305
30	199702A24005	616	5.9	1	2.9	28777	83.4987	34464	2	3	66.667	0.0087
31	199704B10016	622	2	1	2	97500	85.6413	113847	5	5	100	0.00439
32	199903B34009	621	0	0	2	309000	98.5646	313500	.	.	.	.
33	199903B34009	622	0	0	2	309000	98.5646	313500	.	.	.	.

34	199904B14021	537	0	1	2.4	639696	93.6584	683009.7	1268.7	1268.7	100	0.18575
35	199904B14021	616	0	1	2.4	639696	93.6584	683009.7	1268.7	1268.7	100	0.18575
36	199904B14021	634	0	1	2.4	639696	93.6584	683009.7	1268.7	1268.7	100	0.18575
37	200002B48005	612	1.2	1	1.5	339110	73.3138	462546	.	.	.	.
38	200002B48005	613	1.2	1	1.5	339110	73.3138	462546	.	.	.	.

* Directed trip is identified for a given species if the total catch of all species is comprised of more than 50% of that species.
** 1=yes, 2=no
*** % scup discard = (scup discards/scup catch) * 100
**** % scup bycatch = (scup catch/total catch) * 1000

Table 24. Directed herring trips* by statistical area in the 1989-2000 sea sample database.

OBS	IDENT	STAT. AREA	CODEND MESH SIZE	LINER USED**	LINER MESH SIZE	TARGET SPECIES CATCH (LBS)	TARGET SPECIES AS % OF TOTAL CATCH	TOTAL CATCH	SCUP DISCARDS (LBS)	SCUP CATCH (LBS)	% SCUP DISCARD MAFMC DEF***	% SCUP BYCATCH NMFS DEF****
1	198901C02	513	1.8	0	0	2500	98.9707	2526	.	.	.	.
2	198912C54	514	0	0	0	2000	56.5291	3538	.	.	.	.
3	198912C55	514	1.9	0	0	1000	61.1621	1635	.	.	.	.
4	199012C50	514	2.2	0	0	3000	97.9752	3062	.	.	.	.
5	199101C05	521	1.9	0	0	2120	54.1922	3912	.	.	.	.
6	199101G06	612	2	0	0	3630	65.0421	5581	.	.	.	.
7	199101G07	612	2	0	0	4000	60.5969	6601	.	.	.	.
8	199106B07	539	3	1	2	1536	52.0149	2953	36	53	67.9245	1.79478
9	199204A04	621	2	1	1	8525	84.8934	10042	.	.	.	.
10	199401A14	539	3	1	0	39500	98.7006	40020	.	.	.	.
11	199402A50	539	3.5	1	0	5857	67.8836	8628	.	.	.	.
12	199402A53	539	4.5	1	0	16800	97.7881	17180	.	.	.	.
13	199402A54	539	3	1	0	27900	99.5753	28019	.	.	.	.
14	199508A49054	514	1.9	0	0	6125	62.7304	9764	.	.	.	.
15	199508A79016	513	2	0	0	3510	92.4901	3795	.	.	.	.
16	199509A67070	513	2.1	0	0	7750	73.5818	10532.5	.	.	.	.
17	199509A67077	513	2.1	0	0	3750	86.5331	4333.6	.	.	.	.
18	199510A67092	513	2	0	0	3375	64.8589	5203.6	.	.	.	.
19	199510A67092	514	2	0	0	3375	64.8589	5203.6	.	.	.	.
20	199612A32026	539	5.3	1	1.5	40154	79.9021	50254	.	.	.	.
21	199612A32026	611	5.3	1	1.5	40154	79.9021	50254	.	.	.	.

OBS	IDENT	STAT. AREA	CODEND MESH SIZE	LINER USED**	LINER MESH SIZE	TARGET SPECIES CATCH (LBS)	TARGET SPECIES AS % OF TOTAL CATCH	TOTAL CATCH	SCUP DISCARDS (LBS)	SCUP CATCH (LBS)	% SCUP DISCARD MAFMC DEF***	% SCUP BYCATCH NMFS DEF****
22	199702A54003	611	5.4	1	1.7	8366	99.0495	8446.3	.	.	.	.
23	199702B15006	611	0	1	1.8	5835	96.702	6034	.	.	.	.

* Directed Trip is identified for a given species if the total catch of all species is comprised of more than 50% of that species.
** 1=yes, 2=no
*** % scup discard = (scup discards/scup catch) * 100
**** % scup bycatch = (scup catch/total catch) * 1000

Table 25. Directed *Loligo* trips* by statistical area in the 1989-2000 sea sample database.

OBS	IDENT	STAT. AREA	CODEND MESH SIZE	LINER USED**	LINER MESH SIZE	TARGET SPECIES CATCH (LBS)	TARGET SPECIES AS % OF TOTAL CATCH	TOTAL CATCH	SCUP DISCARDS (LBS)	SCUP CATCH (LBS)	% SCUP DISCARD MAFMC DEF***	% SCUP BYCATCH NMFS DEF****
1	198905A22	537	5.5	1	1.5	27000	96.7915	27895	52	95	54.737	0.3406
2	198905A22	538	5.5	1	1.5	27000	96.7915	27895	52	95	54.737	0.3406
3	198905D07	538	3.5	1	2	11225	76.8678	14603	26	1135	2.291	7.7724
4	198906A25	612	4	1	2	37409	92.6309	40385	104	146	71.233	0.3615
5	198906A25	613	4	1	2	37409	92.6309	40385	104	146	71.233	0.3615
6	198907E18	537	4	1	2	6330	76.6066	8263	.	.	.	.
7	198911E30	615	2	0	0	6800	99.0243	6867	17	17	100	0.2476
8	198911E30	622	2	0	0	6800	99.0243	6867	17	17	100	0.2476
9	198911E31	615	2.1	0	0	26300	85.3287	30822	165	191	86.387	0.6197
10	198911E31	622	2.1	0	0	26300	85.3287	30822	165	191	86.387	0.6197
11	199001J01	613	5.5	1	3.5	32180	50.0311	64320	6392	6814	93.807	10.5939
12	199001J01	616	5.5	1	3.5	32180	50.0311	64320	6392	6814	93.807	10.5939

13	199003E08	611	5.5	1	3	30547	61.5185	49655	121	871	13.892	1.7541
14	199003E08	616	5.5	1	3	30547	61.5185	49655	121	871	13.892	1.7541
15	199005G04	614	2	0	0	2500	80.8538	3092	52	52	100	1.6818
16	199005G04	621	2	0	0	2500	80.8538	3092	52	52	100	1.6818
17	199006G11	621	3	0	0	6100	69.3813	8792	3	3	100	0.0341
18	199105G08	621	1	0	0	2210	65.1725	3391	769	769	100	22.6777
19	199105G11	621	0	0	0	1100	61.6592	1784	19	19	100	1.065
20	199105G14	621	0	0	0	2130	57.7236	3690	487	487	100	13.1978
21	199105G16	621	0	0	0	1010	65.0354	1553	150	150	100	9.6587
22	199105H16	534	0	0	0	4250	89.5114	4748	241	241	100	5.0758
23	199105H16	539	0	0	0	4250	89.5114	4748	241	241	100	5.0758
24	199110B12	537	5.5	1	2	29180	79.6767	36623	193	744	25.941	2.0315
25	199110B12	613	5.5	1	2	29180	79.6767	36623	193	744	25.941	2.0315
26	199110B16	537	2	0	0	24520	65.8715	37224	2965	3194	92.83	8.5805
27	199110B16	613	2	0	0	24520	65.8715	37224	2965	3194	92.83	8.5805
28	199110B16	615	2	0	0	24520	65.8715	37224	2965	3194	92.83	8.5805
29	199110B16	616	2	0	0	24520	65.8715	37224	2965	3194	92.83	8.5805
30	199110B21	613	5	1	2	50920	88.8625	57302	842	1355	62.14	2.3647
31	199110B26	613	3	1	2.5	15680	97.8471	16025	239	241	99.17	1.5039
32	199110B27	537	0	0	0	30445	65.746	46307	369	655	56.336	1.4145
33	199110B27	613	0	0	0	30445	65.746	46307	369	655	56.336	1.4145
34	199112B58	613	3	1	2	3198	58.6466	5453	63	90	70	1.6505
35	199202B93	616	6	1	5	8042	52.367	15357	13	13	100	0.0847
36	199203A09	616	5.5	1	2.4	46077	72.924	63185	.	.	.	.
37	199205A13	538	5	1	2	2465	68.7587	3585	0	279	0	7.7824
38	199205A14	538	5	1	2	1690	62.6855	2696	0	352	0	13.0564
39	199206A21	613	5.5	1	2	1650	50.536	3265	725	840	86.31	25.7274
40	199210A30	613	5.5	1	2.5	1680	81.9912	2049	2	4	50	0.1952
41	199210A32	632	2	0	0	31400	67.6462	46418	.	.	.	.
42	199211A56	539	4.8	1	2	19901	51.9446	38312	1801	2185	82.426	5.7032
43	199211A56	613	4.8	1	2	19901	51.9446	38312	1801	2185	82.426	5.7032
44	199211A56	616	4.8	1	2	19901	51.9446	38312	1801	2185	82.426	5.7032
45	199211B31	613	5.5	1	2	53927	51.5885	104533	3311	5776	57.323	5.5255
46	199211B31	616	5.5	1	2	53927	51.5885	104533	3311	5776	57.323	5.5255
47	199301A32	616	5.5	1	2.5	67940	94.6925	71748	.	.	.	.
48	199402A94	526	5.5	1	0	31375	56.3103	55718	0	2	0	0.0036
49	199402A94	537	5.5	1	0	31375	56.3103	55718	0	2	0	0.0036
50	199402A94	616	5.5	1	0	31375	56.3103	55718	0	2	0	0.0036
51	199412A61030	537	0	1	2.5	7341	58.4614	12557	.	.	.	.
52	199412A61030	539	0	1	2.5	7341	58.4614	12557	.	.	.	.
OBS	IDENT	STAT. AREA	CODEND MESH SIZE	LINER USED**	LINER MESH SIZE	TARGET SPECIES CATCH (LBS)	TARGET SPECIES AS % OF TOTAL CATCH	TOTAL CATCH	SCUP DISCARDS (LBS)	SCUP CATCH (LBS)	% SCUP DISCARD MAFMC DEF***	% SCUP BYCATCH NMFS DEF****
53	199505A24006	539	3	1	1.8	1830	68.8876	2656.5	460	472	97.458	17.7677
54	199506A24009	613	3	1	1.9	1590	90.3923	1759	9	9	100	0.5117
55	199506A24010	613	1.5	0	0	4760	96.0452	4956	7	7	100	0.1412
56	199506A41023	612	5.6	1	1.9	3467	72.8974	4756	13	15	86.667	0.3154
57	199506A41023	613	5.6	1	1.9	3467	72.8974	4756	13	15	86.667	0.3154
58	199506A88001	612	2.5	0	0	12000	94.7942	12659	2.5	2.5	100	0.0197
59	199506A88001	613	2.5	0	0	12000	94.7942	12659	2.5	2.5	100	0.0197
60	199507A41028	612	6	1	2.3	9960	74.0631	13448	2	2	100	0.0149

OBS	IDENT	STAT. AREA	CODEND MESH SIZE	LINER USED**	LINER MESH SIZE	TARGET SPECIES CATCH (LBS)	TARGET SPECIES AS % OF TOTAL CATCH	TOTAL CATCH	SCUP DISCARDS (LBS)	SCUP CATCH (LBS)	% SCUP DISCARD MAFMC DEF***	% SCUP BYCATCH NMFS DEF****
61	199507A88002	613	2.5	0	0	3425	89.1811	3840.5	5	5	100	0.1302
62	199507A88004	613	5.5	1	1.9	3415	95.8596	3562.5	2	2	100	0.0561
63	199507A88005	613	3.5	1	1.6	3155	92.9226	3395.3	3	3	100	0.0884
64	199507A88006	613	3.5	1	1.6	1325	88.3157	1500.3	0.5	0.5	100	0.0333
65	199507A88007	613	5.6	1	1.8	2630	90.8871	2893.7	1.2	1.2	100	0.0415
66	199507A88008	613	5.5	1	1.8	1542	92.8356	1661	1.3	1.3	100	0.0783
67	199507A88009	613	5.4	1	1.9	4570	95.3076	4795	.	.	.	.
68	199507A88010	613	5.6	1	1.7	5045	93.0057	5424.4	0.3	0.3	100	0.0055
69	199507A88013	613	3.5	1	1.6	4085	96.8377	4218.4	.	.	.	.
70	199507A88015	613	3.5	1	1.6	2870	96.7046	2967.8	2	2	100	0.0674
71	199507A88017	613	3	1	1.8	4135	97.9046	4223.5	0.5	0.5	100	0.0118
72	199507A88018	613	5.4	1	1.9	1560	83.6416	1865.1	1	1	100	0.0536
73	199508A88020	612	5.4	1	1.8	3245	81.4815	3982.5	.	.	.	.
74	199508A88020	613	5.4	1	1.8	3245	81.4815	3982.5	.	.	.	.
75	199602A44004	622	5.5	1	1.5	23500	60.8493	38620	1000	1500	66.667	3.884
76	199603A28014	525	2.7	0	0	31278	51.2372	61045.5	0	1	0	0.0016
77	199603A28014	526	2.7	0	0	31278	51.2372	61045.5	0	1	0	0.0016
78	199603A28014	537	2.7	0	0	31278	51.2372	61045.5	0	1	0	0.0016
79	199603A28014	543	2.7	0	0	31278	51.2372	61045.5	0	1	0	0.0016
80	199605A03023	538	6.1	1	2.4	6196	52.8398	11726	332	475	69.895	4.0508
81	199606A03024	538	6	1	2.4	4583	66.8905	6851.5	174	189.5	91.821	2.7658
82	199607A95009	612	3.5	1	1.5	1032	50.3906	2048	1	3	33.333	0.1465
83	199607B09030	612	0	1	0	1030	71.6173	1438.2	11	12	91.667	0.8344
84	199608A31076	613	5.6	1	1.9	1201	80.87	1485.1	.	.	.	.
85	199608A31079	612	5.6	1	1.9	1572	59.4441	2644.5	.	.	.	.
86	199608A31079	613	5.6	1	1.9	1572	59.4441	2644.5	.	.	.	.
87	199702B10010	622	0	0	0	36950	77.3223	47787	.	.	.	.
88	199703B15011	616	5.6	1	1.6	17940	76.6962	23391	10	19	52.632	0.0812
89	199704B15015	611	5.5	1	1.6	26640	64.9645	41007	1900	1925	98.701	4.69432
90	199704B15015	616	5.5	1	1.6	26640	64.9645	41007	1900	1925	98.701	4.69432
91	199704B15015	623	5.5	1	1.6	26640	64.9645	41007	1900	1925	98.701	4.69432
92	199705A03034	537	2.4	0	0	2590.5	64.8338	3995.6	20	95	21.053	2.37762
93	199705A03034	538	2.4	0	0	2590.5	64.8338	3995.6	20	95	21.053	2.37762
94	199706A03035	514	3.2	0	0	3156.5	92.74	3403.6	8.5	17	50	0.49947
95	199706A03035	538	3.2	0	0	3156.5	92.74	3403.6	8.5	17	50	0.49947
96	199706A03036	538	3.2	0	0	4140	96.1404	4306.2	3.6	5.7	63.158	0.13237
97	199706A03038	538	1.6	0	0	1061	72.921	1455	2	9	22.222	0.61856
98	199706A03040	538	1.6	0	0	1384	83.2732	1662	0.5	0.5	100	0.03008
99	199706A25032	538	6	1	2.5	1100	80.1165	1373	10	10	100	0.72833
100	199706A25034	538	0	0	0	1281	52.716	2430	8	8	100	0.32922
101	199707B15037	612	5.5	1	1.6	7400	69.4249	10659	.	.	.	.
102	199707B15038	612	5.5	1	1.6	7300	96.1285	7594	1	1	100	0.01317
103	199707B15039	613	5.5	1	2	4250	73.5167	5781	.	.	.	.
104	199707B15040	613	5.5	1	2	3200	82.666	3871	.	.	.	.
105	199707B15041	613	5.5	1	2	2975	90.3157	3294	.	.	.	.
106	199707B15042	613	5	1	1.9	4271	92.7651	4604.1	2	2	100	0.04344
107	199707B17009	615	4.3	1	2	3250	67.2836	4830.3	241	241	100	4.98934
108	199707B17010	615	4.4	1	2	6400	94.8528	6747.3	0.8	0.8	100	0.01186
109	199709A24039	537	5.9	1	2.4	29960	83.7854	35758	.	.	.	.
110	199710A24042	537	5.9	1	2.4	41317	50.7536	81407	.	.	.	.
111	199710A24042	612	5.9	1	2.4	41317	50.7536	81407	.	.	.	.
112	199710A24042	613	5.9	1	2.4	41317	50.7536	81407	.	.	.	.
113	199710A24042	615	0	1	2.4	41317	50.7536	81407	.	.	.	.
114	199710A24042	616	0	1	2.4	41317	50.7536	81407	.	.	.	.

115	199801A24004	616	4.5	1	2.4	19114	85.6592	22314	.	.	.	.
116	199801B16002	616	6.1	1	2	24086	80.0537	30087.3	347	347	100	1.15331
117	199801B16002	623	6.1	1	2	24086	80.0537	30087.3	347	347	100	1.15331
118	199802A24005	537	6.3	1	2.4	36576	61.3228	59645	.	.	.	.
119	199802A24005	616	6.3	1	2.4	36576	61.3228	59645	.	.	.	.
120	199802B15004	616	4.5	1	2	11340	60.7294	18673	.	.	.	.
121	199803A24007	616	6.2	1	2.4	11770	60.6836	19395.7	2	11	18.182	0.05671
122	199803B15005	622	2	0	0	35180	91.3292	38520	18	18	100	0.04673
123	199803B15006	622	2	0	0	45515	57.8865	78628	.	.	.	.
124	199803B15006	626	2	0	0	45515	57.8865	78628	.	.	.	.
125	199803B15006	627	2	0	0	45515	57.8865	78628	.	.	.	.
126	199803B16004	525	6.1	1	2	73900	84.535	87419.4	.	.	.	.
127	199803B16004	526	6.1	1	2	73900	84.535	87419.4	.	.	.	.
128	199803B16004	622	6.1	1	2	73900	84.535	87419.4	.	.	.	.
129	199803B16004	623	6.1	1	2	73900	84.535	87419.4	.	.	.	.
130	199804B15007	616	2	0	0	51150	70.5936	72457	431	431	100	0.59484
131	199804B15007	622	2	0	0	51150	70.5936	72457	431	431	100	0.59484
132	199804B15007	623	2	0	0	51150	70.5936	72457	431	431	100	0.59484
133	199804B15007	626	2	0	0	51150	70.5936	72457	431	431	100	0.5948
134	199804B15007	627	2	0	0	51150	70.5936	72457	431	431	100	0.5948
135	199809B15028	537	6	1	3	8450	55.0202	15358	.	.	.	.
136	199811B15030	616	2	1	1.9	7240	50.1733	14430	.	.	.	.
137	199903A24003	525	5.9	1	2	50111	62.3432	80379.3	.	.	.	.
138	199903A24003	537	5.9	1	2	50111	62.3432	80379.3	.	.	.	.
139	199903A52002	526	6	1	1.7	26295	64.0607	41047	0	6	0	0.0146
140	199904A03014	526	6	1	2.4	26166	55.4746	47167.5	.	.	.	.
141	199904A03014	537	6	1	2.4	26166	55.4746	47167.5	.	.	.	.
142	199904A52003	525	6.2	1	1.9	22462	75.8593	29610.1	.	.	.	.
143	199904A52003	526	6.2	1	1.9	22462	75.8593	29610.1	.	.	.	.
144	199904A52003	537	6.2	1	1.9	22462	75.8593	29610.1	.	.	.	.
145	199906A54035	613	5.7	1	0.1	1031	93.4554	1103.2	1.7	1.7	100	0.1541
146	199906A54036	613	0	1	2	1825	80.5242	2266.4	14	14	100	0.6177
147	199906B17004	612	4.5	1	1.9	7126	94.2343	7562	.	.	.	.
148	199906B38009	612	0	0	1.9	11522	72.1686	15965.4	.	.	.	.
149	199906B38009	614	0	0	1.9	11522	72.1686	15965.4	.	.	.	.
150	199906B38009	615	0	0	1.9	11522	72.1686	15965.4	.	.	.	.
151	199906B38009	621	0	0	0	11522	72.1686	15965.4	.	.	.	.
152	199906B38010	612	1.8	0	0	4260	58.605	7269	.	.	.	.
153	199906B38010	614	1.8	0	0	4260	58.605	7269	.	.	.	.
154	199907A54043	613	5.5	1	1.8	1555	76.3752	2036	2	2	100	0.0982
155	199907A54045	613	5.5	1	1.8	1268	82.5521	1536	.	.	.	.
156	199907A54046	613	4.4	1	1.7	1253	89.8208	1395	.	.	.	.
157	199910B48005	615	4.5	1	1.9	8371	81.3666	10288	.	.	.	.
158	199910B48005	622	4.5	1	1.9	8371	81.3666	10288	.	.	.	.
159	199910B48006	622	0	1	1.9	44723	50.1581	89164	.	.	.	.
160	199910B48006	626	0	1	1.9	44723	50.1581	89164	.	.	.	.
161	199910B48006	627	0	1	1.9	44723	50.1581	89164	.	.	.	.
162	199911B42007	616	5.6	1	2.4	64331	94.7249	67913.5	.	.	.	.
163	199911B48007	626	0	1	1.9	63287	62.3315	101533	20	20	100	0.0197
164	200002B50002	616	4.4	1	2	33365	61.3322	54400.5	7875	15235	51.69	28.0053
165	200002B50002	622	4.4	1	2	33365	61.3322	54400.5	7875	15235	51.69	28.0053
166	200002B50003	616	0	1	2	18950	78.7303	24069.5	1015	1215	83.539	5.0479
167	200002B50003	622	0	1	2	18950	78.7303	24069.5	1015	1215	83.539	5.0479
168	200002B50003	623	0	1	2	18950	78.7303	24069.5	1015	1215	83.539	5.0479

* Directed Trip is identified for a given species if the total catch of all species is comprised of more than 50% of that species.
** 1=yes, 2=no
*** % scup discard = (scup discards/scup catch) * 100
**** % scup bycatch = (scup catch/total catch) * 1000

Table 26. Directed whiting trips* by statistical area in the 1989-2000 sea sample database.

OBS	IDENT	STAT. AREA	CODEND MESH SIZE	LINER USED**	LINER MESH SIZE	TARGET SPECIES CATCH (LBS)	TARGET SPECIES AS % OF TOTAL CATCH	TOTAL CATCH	SCUP DISCARDS (LBS)	SCUP CATCH (LBS)	% SCUP DISCARD MAFMC DEF***	% SCUP BYCATCH NMFS DEF****
1	198901C06	513	2.5	0	0	44362	95.8246	46295	.	.	.	.
2	198901C06	514	2.5	0	0	44362	95.8246	46295	.	.	.	.
3	198904A16	537	5.5	1	3.5	18921	69.8218	27099	.	.	.	.
4	198904A16	616	5.5	1	3.5	18921	69.8218	27099	.	.	.	.
5	198905C22	513	1.6	0	0	1453	58.2131	2496	.	.	.	.
6	198905E12	537	3	0	0	36731	66.8322	54960	2241	2713	82.60	4.94
7	198906E16	537	5	1	3	12745	87.1453	14625	.	.	.	.
8	198906H01	525	5.5	1	2.7	104450	96.3063	108456	.	.	.	.
9	198906H01	537	5.5	1	2.7	104450	96.3063	108456	.	.	.	.
10	198907C31	513	2.5	0	0	3784	64.31	5884	.	.	.	.
11	198907E17	525	5.5	1	2.7	133860	92.3268	144985	.	.	.	.
12	198907E19	522	5.5	1	3	95234	90.1598	105628	.	.	.	.
13	198907G14	522	2.5	0	2.5	84441	83.2341	101450	.	.	.	.
14	198907G14	561	2.5	0	2.5	84441	83.2341	101450	.	.	.	.
15	198908C34	522	2.5	0	0	22662	93.2708	24297	.	.	.	.
16	198908C37	514	2	0	0	13904	89.4781	15539	.	.	.	.
17	198908C37	521	2	0	0	13904	89.4781	15539	.	.	.	.
18	198908D24	514	2.5	0	0	5161	73.2888	7042	.	.	.	.
19	198908H04	522	5.5	1	3	31200	93.7923	33265	.	.	.	.
20	198908J02	539	3	0	0	8325	77.4491	10749	.	.	.	.
21	198908K01	522	5.5	1	2.5	100150	99.6607	100491	.	.	.	.
22	198908K03	522	5.5	1	3.5	120100	89.2937	134500	.	.	.	.
23	198909C38	513	2	0	0	2015	74.7681	2695	.	.	.	.
24	198909C39	521	2	0	0	3385	67.3766	5024	.	.	.	.
25	198909C41	514	0	0	0	13505	73.5486	18362	.	.	.	.
26	198909C41	521	0	0	0	13505	73.5486	18362	.	.	.	.
27	198909E22	537	5.5	1	3	33877	66.9162	50626	.	.	.	.
28	198909E23	522	5.5	1	3	76550	87.046	87942	.	.	.	.
29	198909J03	522	5.5	1	3	76865	83.3722	92195	.	.	.	.
30	198909J03	525	5.5	1	3	76865	83.3722	92195	.	.	.	.
31	198909J03	537	5.5	1	3	76865	83.3722	92195	.	.	.	.
32	198910C43	513	2.5	0	0	4324	88.9712	4860	.	.	.	.
33	198910C44	513	2	0	0	3800	77.4878	4904	.	.	.	.
34	198910C44	514	2	0	0	3800	77.4878	4904	.	.	.	.
35	198910C45	514	2	0	0	4032	76.9466	5240	.	.	.	.
36	198910C46	521	2	0	0	11100	82.0581	13527	.	.	.	.
37	198910G22	522	5.5	1	3	67439	77.3383	87200	.	.	.	.
38	198911C49	514	2	0	0	3027	88.1223	3435	1	1	100.00	0.03
39	198911E33	539	3.5	1	3	7772	74.8243	10387	.	.	.	.
40	198912J18	539	3.5	0	3	10000	68.7711	14541	.	.	.	.
41	199004A08	613	3	1	2	4926	50.8359	9690	0	61	0.00	0.63
42	199006B04	522	3	0	0	74426	78.072	95330	.	.	.	.
43	199006B04	526	3	0	0	74426	78.072	95330	.	.	.	.
44	199006B04	537	3	0	0	74426	78.072	95330	.	.	.	.
45	199007C31	514	2.5	0	0	3840	88.6836	4330	.	.	.	.

OBS	IDENT	STAT. AREA	CODEND MESH SIZE	LINER USED**	LINER MESH SIZE	TARGET SPECIES CATCH (LBS)	TARGET SPECIES AS % OF TOTAL CATCH	TOTAL CATCH	SCUP DISCARDS (LBS)	SCUP CATCH (LBS)	% SCUP DISCARD MAFMC DEF***	% SCUP BYCATCH NMFS DEF****
46	199007C31	521	2.5	0	0	3840	88.6836	4330	.	.	.	.
47	199007C33	522	2.5	0	0	19939	85.5164	23316	.	.	.	.
48	199007D24	522	5.5	1	2.5	34193	52.3669	65295	.	.	.	.
49	199007K04	525	5.5	1	3.5	31033	69.3273	44763	.	.	.	.
50	199007K04	526	5.5	1	3.5	31033	69.3273	44763	.	.	.	.
51	199008C35	522	2.5	0	2.5	11792	86.9232	13566	.	.	.	.
52	199008C38	522	3	0	0	45652	98.3561	46415	.	.	.	.
53	199009B08	537	3	0	0	7185	82.7765	8680	.	.	.	.
54	199009D30	522	3.5	1	2.5	87433	73.7719	118518	.	.	.	.
55	199010C42	514	2.5	0	2.5	3434	73.0017	4704	.	.	.	.
56	199010C44	521	2.4	0	0	4075	51.1357	7969	.	.	.	.
57	199010K13	513	2	0	0	2865	65.9227	4346	0	2	0.00	0.05
58	199010K13	514	2	0	0	2865	65.9227	4346	0	2	0.00	0.05
59	199011C45	514	2.5	0	0	17230	77.3652	22271	.	.	.	.
60	199011C45	521	2.5	0	0	17230	77.3652	22271	.	.	.	.
61	199012C51	514	2.5	0	0	4350	70.4225	6177	.	.	.	.
62	199012D43	521	2.7	0	0	4622	52.4989	8804	.	.	.	.
63	199102A02	537	4	1	2	40829	68.2782	59798	.	.	.	.
64	199102A02	616	4	1	2	40829	68.2782	59798	.	.	.	.
65	199102H03	525	5.5	1	3.5	56215	95.7993	58680	.	.	.	.
66	199103K13	537	0	1	2	59744	85.9873	69480	.	.	.	.
67	199103K13	616	0	1	2	59744	85.9873	69480	.	.	.	.
68	199106H20	526	5.5	1	3.5	37503	52.1665	71891	.	.	.	.
69	199106H20	537	5.5	1	3.5	37503	52.1665	71891	.	.	.	.
70	199107B09	522	2.5	0	0	8790	85.5391	10276	.	.	.	.
71	199107B10	514	2.5	0	0	1741	65.7974	2646	.	.	.	.
72	199107B11	513	2.3	0	0	1912	57.5038	3325	.	.	.	.
73	199107B11	514	2.3	0	0	1912	57.5038	3325	.	.	.	.
74	199107B14	514	2.9	0	0	2237	90.3473	2476	.	.	.	.
75	199107B15	514	2.5	0	0	3751	97.5553	3845	.	.	.	.
76	199107B18	522	5.5	1	3	104050	80.8828	128643	.	.	.	.
77	199107B18	537	5.5	1	2.5	104050	80.8828	128643	.	.	.	.
78	199108B21	522	5.5	1	3	133863	95.9041	139580	.	.	.	.
79	199108B21	537	5.5	1	3	133863	95.9041	139580	.	.	.	.
80	199108B27	537	5.5	1	2	17897	78.0915	22918	0	6	0.00	0.03
81	199109B36	522	0	0	0	87020	63.9064	136168	.	.	.	.
82	199109B37	522	6	1	3	83200	88.5813	93925	.	.	.	.
83	199109B41	522	2.5	0	0	35320	94.7298	37285	.	.	.	.
84	199109B43	514	2.5	0	0	10478	78.4575	13355	.	.	.	.
85	199109B49	537	4	1	2	14657	51.7513	28322	.	.	.	.
86	199110H03	514	2.5	0	0	2867	90.4416	3170	.	.	.	.
87	199110H04	514	2.3	0	0	1478	91.0659	1623	.	.	.	.
88	199110H05	521	2.5	0	0	9078	71.6609	12668	.	.	.	.
89	199110H07	514	2.5	0	0	1142	79.1407	1443	.	.	.	.
90	199110H08	514	2.3	0	0	14830	94.5489	15685	.	.	.	.
91	199110I03	514	2	0	0	5397	86.7545	6221	2	2	100.00	0.03
92	199110I07	514	2.7	0	0	2023	70.5124	2869	1	1	100.00	0.03
93	199111H10	514	2.5	0	0	3218	80.1295	4016	1	1	100.00	0.02
94	199111H11	514	2.5	0	0	11226	97.6599	11495	.	.	.	.
95	199111H15	514	2.5	0	0	8635	91.6764	9419	.	.	.	.
96	199111H16	514	2.5	0	0	5085	84.7359	6001	1	1	100.00	0.02
97	199111H18	514	2	0	0	3145	83.9786	3745	.	.	.	.
98	199111H19	514	2.3	0	0	3911	76.1488	5136	.	.	.	.
99	199112H21	514	2.5	0	0	4075	76.2252	5346	.	.	.	.
100	199112H22	514	2.3	0	0	3010	83.9609	3585	.	.	.	.

BS	IDENT	STAT. AREA	CODEND MESH SIZE	LINER USED**	LINER MESH SIZE	TARGET SPECIES CATCH (LBS)	TARGET SPECIES AS % OF TOTAL CATCH	TOTAL CATCH	SCUP DISCARDS (LBS)	SCUP CATCH (LBS)	% SCUP DISCARD MAFMC DEF***	% SCUP BYCATCH NMFS DEF****
101	199112H23	514	2.5	0	0	1110	71.4746	1553	0	3	0.00	0.19
102	199201B62	537	3	1	2	16401	86.0674	19056	.	.	.	.
103	199201B62	616	3	1	2	16401	86.0674	19056	.	.	.	.
104	199201B68	537	5	1	2	29710	60.0396	49484	370	710	52.11	1.43
105	199201B68	616	5	1	2	29710	60.0396	49484	370	710	52.11	1.43
106	199201B76	537	5.5	1	2	40654	86.9232	46770	.	.	.	.
107	199201B76	616	5.5	1	2	40654	86.9232	46770	.	.	.	.
108	199201B80	537	3	1	2	15850	60.9873	25989	.	.	.	.
109	199201B80	616	3	1	2	15850	60.9873	25989	.	.	.	.
110	199201K32	513	2	0	0	1486	58.0923	2558	.	.		
111	199201K46	513	2	0	0	1433	51.9579	2758	1	1	100.00	0.04
112	199201K47	513	2	0	0	2052	60.1407	3412	.	.	.	.
113	199202B91	537	3	1	1.6	37640	75.9315	49571	.	.	.	.
114	199202B99	537	5	1	2	37325	80.1447	46572	0	2	0.00	0.00
115	199202B99	616	5	1	2	37325	80.1447	46572	0	2	0.00	0.00
116	199203A04	537	3	1	2	9131	54.8112	16659	.	.	.	.
117	199203A04	616	3	1	2	9131	54.8112	16659	.	.	.	.
118	199204A17	537	3.5	1	2.8	14791	51.2101	28883	943	7123	13.24	24.66
119	199204A17	613	3.5	1	2.8	14791	51.2101	28883	943	7123	13.24	24.66
120	199207A05	522	2.5	0	0	27501	91.9797	29899	.	.	.	.
121	199207A08	522	3	0	0	19980	94.6471	21110	.	.	.	.
122	199207A19	537	5.5	1	3	133305	97.3463	136939	.	.	.	.
123	199207H56	514	2.5	0	0	8825	95.3745	9253	.	.	.	.
124	199208I51	522	2.3	0	0	26233	94.6049	27729	.	.	.	.
125	199208I52	522	2.3	0	0	31358	96.9845	32333	.	.	.	.
126	199208I53	514	2.5	0	0	3494	88.8155	3934	.	.	.	.
127	199208I54	514	2.2	0	0	4882	95.8759	5092	.	.	.	.
128	199208I55	514	2.9	0	0	1461	78.7177	1856	.	.	.	.
129	199208I56	514	2.3	0	0	4406	53.9753	8163	.	.	.	.
130	199208I57	514	2.5	0	0	4260	75.3049	5657	.	.	.	.
131	199209A25	537	5.5	1	3	27675	66.0344	41910	.	.	.	.
132	199209A35	522	5.5	1	3	86450	81.6861	105832	.	.	.	.
133	199209I59	514	2.5	0	0	3655	83.163	4395	.	.	.	.
134	199209I60	514	2.5	0	0	2242	86.899	2580	.	.	.	.
135	199209I61	521	2.3	0	0	11125	76.931	14461	.	.	.	.
136	199209I61	542	2.3	0	0	11125	76.931	14461	.	.	.	.
137	199210A10	522	3	0	0	50725	78.565	64564	.	.	.	.
138	199210I65	521	2.4	0	0	9455	90.695	10425	.	.	.	.
139	199210I66	521	2.3	0	0	25825	87.253	29598	.	.	.	.
140	199211I51	514	2.5	0	0	2650	90.136	2940	.	.	.	.
141	199211I52	514	2.9	0	0	2190	85.984	2547	.	.	.	.
142	199211I55	514	2.5	0	0	11155	84.855	13146	0	120	0.00	0.91
143	199301A31	539	3	1	2.5	1921	52.074	3689	.	.	.	.
144	199303A36	616	5.5	1	0	14398	55.507	25939	.	.	.	.
145	199303A70	616	3.5	1	0	49631	88.015	56389	.	.	.	.
146	199303A72	616	2.5	1	0	53987	71.348	75667	.	.	.	.
147	199303A94	616	4	1	0	34409	92.757	37096	.	.	.	.
148	199304A07	537	3.5	1	0	5562	59.429	9359	0	20	0.00	0.21
149	199304A07	616	3.5	1	0	5562	59.429	9359	0	20	0.00	0.21
150	199305I68	513	2.5	0	0	14560	97.659	14909	.	.	.	.
151	199306I69	514	2.5	0	0	2820	95.464	2954	.	.	.	.
152	199307A08	522	5.5	1	0	119395	94.142	126824	.	.	.	.
153	199307A09	526	5.5	1	0	30323	62.59	48447	.	.	.	.
154	199307A09	537	5.5	1	0	30323	62.59	48447	.	.	.	.
155	199307I51	522	3	0	0	21875	99.568	21970	.	.	.	.

OBS	IDENT	STAT. AREA	CODEND MESH SIZE	LINER USED**	LINER MESH SIZE	TARGET SPECIES CATCH (LBS)	TARGET SPECIES AS % OF TOTAL CATCH	TOTAL CATCH	SCUP DISCARDS (LBS)	SCUP CATCH (LBS)	% SCUP DISCARD MAFMC DEF***	% SCUP BYCATCH NMFS DEF****
156	199307I52	514	2	0	0	1358	60.329	2251	.	.	.	.
157	199308A95	537	6	1	0	67091	57.434	116815	.	.	.	.
158	199308I54	522	3	0	0	18353	98.129	18703	.	.	.	.
159	199309A23	522	5.5	1	0	42970	68.191	63014	.	.	.	.
160	199309H71	537	5.5	1	0	57046	57.214	99706	.	.	.	.
161	199309H71	613	5.5	1	0	57046	57.214	99706	.	.	.	.
162	199309I01	521	2.4	0	0	5875	50.369	11664	.	.	.	.
163	199310A23	537	4.5	1	0	12085	64.464	18747	3	116	2.59	0.62
164	199310A24	537	4.5	1	0	18649	88.033	21184	3	7	42.86	0.03
165	199310I50	513	3	0	0	2240	88.398	2534	.	.	.	.
166	199310I50	514	3	0	0	2240	88.398	2534	.	.	.	.
167	199311A99	537	6	1	0	26604	72.358	36767	1167	1432	81.49	3.89
168	199311A99	613	6	1	0	26604	72.358	36767	1167	1432	81.49	3.89
169	199312A48	539	3	0	0	2212	79.856	2770	.	.	.	.
170	199401A13	0	3	1	0	19377	56.095	34543	1032	9282	11.12	26.87
171	199401A13	616	3	1	0	19377	56.095	34543	1032	9282	11.12	26.87
172	199404A10	537	4	1	0	21355	89.202	23940	.	.	.	.
173	199404A10	613	4	1	0	21355	89.202	23940	.	.	.	.
174	199404A10	616	4	1	0	21355	89.202	23940	.	.	.	.
175	199501A2400	2 537	0	1	2	23224	57.837	40154	25	31	80.65	0.08
176	199501A2400	2 616	0	1	2	23224	57.837	40154	25	31	80.65	0.08
177	199508A28083	514	2	0	0	5400	93.848	5754	.	.	.	.
178	199508A28084	513	2	0	0	4100	94.257	4349.8	.	.	.	.
179	199508A28084	514	2	0	0	4100	94.257	4349.8	.	.	.	.
180	199508A28085	514	2	0	0	6500	100	6500	.	.	.	.
181	199508A28086	514	2	0	0	5450	93.788	5811	.	.	.	.
182	199508A49055	513	1.9	0	0	6700	91.911	7289.7	.	.	.	.
183	199508A49055	514	1.9	0	0	6700	91.911	7289.7	.	.	.	.
184	199508A49056	514	1.9	0	0	1295	86.431	1498.3	.	.	.	.
185	199508A67068	513	2.2	0	0	4325	67.452	6412	.	.	.	.
186	199508A67068	514	2.2	0	0	4325	67.452	6412	.	.	.	.
187	199509A04090	514	2	0	0	2200	61.737	3563.5	.	.	.	.
188	199509A28092	514	2	0	0	3240	68.812	4708.5	.	.	.	.
189	199509A44047	612	2.5	0	0	6500	76.032	8549	.	.	.	.
190	199509A67075	513	2.1	0	0	2000	51.877	3855.3	.	.	.	.
191	199510A44049	612	0	0	0	3625	63.854	5677	.	.	.	.
192	199510A67086	514	0	0	0	3125	64.531	4842.6	.	.	.	.
193	199510A83003	514	0	0	0	2175	57.769	3765	.	.	.	.
194	199511A05062	513	1.7	0	0	9735	93.162	10449.5	.	.	.	.
195	199511A05063	513	1.7	0	0	1660	68.369	2428	.	.	.	.
196	199511A05064	513	1.7	0	0	2435	87.229	2791.5	.	.	.	.
197	199511A28112	514	2	0	0	1356	53.483	2535.4	2	2	100.00	0.08
198	199511A28114	514	2	0	0	1221	70.972	1720.4	0.3	0.3	100.00	0.02
199	199511A28117	514	2	0	0	1943	72.655	2674.3	0.6	0.6	100.00	0.02
200	199511A83006	514	1.9	0	0	3870	63.766	6069.1	0.1	0.1	100.00	0.00
201	199511A83007	514	1.7	0	0	2970	68.528	4334	.	.	.	.
202	199605A99501	513	1.6	0	0	2526	56.025	4508.7	.	.	.	.
203	199607A98501	513	1.7	0	0	1264	68.103	1856	.	.	.	.
204	199607A98503	513	1.7	0	0	4665.5	71.65	6511.5	.	.	.	.
205	199607A98504	513	1.9	0	0	5102	93.165	5476.3	.	.	.	.
206	199607A99502	513	1.4	0	0	2323.3	59.535	3902.4	.	.	.	.
207	199607A99503	513	1.4	0	0	3911.7	74.748	5233.2	.	.	.	.
208	199608A04501	513	1.9	0	0	4825	97.057	4971.3	.	.	.	.
209	199608A05501	513	1.7	0	0	7875	97.436	8082.2	.	.	.	.
210	199608A05502	513	2	0	0	4730	87.294	5418.5	.	.	.	.

OBS	IDENT	STAT. AREA	CODEND MESH SIZE	LINER USED**	LINER MESH SIZE	TARGET SPECIES CATCH (LBS)	TARGET SPECIES AS % OF TOTAL CATCH	TOTAL CATCH	SCUP DISCARDS (LBS)	SCUP CATCH (LBS)	% SCUP DISCARD MAFMC DEF***	% SCUP BYCATCH NMFS DEF****
211	199608A53501	513	2.2	0	0	3916	96.46	4059.7	.	.	.	.
212	199608A53502	513	1.6	0	0	7947	98.031	8106.6	.	.	.	.
213	199608A67501	513	0	0	0	4342.1	88.312	4916.8	.	.	.	.
214	199608A98505	513	2	0	0	7846	81.608	9614.3	.	.	.	.
215	199608A99504	513	1.5	0	0	5239	77.34	6774	.	.	.	.
216	199609A04502	513	2	0	0	2565	91.939	2789.9	.	.	.	.
217	199609A04504	513	2	0	0	1386	91.727	1511	.	.	.	.
218	199609A04505	513	2	0	0	2574	97.15	2649.5	.	.	.	.
219	199609A05503	513	2	0	0	1541	63.876	2412.5	.	.	.	.
220	199609A53503	513	1.4	0	0	6414	96.599	6639.8	.	.	.	.
221	199609A53504	513	1.6	0	0	7443	95.7693	7771.8	.	.	.	.
222	199609A98506	513	1.9	0	0	5996	95.8379	6256.4	.	.	.	.
223	199609A98507	513	1.9	0	0	3909	79.2997	4929.4	.	.	.	.
224	199609A98508	513	1.7	0	0	2069	90.7854	2279	.	.	.	.
225	199610A32503	513	2	0	0	10699	84.3836	12679	.	.	.	.
226	199610A32505	513	1.5	0	0	4334	97.6566	4438	.	.	.	.
227	199610A32506	513	1.5	0	0	3427	92.0742	3722	.	.	.	.
228	199610A32507	513	1.5	0	0	7415	92.0318	8057	.	.	.	.
229	199610A32508	513	1.6	0	0	1810	87.3974	2071	.	.	.	.
230	199610A32509	513	1.9	0	0	5141	92.7476	5543	.	.	.	.
231	199610A32510	513	0	0	0	8023	86.7539	9248	.	.	.	.
232	199610A32511	513	2	0	0	8937	95.4502	9363	.	.	.	.
233	199610A98509	513	0	0	0	7767	93.6855	8290.5	.	.	.	.
234	199611A05507	513	1.9	0	0	2460	88.1499	2790.7	.	.	.	.
235	199611A05508	513	1.9	1	0	3615	82.6853	4372	.	.	.	.
236	199611A05509	513	1.9	0	0	6984	74.1614	9417.3	.	.	.	.
237	199611A24031	537	6	1	2.4	15056	63.8846	23567.5	.	.	.	.
238	199611A32512	513	0	0	0	3442	81.6607	4215	.	.	.	.
239	199611A32513	513	2	0	0	10280	88.6436	11597	.	.	.	.
240	199701A32002	526	0	0	0	57362	53.4719	107275	.	.	.	.
241	199701A32002	537	0	0	0	57362	53.4719	107275	.	.	.	.
242	199701A49003	537	2.2	1	2.4	39478	53.2125	74189.4	0.4	30.4	1.32	0.04
243	199701A49003	613	2.2	1	2.4	39478	53.2125	74189.4	0.4	30.4	1.32	0.04
244	199702B15007	616	0	1	2	33247	89.4073	37186	.	.		
245	199702B15009	616	4.3	1	2	25373	73.2667	34631	.	.		
246	199702B15010	613	5	1	2.1	15055	71.493	21058	0	21	0.00	0.10
247	199702B15010	616	5	1	2.1	15055	71.493	21058	0	21	0.00	0.10
248	199704B15014	525	5.5	1	2.5	43358	80.5058	53857	.	.	.	.
249	199709A24040	537	0	1	2.4	32770	50.1323	65367	.	.	.	.
250	199709A24040	613	0	1	2.4	32770	50.1323	65367	.	.	.	.
251	199709A24041	613	5.8	1	2.4	27666	51.1112	54129	.	.	.	.
252	199803A24006	537	0	1	1.2	46151	51.5339	89554.6	.	.	.	.
253	199803A24006	616	0	1	1.2	46151	51.5339	89554.6	.	.	.	.
254	199807A24036	537	5.9	1	2.4	89067	86.8658	102534	.	.	.	.
255	199810B17007	612	1.9	0	0	7910	57.4562	13767	.	.	.	.
256	199904A24005	537	5.9	1	2.4	25402	55.0219	46167.1	.	.	.	.
257	199905B17003	612	1.9	0	0	3465	54.4469	6364	12	12	100.00	0.19
258	199910B45007	514	2.7	0	0	5934	92.1429	6440	.	.	.	.
259	199910B45008	514	2.4	0	0	3236	73.6291	4395	.	.	.	.
260	199910B45009	514	0	0	0	2510	85.7299	2927.8	.	.	.	.
261	199910B45010	514	2.4	0	0	1292	54.7226	2361	.	.	.	.
262	199910B45013	514	2.8	0	0	7800	91.3028	8543	3	3	100.00	0.04
263	199911B45014	514	0	0	0	1455	54.7816	2656	.	.	.	.
264	199911B45015	514	2.5	0	0	5300	85.4425	6203	.	.	.	.

* Directed Trip is identified for a given species if the total catch of all species is comprised of more than 50% of that species.
** 1=yes, 2=no
*** % scup discard = (scup discards/scup catch) * 100
**** % scup bycatch = (scup catch/total catch) * 1000

Table 27. Directed black sea bass trips* by statistical area in the 1989-2000 sea sample database.

OBS	IDENT	STAT. AREA	CODEND MESH SIZE	LINER USED**	LINER MESH SIZE	TARGET SPECIES CATCH (LBS)	TARGET SPECIES AS % OF TOTAL CATCH	TOTAL CATCH	SCUP DISCARDS (LBS)	SCUP CATCH (LBS)	% SCUP DISCARD MAFMC DEF***	% SCUP BYCATCH NMFS DEF****
1	198901E01	615	5.5	1	0	1162	1.1601	100163	6364	13434	47.3723	13.4121
2	198901E01	616	5.5	1	0	1162	1.1601	100163	6364	13434	47.3723	13.4121
3	198901E01	623	5.5	1	0	1162	1.1601	100163	6364	13434	47.3723	13.4121
4	198902E03	616	3.5	0	0	1822	2.4059	75729	3110	5170	60.1547	6.827
5	198902E03	622	3.5	0	0	1822	2.4059	75729	3110	5170	60.1547	6.827
6	198902E03	623	3.5	0	0	1822	2.4059	75729	3110	5170	60.1547	6.827
7	198912E34	537	5.5	1	3	2342	3.0247	77430	804	2699	29.7888	3.4857
8	198912E34	539	5.5	1	3	2342	3.0247	77430	804	2699	29.7888	3.4857
9	199001I02	614	2.5	0	0	2362	9.5966	24613	24	36	66.6667	0.1463
10	199001I02	626	2.5	0	0	2362	9.5966	24613	24	36	66.6667	0.1463
11	199001I02	632	3.8	0	0	2362	9.5966	24613	24	36	66.6667	0.1463
12	199001J01	613	5.5	1	3.5	1141	1.7739	64320	6392	6814	93.8069	10.5939
13	199001J01	616	5.5	1	3.5	1141	1.7739	64320	6392	6814	93.8069	10.5939
14	199101G04	622	4	0	0	1784	4.0741	43789	7550	28143	26.8273	64.2696
15	199101G04	623	4	0	0	1784	4.0741	43789	7550	28143	26.8273	64.2696
16	199203A05	614	6	1	3	1824	1.6804	108547	8103	10651	76.0774	9.8123
17	199203A05	615	6	1	3	1824	1.6804	108547	8103	10651	76.0774	9.8123
18	199203A05	616	6	1	3	1824	1.6804	108547	8103	10651	76.0774	9.8123
19	199203A05	621	6	1	3	1824	1.6804	108547	8103	10651	76.0774	9.8123
20	199203A05	622	6	1	3	1824	1.6804	108547	8103	10651	76.0774	9.8123
21	199203A05	623	6	1	3	1824	1.6804	108547	8103	10651	76.0774	9.8123
22	199303A42	622	3	0	0	3203	8.4443	37931	1375	1895	72.5594	4.9959
23	199303A42	626	3	0	0	3203	8.4443	37931	1375	1895	72.5594	4.9959
24	199602A44004	622	5.5	1	1.5	4630	11.9886	38620	1000	1500	66.6667	3.884
25	199603A41008	622	0	0	0	3340	20.7905	16065	2534	2717	93.2646	16.9125
26	199603A41008	626	0	0	0	3340	20.7905	16065	2534	2717	93.2646	16.9125
27	199603A41008	632	0	0	0	3340	20.7905	16065	2534	2717	93.2646	16.9125
28	199604A25017	621	1.8	1	1.6	9837	8.6154	114179	3436	4539	75.6995	3.9753
29	199604A25017	622	1.8	1	1.6	9837	8.6154	114179	3436	4539	75.6995	3.9753
30	199604A25017	626	1.8	1	1.6	9837	8.6154	114179	3436	4539	75.6995	3.9753
31	199604A25017	632	1.5	0	0	9837	8.6154	114179	3436	4539	75.6995	3.9753
32	199604A31040	622	2	1	1.3	4226.5	2.9251	144490.8	7309	9133	80.0285	6.3208
33	199604A44018	615	2	1	2	1165	1.0961	106287	0	7	0	0.0066
34	199604A44018	616	2	1	2	1165	1.0961	106287	0	7	0	0.0066
35	199604A44018	622	2	1	2	1165	1.0961	106287	0	7	0	0.0066
36	199604A75028	615	2.4	0	0	6796	29.1868	23284.5	50	173.3	28.8517	0.7443
37	199604A75028	616	2.4	0	0	6796	29.1868	23284.5	50	173.3	28.8517	0.7443
38	199604A75028	622	2.4	0	0	6796	29.1868	23284.5	50	173.3	28.8517	0.7443
39	199702A54005	615	6	1	2.1	2051	1.884	108863	1720	2133	80.6376	1.9593
40	199702A54005	616	6	1	2.1	2051	1.884	108863	1720	2133	80.6376	1.9593

41	199702A54005	622	6	1	2.1	2051	1.884	108863	1720	2133	80.6376	1.9593
42	199702A54005	623	6	1	2.1	2051	1.884	108863	1720	2133	80.6376	1.9593
43	199901A24002	537	6	1	2.4	1472	1.419	103734	8920	11331	78.7221	10.9231
44	199901A24002	613	6	1	2.4	1472	1.419	103734	8920	11331	78.7221	10.9231
45	199901A24002	616	6	1	2.4	1472	1.419	103734	8920	11331	78.7221	10.9231
46	200002B38004	330	2.7	0	0	6269	9.7592	64237	4768	4828	98.7572	7.5159
47	200002B38004	626	1.2	0	0	6269	9.7592	64237	4768	4828	98.7572	7.5159

* Directed Trip is identified for a given species if the total catch of all species is comprised of more than 50% of that species.

** 1=yes, 2=no

*** % scup discard = (scup discards/scup catch) * 100

**** % scup bycatch = (scup catch/total catch) * 1000

Table 28. Latitude and longitude coordinates of gear restricted areas.

Northern Gear Restricted Area 1 - November 1 through December 31

Point	N. lat.	W. long
NGA 1	41E 00"	71E 00"
NGA 2	41E 00"	71E 30"
NGA 3	40E 00"	72E 40"
NGA 4	40E 00"	72E 05"
NGA 5	41E 00"	71E 00"

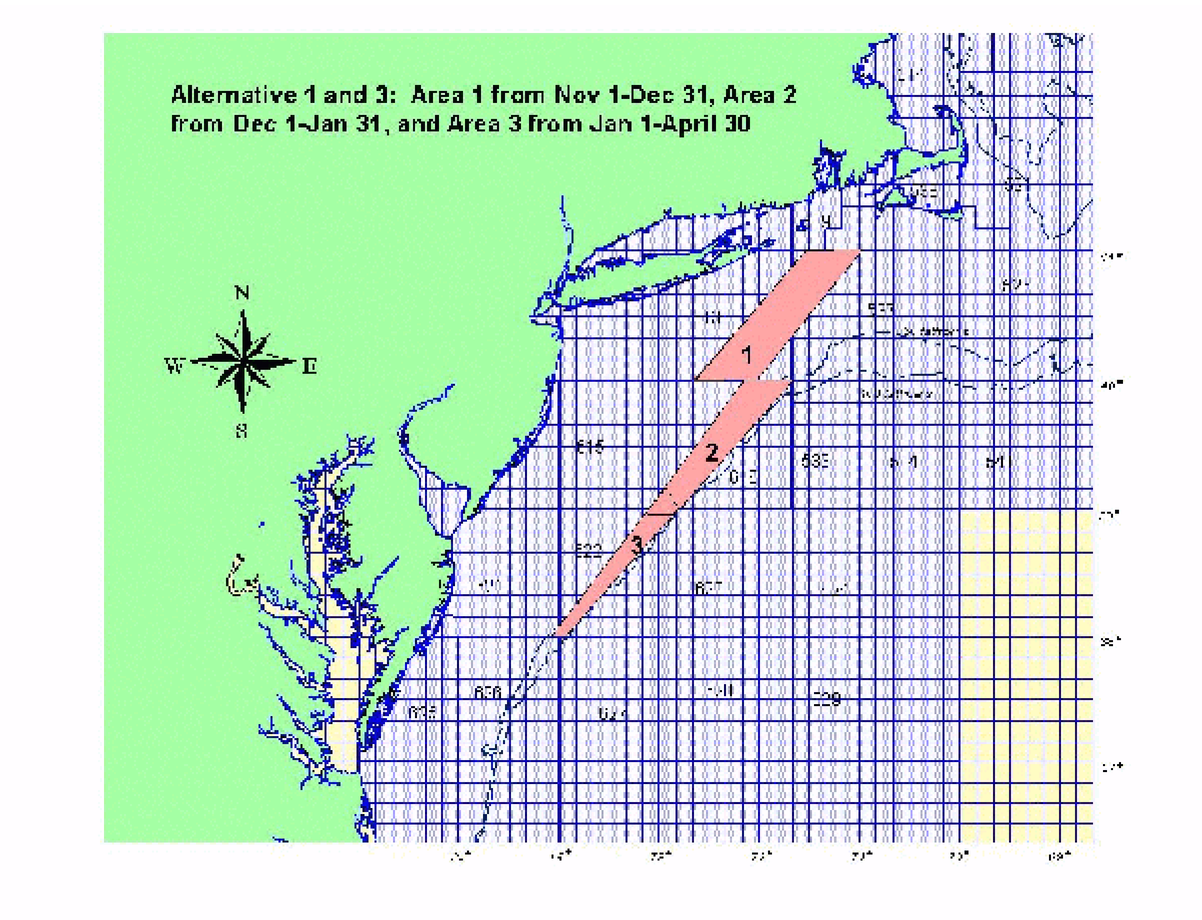
Northern Gear Restricted Area 2 - December 1 through January 31

Point	N. lat.	W. long
NGA 1	40E 00"	71E 40"
NGA 2	40E 00"	72E 10"
NGA 3	39E 00"	73E 09"
NGA 4	39E 00"	72E 50"
NGA 5	40E 00"	71E 40"

Southern Gear Restricted Area 3 - January 1 through April 30

Point	N. lat.	W. long
SGA 1	39E 00"	72E 50"
SGA 2	39E 11"	72E 58"
SGA 3	38E 00"	74E 05"
SGA 4	38E 00"	73E 57"
SGA 5	39E 00"	72E 50"

Figure 4. Alternatives 1 and 3 (Alternative 7a) for gear regulated areas. Alternative 1 includes these areas with directed herring, mackerel, and Loligo fisheries exempt. Each area details the time and location as to when and where codend mesh less than 4.5 inches would be prohibited.



615, 616, 621, and 622 from January 1 to April 30 (Figure 3). These areas include the ten minute squares identified by Council staff as having high scup discards using sea sample data from 1989 - April 1999. This alternative is a modification to Alternative 6 in that the seaward edge of the southern area follows the 100-fathom contour.

Alternative 5 (No GRAs): Under this alternative GRAs would not be implemented.

Each alternative details the time and areas as to when and where otter trawl gear with codend mesh less than 4.5 inches would be prohibited. The prohibitions would apply to all otter trawl gear unless it was being used in an exempted fishery. In addition, vessels with experimental exempted fishing permits would also be allowed to conduct small mesh experiments in restricted areas.

6.3.4.1 Alternative 1

Alternative 1 (Alternative 7a) would regulate the use of otter trawls with codend mesh of less than 4.5 inches in the time and areas most likely to have coincident concentrations of squid and scup (Figure 4). These areas are based on information from industry representatives and sea sample data. Fishermen indicated that scup are located from 50 to 70 fathoms in statistical areas 616 and 622 from January through April and from 30 to 50 fathoms in statistical areas 537, 539, and 613 in November and December. These areas also include the high discard areas identified by Council staff based on sea sample data (Tables 22a-e; Figure 2). This alternative also includes the exemption of the herring, mackerel, and *Loligo* fisheries.

Although the Monitoring Committee recommended that the herring and mackerel fisheries be exempted from GRAs, the Council voted to exempt the *Loligo* fishery for Winter II 2000, as well. They felt that the bycatch of scup in the directed *Loligo* fishery had been reduced significantly in recent years as the result of changes in the *Loligo* and scup fisheries, and as such this bycatch would not prevent the attainment of fishing mortality objectives for scup. In addition to GRAs, the early closures of the Winter I scup fishery and Winter *Loligo* fishery also effectively reduce scup discards in 2000, since the fisheries were closed for extended periods.

When the directed trips of herring, mackerel, and *Loligo* fisheries are excluded from the sea sample data to determine the reduction of scup discards with these exemptions, the associated reduction in the scup discards based on the remaining trips is 51%(Table 29). The remaining trips were comprised predominantly of whiting, scup, *Loligo*, butterfish, and summer flounder. If these trips had not occurred in these areas during these times as a result of the GRAs, not only would scup discards been reduced by 51%, but landings of small mesh species would have been reduced as follows: herring - 0%, mackerel - 0%, black sea bass - 25%, whiting - 4%, and *Loligo* - 6% (Table 29). These percentages are reductions associated with the total otter trawl landings of each species in the 1989-2000 sea sample data. Since the Council considers *Loligo* exempt for Winter II 2000, *Loligo* was excluded, in case the exemption continues for 20001. If *Loligo* is not exempt for 2001 then scup discards will be reduced between 51% and 61%. It is unlikely that the associated reductions in discards and landings with any GRA would occur, as fishermen redirect effort to other areas and times. In addition, enforcement of regulations could be problematic given the mixed nature of the trawl fishery (i.e., what is a directed trip).

Table 29. The percent of landings and scup discards that would be reduced by proposed GRA alternatives. The reductions are based on sea sample data from January 1989 - May 2000, for bottom otter trawls with mesh less than 4.5 inches.

Species	**Total Landings (lbs)**	**Reduction in Landings/Discards**				
		Alternative				
		1	**2**	**3**	**4**	**5**
Herring Landings	500,845	0%	0%	3%	8%	0%
Mackerel Landings	3,224,271	0%	2%	11%	30%	0%
Black Sea Bass Landings	73,449	25%	29%	42%	50%	0%
Whiting Landings	4,706,999	4%	15%	5%	17%	0%
Loligo Landings	3,292,641	6%	11%	22%	38%	0%
Scup Discards	**5,622,640**	**51%**	**59%**	**61%**	**71%**	**0%**

[a] **Percentage reductions in landings/discards apply to landings/discards from sea sample data for January 1989-May 2000.**

The potential lost revenue for each species was estimated by applying estimated reduction in landings based on sea sample data and 1998 prices in NMFS General Canvass Data to total otter trawl landings in the 1998 VTR data (Table 30). It was necessary to use average prices from NMFS general canvass data when estimating changes in revenues because VTR data do not contain dollar values. These data indicate that the potential for lost revenue is $2.4 million under Alternative 1.

Table 30. Potential reduction in value of 1998 VTR otter trawl landings based on estimated reductions in landings for gear restricted areas alternatives (sea sample data) and 1998 prices(NMFS General Canvass Data).

Species	**Total Revenue (thousand dollars)**	**Reduction in Revenue (thousand dollars)**				
		Alternative				
		1	**2**	**3**	**4**	**5**

Herring	210	0	0	6	17	0
Mackerel	3,147	0	63	346	944	0
Black Sea Bass	1,360	340	394	571	680	0
Whiting	14,664	587	2,200	733	2,493	0
Loligo	25,121	1,507	2,763	5,526	9,546	0
Total	**44,502**	**2,434**	**5,420**	**7,177**	**13,663**	**0**

However, as noted by Council staff in previous analyses and Kennelly (1999), closing an areas for a specific time “will not simply remove trawling effort from the region but merely redirect it to other areas that may yield lower scup discards.” As such, reductions of discards and landings inside the closed areas “will be tempered by increased landings and discards outside the closure by the redirected vessels.” As such, the effect of the restricted areas would be reduced as fishermen recoup their landings in areas outside the restricted areas.

In addition, the Council continues to be concerned about the data limitations and questioned the extent of the discard problem. Since the late 1980s and early 1990s fisheries have been affected by a number of regulations including summer flounder mesh sizes, groundfish mesh sizes, and scup mesh sizes with associated thresholds and trip limits that would have reduced scup discards. In addition, improvements in electronics allow fishermen to avoid areas where small scup are concentrated and, as such, allow for significant reductions in scup discards.

In general, sea sample data suggests that this alternative would reduce scup discards with minimal effect on landings of other commercially important species. As such, this alternative offers the best balance between the economic effects on the industry and a reduction in scup discards. Because this alternative was derived with significant industry input, it is more likely that these restricted areas will have industry-wide support resulting in greater compliance and greater reductions in scup discards. Reduced scup discards will benefit both the scup stock and the fishing industry. As more scup are allowed to reach maturity and spawn, spawning stock biomass and yields will increase.

6.3.4.2 Alternative 2

Alternative 2 (Alternative 6a in the 2000 Specification Package) would regulate the use of trawls with codend mesh less than 4.5 inches in an area that intersects statistical areas 537, 539, and 613 from November 1 to December 31, and one that intersects statistical areas 615, 616, 621, and 622 from January 1 to April 30 (Figure 3). These areas include the ten minute squares identified by Council staff as having high scup discards using sea sample data from 1989 - April 1999. The seaward edge of the southern area of this alternative follows the 100-fathom contour. This alternative also includes the exemption of the herring, mackerel, and *Loligo* fisheries.

When the directed trips of herring, mackerel, and *Loligo* fisheries are excluded from the sea sample data to determine the reduction of scup discards with these exemptions, the associated reduction in the scup discards based on the remaining trips is 59%(Table 29). These remaining trips were comprised predominantly of whiting, scup, *Loligo*, butterfish, and summer flounder. If these trips had not occurred in these areas during these times as a result of the GRAs, not only would scup discards been reduced by 59%, but landings of small mesh species would have been reduced as follows: herring - 0%, mackerel - 2%, black sea bass - 29%, whiting - 15%, and *Loligo* - 11% (Table 29). These percentages are reductions associated with the total otter trawl landings of each species in the 1989-2000 sea sample data. It is unlikely that the associated reductions in discards and landings with any GRA would occur, as fishermen redirect effort to other areas and times. In addition, enforcement of regulations could be problematic given the mixed nature of the trawl fishery (i.e., what is a directed trip).

The potential lost revenue for each species was estimated by applying estimated reduction in landings based on sea sample data and 1998 prices in NMFS General Canvass Data to total otter trawl landings in the 1998 VTR data (Table 30). It was necessary to use average prices from NMFS general canvass data when estimating changes in revenues because VTR data do not contain dollar values. These data indicate that the potential for lost revenue is $5.4 million under Alternative 2.

Sea sample data indicate that this alternative would allow for an 8% greater reduction in scup discards than Alternative 1 at the expense of a greater decrease in landings of other commercially important species. Decreased revenues could be as much as 223% higher under this alternative compared to the preferred alternative. As such, the benefits associated with this reduction in scup discards may be outweighed by the effect on other fisheries. Based on industry input, the two-month and four-month closures combined with larger areas could close areas to small mesh gear when scup were not present resulting in an impact on fisheries that do not discard scup.

As noted by Council staff in previous analyses and Kennelly (1999), closing areas for a specific time “will not simply remove trawling effort from the region but merely redirect it to other areas that may yield lower scup discards.” As such, reductions of discards and landings inside the closed areas “will be tempered by increased landings and discards outside the closure by the redirected vessels.” As such, the effect of the restricted areas would be reduced as fishermen recoup their landings in areas outside the restricted areas.

In addition, the Council continues to be concerned about the data limitations and questioned the extent of the discard problem. Since the late 1980s and early 1990s fisheries have been affected by a number of regulations including summer flounder mesh sizes, groundfish mesh sizes, and scup mesh sizes with associated thresholds and trip limits that would have reduced scup discards.

In addition, improvements in electronics allow fishermen to avoid areas where small scup are concentrated and, as such, allow for significant reductions in scup discards.

These analyses indicate scup discards could be reduced based on sea sample data by closing these two areas at various times during the year and making the herring, mackerel, and *Loligo* fisheries exempt. Due to the seasonal variation of scup, the longer time periods and larger areas may result in a restricted area that is more effective in reducing discards. Since scup migration is dependent on water temperature it can vary from one year to the next. In addition, the larger areas may make this alternative more enforceable. Because this alternative regulates larger areas than Alternative 1, it is more likely that areas would be closed to small mesh during the period when small scup would be vulnerable to the gear. Likewise, these areas may be closed when scup are not present. Nonetheless, reduced scup discards will benefit both the scup stock and the fishing industry. As more scup are allowed to reach maturity and spawn, spawning stock biomass and yields will increase.

6.3.4.3 Alternative 3

Alternative 3 (Alternative 7a above) would regulate the use of otter trawls with codend mesh of less than 4.5 inches in the time and areas most likely to have coincident concentrations of squid and scup (Figure 4). These areas are based on information from industry representatives that indicated that scup are located from 50 to 70 fathoms in statistical areas 616 and 622 from January through April and from 30 to 50 fathoms in statistical areas 537, 539, and 613 in November and December. These areas also include the high discard areas identified by Council staff(Tables 22a-e; Figure 2).

The associated reduction in the scup discards for Alternative 3 is 61%(Table 29). If these trips had not occurred in these areas during these times as a result of the GRAs, not only would scup discards been reduced by 61%, but landings of small mesh species would have been reduced as follows: herring - 3%, mackerel - 11%, black sea bass - 42%, whiting - 5%, and *Loligo* - 22% (Table 29). These percentages are reductions associated with the total otter trawl landings of each species in the 1989-2000 sea sample data. It is unlikely that the associated reductions in discards and landings with any GRA would occur, as fishermen redirect effort to other areas and times. In addition, enforcement of regulations could be problematic given the mixed nature of the trawl fishery (i.e., what is a directed trip).

The potential lost revenue for each species was estimated by applying estimated reduction in landings based on sea sample data and 1998 prices in NMFS General Canvass Data to total otter trawl landings in the 1998 VTR data (Table 30). It was necessary to use average prices from NMFS general canvass data when estimating changes in revenues because VTR data do not contain dollar values. These data indicate that the potential for lost revenue is nearly $7.2 million under Alternative 3.

These analyses indicate that scup discards based on sea sample data could be reduced by closing these two areas at various times during the year. Sea sample data indicate that this alternative would allow for a 10% greater reduction in scup discards than Alternative 1 at the expense of a greater decrease in landings of other commercially important species. Decreased revenues could be as much as 295% higher under this alternative compared to the preferred alternative. As such, the benefits associated with this reduction in scup discards may be outweighed by the effect on other fisheries.

As noted by Council staff in previous analyses and Kennelly (1999), closing an areas for a specific time “will not simply remove trawling effort from the region but merely redirect it to other areas that may yield lower scup discards.” As such, reductions of discards and landings inside the closed areas “will be tempered by increased landings and discards outside the closure by the redirected vessels.” As such, the effect of the restricted areas would be reduced as fishermen recoup their landings in areas outside the restricted areas.

In addition, the Council continues to be concerned about the data limitations and questioned the extent of the discard problem. Since the late 1980s and early 1990s fisheries have been affected by a number of regulations including summer flounder mesh sizes, groundfish mesh sizes, and scup mesh sizes with associated thresholds and trip limits that would have reduced scup discards. In addition, improvements in electronics allow fishermen to avoid areas where small scup are concentrated and, as such, allow for significant reductions in scup discards.

In general, sea sample data suggests that this alternative would reduce scup discards with more effect on landings of other commercially important species than Alternative 1. Reduced scup discards will benefit both the scup stock and the fishing industry. As more scup are allowed to reach maturity and spawn, spawning stock biomass and yields will increase.

6.3.4.4 Alternative 4

Alternative 4 (Alternative 6a in the 2000 Specification Package) would regulate the use of trawls with codend mesh less than 4.5 inches in an area intersects statistical areas 537, 539, and 613 from November 1 to December 31, and one that intersects statistical areas 615, 616, 621, and 622 from January 1 to April 30 (Figure 3). These areas include the ten minute squares identified by Council staff as having high scup discards using sea sample data from 1989 - April 1999. The seaward edge of the southern area of this alternative follows the 100-fathom contour to approximate the seasonal location of scup.

The associated reduction in the scup discards for Alternative 4 is 71%(Table 29). If these trips had not occurred in these areas during these times as a result of the GRAs, not only would scup discards been reduced by 71%, but landings of small mesh species would have been reduced as follows: herring - 8%, mackerel - 30%, black sea bass - 50%, whiting - 17%, and *Loligo* - 35% (Table 29). These percentages are reductions associated with the total otter trawl landings of each species in the 1989-2000 sea sample data. It is unlikely that the associated reductions in discards and landings with any GRA would occur, as fishermen redirect effort to other areas and times. In addition, enforcement of regulations could be problematic given the mixed nature fishery (i.e., what is a directed trip).

The potential lost revenue for each species was estimated by applying estimated reduction in landings based on sea sample data and 1998 prices in NMFS General Canvass Data to total otter trawl landings in the 1998 VTR data (Table 30). It was necessary to use average prices from NMFS general canvass data when estimating changes in revenues because VTR data do not contain dollar values. These data indicate that the potential for lost revenue is $13.7 million under Alternative 4.

Sea sample data indicate that this alternative would allow for an 20% greater reduction in scup discards than Alternative 1 at the expense of a greater decrease in landings of other commercially important species. Decreased revenues could be as much as 561% higher under this alternative compared to the preferred alternative. As such, the benefits associated with this reduction in scup discards may be outweighed by the effect on other fisheries. Based on industry input, the two-month and four-month closures combined with larger areas could close areas to small mesh gear when scup were not present, resulting in an impact on other fisheries that do not discard scup.

As noted by Council staff in previous analyses and Kennelly (1999), closing areas for a specific time “will not simply remove trawling effort from the region but merely redirect it to other areas that may yield lower scup discards.” As such, reductions of discards and landings inside the closed areas “will be tempered by increased landings and discards outside the closure by the redirected vessels.” As such, the effect of the restricted areas would be reduced as fishermen recoup their landings in areas outside the restricted areas.

These analyses indicate scup discards could be reduced based on sea sample data by closing these two areas at various times during the year. Due to the seasonal variation of scup, the longer time periods and larger areas may result in a restricted area more effective in reducing discards. Since scup migration is dependent on water temperature it can vary from one year to the next. In addition, the larger areas and longer time periods may make this alternative more enforceable. Because this alternative regulates areas for a longer total period of time than Alternative 1, it is more likely that areas would be closed to small mesh during the period when small scup would be vulnerable to the gear. Likewise, these areas could be closed when scup are not present. Nonetheless, reduced scup discards will benefit both the scup stock and the fishing industry. As more scup are allowed to reach maturity and spawn, spawning stock biomass and yields will increase.

6.3.4.5 Alternative 5

Alternative 5 would not implement GRAs. As such, scup bycatch and landings from small mesh fisheries would not be reduced.

However, the limitations of sea sample data make the effectiveness of GRAs uncertain. In addition, fisheries have changed significantly since the 1980's and early 1990's when the first sea sample data were collected. Mesh and size limits as well as thresholds and trip limits have changed for a number of species including groundfish, summer flounder, scup, black sea bass, and *Loligo*. Fishermen testified that improvements in electronics also allow fishermen to avoid areas where small scup are concentrated and, as such, allow for significant reductions in scup discards.

The Council is currently funding a mesh selectivity study with Manomet to reduce scup discards in small mesh fisheries and preliminary results are promising. Gear modifications are preferable to season/area closures for a number of reasons: 1) they could allow for a greater reduction in scup discards with a smaller reduction in landings of other small mesh species; and 2) they allow small mesh fisheries to continue to fish, while at the same time reducing the discards of scup throughout the region.

6.3.4.6 Summary

A closure to small mesh in the areas detailed in Alternative 1 as compared to Alternative 2, 3, or 4, would have a higher probability of achieving reductions in scup discards while minimizing both the enforcement costs and impact to other small mesh fisheries. Reduced scup discards will benefit both the scup stock and the fishing industry. As more scup are allowed to reach maturity and spawn, spawning stock biomass and yields will increase.

6.4 Impact of Alternative 2 on the Environment (Status Quo)

6.4.1 Impact of Alternative 2 Summer Flounder Measures upon the Environment

This alternative would set the 2001 summer flounder TAL at 18.52 million lb (8.4 million kg), the same TAL that was implemented in 2000. Based on this limit 60 percent would be allocated to the commercial fishery, or 11.11 million lb (5.04 million kg). The recreational fishery would be allocated 40 percent or 7.41 million lb (3.36 million kg) in 2001. Based on stochastic projections, a total coastwide harvest limit of 18.52 million lb (8.4 million kg) would have less than a 50 percent probability of achieving the target biomass of 148.8 million lb (67.5 million kg) by the end of 2001.

These flounder measures would not result in any negative impacts on other fisheries. The commercial fishery for summer flounder is primarily prosecuted with otter trawls and often harvests a mixed fishery, including summer flounder, scup, black sea bass, squid, Atlantic mackerel and silver hake. Given the mixed fishery nature of the summer flounder fishery, incidental catch of other species does occur. Because these measures would not increase effort in the summer flounder fishery, the incidental catch rates of other species should not increase.

A recreational harvest limit of 7.41 million lb (3.36 million kg) in 2001 would be the same harvest limit that was implemented each year beginning in 1997. However, this harvest limit for 2001 could result in a decrease in recreational landings of about 1 million lb (0.45 million kg) from estimated recreational landings for 1999. As such, it is likely that more restrictive limits (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) would be required to prevent anglers from exceeding the recreational harvest limit in 2001. At the present time there are neither behavioral or demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. It may be possible that, given the popularity of summer flounder among anglers as the most frequently sought species in the Mid-Atlantic, and fourth in the North Atlantic in 1999 (MRFSS), a drastic decrease in recreational harvest limit could adversely affect the demand for party/charter boat trips. However, overall party/charter demand for all species is stable, so overall economic impacts are anticipated to be slight.

6.4.2 Impact of Alternative 2 Scup Measures upon the Environment

This alternative would set the coastwide commercial quota at 2.534 million lb (1.15 million kg). The recreational harvest limit would be 1.238 million lb (0.56 million kg). This alternative would maintain the same quota and harvest limits that were implemented in both 1999 and 2000.

This commercial quota represents a 24% decrease in landings relative to the estimate for 1999 commercial landings. As such, the scup measures should not result in any negative impacts on other fisheries. The commercial fishery for scup is primarily prosecuted with otter trawls and pots/traps and often harvests mixed species, including summer flounder, scup, black sea bass, squid, Atlantic mackerel and silver hake. Given the mixed species nature of the scup fishery, incidental catch of other species does occur. Because these measures could decrease effort in the scup fishery, the incidental catch rates of other species should also decrease.

This alternative would implement a recreational harvest limit of 1.238 million lb (0.39 million kg). In 1999, scup recreational landings were estimated at 1.89 million lb (0.86 million kg). As such, this harvest limit for 2001 could result in a decrease in recreational landings of about 0.65 million lb (0.29 million kg) from estimated recreational landings for 1999. As such, it is likely that more restrictive limits (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) would be required to prevent anglers from exceeding the recreational harvest limit in 2001. At the present time there are neither behavioral or demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. It may be possible that a drastic decrease in recreational harvest limit could adversely affect the demand for party/charter boat trips. However, overall party/charter demand for all species is stable, so overall economic impacts are anticipated to be slight.

6.4.3 Impact of Alternative 2 Black Sea Bass Measures upon the Environment

This alternative under Alternative 2 is the same as the black sea bass alternative discussed under Alternative 1 (section 6.1.3 of the EA).

6.5 Impact of Alternative 3 on the Environment (Least Restrictive)

6.5.1 Impact of Alternative 3 Summer Flounder Measures upon the Environment

This alternative would set the coastwide limit at 20.461 million lb (9.281 million kg). Based on this limit, 12.277 million lb (5.568 million kg) would be allocated to the commercial fishery and 8.184 million lb (3.712 million kg) to the recreational fishery in 2001. Based on stochastic projection results, a TAL of 20.461 million lb (9.281 million kg) has less than a 30% chance of achieving the biomass target in 2001.

This alternative, a coastwide landing limit of 20.461 million lb (9.281 million kg) would be approximately 2 million lb (0.91 million kg) higher than the 2000 TAL. As such, this summer flounder TAL may result in negative impacts on other fisheries. The commercial fishery for summer flounder is primarily prosecuted with otter trawls and often harvests a mixed fishery, including summer flounder, scup, black sea bass, squid, Atlantic mackerel and silver hake. Given the mixed fishery nature of the summer flounder fishery, incidental catch of other species does occur. Because these measures would result in an increase in effort for the summer flounder fishery, the incidental catch rates of other species would also increase.

This alternative would increase short-term benefits to the commercial and recreational fisheries due to the increase in landings but has an unacceptably low probability of achieving the target biomass. If the target is exceeded, stock rebuilding will be slowed and the long-term benefits to the fishery and the stock will be reduced. In addition, because this TAL has less than 30% chance of achieving the biomass target in 2001, this limit would violate the provisions of the emergency interim rule. As such, this harvest limit could not be implemented.

6.5.2 Impact of Alternative 3 Scup Measures upon the Environment

This alternative would set the coastwide commercial quota at 5.139 million lb (2.33 million kg). The recreational harvest limit would be 1.967 million lb (0.89 million kg).

This alternative is based on the assumption that the SSB index based on the NEFSC spring trawl survey will be 0.24 in 2001 and an F=1.0 (exploitation rate of 58%) in 1999. Based on this projected biomass level and 1999 F, total landings could be 7.11 million lb in 2001 to achieve the target exploitation rate of 33%. Based on discard estimates used for 2000, the combined TAC would be 9.26 million lb (4.20 million kg).

The commercial quota of 5.139 million lb (2.33 million kg) is derived from the commercial TAC of 7.223 million lb (3.28 million kg) and a discard level of 2.084 million lb (0.95 million kg). As such, this alternative would use the same discard amount in 2001 as used in the 2000 quota calculation.

These scup measures may result in negative impacts to other fisheries.

Under this alternative, this commercial quota would be more than double the quota implemented for 2000 and an increase of 55% relative to the 1999 landings. The commercial fishery for scup is primarily prosecuted with otter trawls and pots/traps and often harvests a mixed fishery, including summer flounder, scup, black sea bass, squid, Atlantic mackerel and silver hake. Given the mixed fishery nature of the scup fishery, incidental catch of other species does occur. Because these measures will result in an increase of effort in the scup flounder fishery, the incidental catch rates of other species may also increase.

The scup recreational harvest limit for 2001 would be 1.967 million lb (0.89 million kg). This is a 4 percent increase over the 1999 recreational landings, and a 0.73 million lb (0.33 million kg) decrease from the 2000 recreational harvest limit. Given that this is an increase over the 1999 landings, it is not expected that this recreational harvest limit would have any significant impact on the recreational fishery.

This TAL, which includes both the commercial quota and recreational harvest limit would increase short-term benefits to fishermen due to an increase in landings. However, the higher TAL assumes a stock abundance that may be unrealistically high resulting in an exploitation rate that exceeds the target for 2000. If the target is exceeded, stock rebuilding will be slowed and the long-term benefits to the fishery and the stock will be reduced.

6.5.3 Impact of Alternative 3 Black Sea Bass Measures upon the Environment

This 2001 TAL is based on the assumption that the SSB value for 2001 will be 0.521, the highest value in the spring bottom trawl survey index (transformed) for the period 1968 to 2000. Based on this SSB value and the assumption that the exploitation rate was 48% in 1998, the TAL in 2001 could be 7.91 million lb (3.59 million kg) to achieve the target exploitation rate in 2001 of 37%. Based on this TAL, the commercial quota would be 3.88 million lb (1.76 million kg) and the recreational harvest limit would be 4.03 million lb (1.83 million kg) for 2001.

These black sea bass measures may result in negative impacts to other fisheries. The commercial fishery for black sea bass is primarily prosecuted with otter trawls and pots/traps and often harvests other species of fish. Given the mixed fishery nature of the black sea bass fishery, incidental catch of other species does occur. Because these measures will result in an increase in effort for the black sea bass fishery, the incidental catch rates of other species may increase.

Recreational landings would be increased by over 2 million lb (0.91 million kg) relative to the 1999 landings estimate if this alternative were implemented. As such, it is not expected that this alternative would have an adverse affect on the recreational fishery for black sea bass.

This higher TAL is based on a SSB value that may be unrealistic for 2001. As such, it will result in an exploitation rate that would likely exceed the target for 2001. If the target is exceeded, stock rebuilding will be slowed and the long-term benefits to the fishery and the stock will be reduced.

6.6 Impact of Alternative 4 on the Environment (Most Restrictive)

6.6.1 Impact of Alternative 4 Summer Flounder Measures upon the Environment

This alternative would set the 2001 summer flounder TAL at 16.57 million lb (7.515 million kg), a decrease of 11 percent from the 2000 TAL. Based on this limit 60 percent would be allocated to the commercial fishery, or 9.94 million lb (4.51 million kg). The recreational fishery would be allocated 40 percent or 6.63 million lb (3.01 million kg) in 2001. Based on stochastic projections, a total coastwide harvest limit of 16.57 million lb (7.515 million kg) would have a 75 percent probability of achieving the target biomass at the end of 2001.

This TAL would not result in any negative impacts on other fisheries. The commercial fishery for summer flounder is primarily prosecuted with otter trawls and often harvests a mixed fishery, including summer flounder, scup, black sea bass, squid, Atlantic mackerel and silver hake. Given the mixed fishery nature of the summer flounder fishery, incidental catch of other species does occur. Because these measures would result in a reduction of effort in the summer flounder fishery, the incidental catch rates of other species should also decrease.

A recreational harvest limit of 6.63 million lb (3.01 million kg) in 2001 would be 0.78 million lb (0.35 million kg) below the recreational harvest limit for 2000 and 0.96 million lb (0.44 million kg) below the 1999 recreational landings. As such, it is likely that more restrictive limits (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) would be required to prevent anglers from exceeding the recreational harvest limit in 2001. At the present time there are neither behavioral or demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. It may be possible that, given the popularity of summer flounder among anglers as the most frequently sought species in the Mid-Atlantic, and fourth in the North Atlantic in 1999 (MRFSS), a drastic decrease in recreational harvest limit could adversely affect the demand for party/charter boat trips. However, overall party/charter demand for all species is stable, so overall economic impacts may be slight.

6.6.2 Impact of Alternative 4 Scup Measures upon the Environment

This alternative would implement a coastwide commercial quota of 3.496 million lb (1.59 million kg). The recreational harvest limit would be 1.504 million lb (0.68 million kg). These limits assume an F=1.0 (exploitation rate of 58%) for 1999 and an average biomass that was at least identical to the 2000 value of 0.17 in 2001 (average of .11 for 1999, .15 for 2000, and the projected .24 for 2001). Based on these assumptions, the exploitation rate could drop to 33% if the landings do not exceed 5.0 million pounds in 2001.

The commercial quota of 3.496 million lb (1.59 million kg) is derived from the commercial TAC of 5.58 million lb (2.53 million kg) and a discard level of 2.084 million lb (1.32 million kg), the same discard amount used in 2000 to derive the commercial quota. The recreational harvest limit is derived from a recreational TAC of 2.037 million lb (0.92 million kg)and a discard estimate of 0.07 million lb (0.03 million kg), the same discard amount used in 2000.

These scup measures may result in negative impacts to other fisheries. Under this alternative, this commercial quota would be about 1 million lb (0.45 million kg) more than the quota implemented for 2000 and an increase of about 5% relative to 1999 landings. The commercial fishery for scup is primarily prosecuted with otter trawls and pots/traps and often harvests a mixed fishery, including summer flounder, scup, black sea bass, squid, Atlantic mackerel and silver hake. Given the mixed fishery nature of the scup fishery, incidental catch of other species does occur. Because these measures would result in a reduction of effort in the scup fishery, the incidental catch rates of other species should also decrease.

Under this alternative, the scup recreational harvest limit for 2001 would be 1.504 million lb (0.68 million kg), a 20% decrease relative to the 1999 recreational landings, and about 0.3 million lb (million kg) more than the recreational harvest limit implemented for 2000. As such, it is likely that more restrictive limits (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) would be required to prevent anglers from exceeding the recreational harvest limit in 2001. At the present time there are neither behavioral or demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. It may be possible that a drastic decrease in recreational harvest limit could adversely affect the demand for party/charter boat trips. However, overall party/charter demand for all species is stable, so overall economic impacts are anticipated to be slight.

6.6.3 Impact of Alternative 4 Black Sea Bass Measures upon the Environment

This 2001 TAL is based on the assumption that the SSB value for 2001 will be 0.2011, the 1999 estimated value for SSB based on the spring bottom trawl survey index (transformed) for the years 1998, 1999, and 2000 (i.e., a three year average). Based on this SSB value and the assumption that the exploitation rate was 48% in 1998, the TAL in 2001 could be 4.08 million lb (1.85 million kg) to achieve the target exploitation rate in 2001 of 37%. Based on this TAL, the commercial quota would be 1.999 million lb (0.91 million kg) and the recreational harvest limit would be 2.081 million lb (0.94 million kg) for 2001.

This TAL is based on an estimate of SSB that may be unrealistic given the current information on the stock. The best available information on stock status indicates that stock size has increased in recent years. In fact, the 3-year average for 1998-2000 is 42% larger than the value for 1997-1999. In addition, the recruitment index for 2000 is the highest in the time series, 1968-2000. If protected, this year class should allow for additional stock rebuilding in 2001 and beyond. As such, a reduction in TAL of this degree would have significant impacts on the commercial fishery while not being necessary to meet the FMP requirements.

These black sea bass measures should not result in any negative impacts on other fisheries. The commercial fishery for black sea bass is primarily prosecuted with otter trawls and pots/traps and often harvests a mixed fishery, including summer flounder, scup, black sea bass, squid, Atlantic mackerel and silver hake. Given the mixed fishery nature of the black sea bass fishery, incidental catch of other species does occur. Because these measures would result in no increase in effort for the black sea bass fishery, the incidental catch rates of other species should not increase.

Recreational landings would be increased by 0.38 million lb (0.17 million kg) relative to the 1999 landings estimate if this alternative were implemented. As such, it is not expected that this alternative would have an adverse affect on the recreational fishery for black sea bass.

6.7 Social Impacts

New quotas alone have relatively limited social impacts. The changes in social structure and cultural fabric that may have occurred under implementation of limited access are already largely in place. The major impact of quota reductions is to profitability. Only where there is a significant reduction in net revenues or in the ability to meet costs and make a living are substantial social impacts likely. With regard to commercial fishermen, the landings and revenue per vessel for the species whose quotas are being lowered in Alternative 1 (the preferred alternative) are such a small portion of overall landings and revenues for the majority of those vessels that impacts are expected to be small (Regulatory Impact Review, section 5.0).

The specifications are not expected to affect in a negative way the overall demand for recreational fishing trips in the North and Mid-Atlantic regions (Regulatory Impact Review, section 5.0). As such, there should not be significant adverse impacts to ports and communities.

A detailed study and characterization of the black sea bass and scup fisheries was conducted by Finlayson and McCay (1994). That study was conducted in order to assess the economic impacts of the draft management FMP for the scup and black sea bass fisheries. This report indicates that black sea bass pot specialization is found from Cape May, NJ through Virginia. The Montauk and Hampton Roads black sea bass pot fishery really only developed beginning in 1992 and 1993. Nonetheless, already in 1994 Hampton Roads, Cape May, and Ocean City pot fishers and Ocean City handline fishermen were heavily dependent on black sea bass. Given the variety of other fishing activities, and in some cases other industries, while individuals may be heavily affected, fishing communities in the region will be minimally impacted. A distinction needs to be made, however, between impacts to individuals and impacts to communities. Where the number of affected individuals in a community is large, the types and degree of impacts are likely to be the same at each level. Where the numbers of individuals are small, however, they may not be.

Further north, Rhode Island pot fishermen and fish trap/pound net fishers are heavily dependent on scup. These fishermen are scattered through communities the length of the Rhode Island coast, however. So the impacts to individuals are unlikely to translate into large community effects.

More recently, McCay and Cieri (2000) reported a small pot fishery in Wildwood, NJ, that mainly targets black sea bass. In Sea Isle City, NJ, there is an offshore pot fishery for lobster, conch, and fish (mostly black sea bass). The value of fish trapped within the pot fishery accounted for 12% of the total value landed by the pot fishery in Sea Isle City in 1998. In Delaware, fishermen (predominantly “bayman” or “watermen”) use a wide array of gear types when working the estuary, bay, and tributaries of the Delaware Bay and River, bordering New Jersey. Pots and traps are an important type of gear for these fishermen. For fish traps, the most important species is black sea bass. A more detailed description of several ports important to fisheries managed by the Mid-Atlantic Council is presented in section 4.0 of the EA.

It is important to mention that when the proposed quotas for summer flounder, scup, and black sea bass for year 2001 are compared to the quotas specified (adjusted quotas) for those species in 2000, the 2001 quotas are 1% lower, 136% higher, and 13% higher, respectively. However, due to projected overages in 2000, the overall adjusted commercial quotas for 2001 will be 2% lower, 112% higher, and 3% higher than the quotas specified for summer flounder, scup, and black sea bass in 2000, respectively (section 3.1 and 4.0, RIR/IRFA). Even thought the overall adjusted quotas for 2001 for all three species are higher than the quotas specified for 2000, the scup quota in Winter I and the black sea bass quota in Quarter II are projected to be lower in 2001 than in 2000 due to projected overages during these periods in 2000. As such, not all vessels that participated in these fisheries may be equally affected. For example, if a vessel only targets and lands black sea bass in Quarters I, III and/or IV, then this vessel would not be affected by the projected overage reductions in Quarter II. While some individual fishermen and their families may find the final adjusted 2001 quotas to have significant impacts, the larger communities and towns in which they live will not.

Vessel affected under the 2001 recommended harvest levels (Alternative 1)

Under Alternative 1, a total of 8 vessels are impacted with revenue reductions greater than 5 percent (section 5.1, RIR/IRFA). Of these, 5 vessels hold some combination of summer flounder, scup or black sea bass commercial permits. The remaining 3 vessels have shown landings of either of those three species in 1999, but do not hold any of the requisite Federal permits in 2000. These vessels may be fishing exclusively in state waters fisheries for those species, and landings are indicated because of reporting requirements for their other Federal permits or they do not hold a Federal permit to participate in these fisheries any longer.

The various permit combinations held by the 5 vessels are described in Table 31. Vessels holding multiple permits would be able to maintain diverse fishing opportunities.

Table 31. Combinations of 2000 FLK, BSB, and SCP permits held, by commercial vessels impacted under Alternative 1.

	All 3	FLK only	BSB only	SCP only	SCP/ BSB	SCP/ FLK	BSB/ FLK	None*
Commercial	1	0	1	1	1	1	0	3

* "None" indicates no summer flounder, scup, or black sea bass permit held, and not necessarily no commercial permits held.

Many of these vessels hold permits in other fisheries (Table 32)– especially bluefish, squid-mackerel-butterfish, surfclam, and ocean quahog. The 5 vessels with Federal permits for summer flounder, scup, and/or black sea bass are h-ported (home port) in Massachusetts, New Jersey, New York, Pennsylvania, and Virginia. It is important to mention that when the proposed quotas for summer flounder, scup, and black sea bass for year 2001 are compared to the quotas specified for those species in 2000, they are 1% lower, 136% higher, and 13% higher, respectively. However, due to projected overages in 2000, the overall adjusted commercial quotas for 2001 will be 2% lower, 112% higher, and 3% higher than the quotas specified for summer flounder, scup, and black sea bass in 2000, respectively. Even thought the overall adjusted quotas for 2001 for most of the species are higher than the quotas specified for 2000, the scup quota in Winter I and the black sea bass quota in Quarter II are projected to be lower in 2001 versus 2000 due to projected overages during these periods in 2000. As such, not all vessels that participated in these fisheries may be equally affected. For example, if a vessel only targets and lands black sea bass in Quarters I, III and/or IV, then this vessel would not be affected by the projected overage reductions in Quarter II. The 8 vessels identified as having revenue reductions greater than 5 percent are likely to be particularly active in these fisheries in these periods. Thus, incurring in revenue losses even thought most of the fishing opportunities in 2001 for all vessels are greater than those in 2000. In fact, the analysis conducted in section 5.1 the RIR/IRFA indicates that most vessel under this alternative will have either no change in revenues or an increase in revenues.

Table 32. Other 2000 permits held by the 5 vessels holding FLK, SCP, and BSB commercial permits impacted under Alternative 1.

	Northeast Region Permit Status	Number of Vessels	Percent of Permitted Vessels
Commercial	Multispecies	2	40
	Surfclam	3	60
	Lobster, trap gear	2	40
	Lobster, non-trap gear	1	20
	Squid/Mackerel/ Butterfish	4	80
	Quahog	3	60
	Bluefish	5	100
Recreational	FLK, SCP, and/or BSB	2	40
	Multispecies	2	40
	Squid/Mackerel/ Butterfish	2	40
	Bluefish	2	40

Under Alternative 1, all impacted vessels were h-ported in separate counties and states (section 5.0, RIR/IRFA). Specific vessel characteristics are not reported by county or port due to data confidentiality. However, the largest impacted vessel was 58 ft in length (43 GRT) and the smallest vessel was 23 ft in length (3 GRT). The average length for all the affected vessels for which permit data was available was 41 ft (25 GRT). Smaller vessels generally have few options for changing their fishing locations or ports of landing.

Effects of the gear restricted areas

Section 6.3.4 of the EA describes and analyzes in detail the preferred and alternative measures addressed in this specification document to reduce scup discards. Additional analyses are presented in section 5.1.3 of the RIR/IRFA. A summary of the effects on exvessel revenues associated with the various alternatives evaluated is presented below.

As indicated in the analysis presented in sections 6.3.4 of the EA and 5.1.3 of the RIR/IRFA, the preferred alternative (GRA Alternative 1) would reduce landings of black sea bass, whiting, and *Loligo*. The reductions in landings would decrease exvessel revenue of participating entities in the amount of $2.43 million. This figure was derived by applying estimated reduction in landings based on sea sampling data (January 1989 thru May 2000, combined) and 1998 prices in NMFS general Canvass Data to total otter trawl landings in 1998 VTR data for all areas combined. It was necessary to use average prices from NMFS general canvass data when estimating changes in revenues because VTR data do not contain dollar values. Assuming that reductions in discards from sea sampling data are representative of reductions in discards in the VTR data, then the estimated loss in revenue associated with this alternative represents an upper limit estimate. GRA Alternatives 2 through 4 would also reduce landings of herring (Alternatives 3 and 4 only), mackerel, black sea bass, whiting, and *Loligo*. The reductions in landings associated with Alternatives 2 to 4 would decrease exvessel revenue of participating entities in the amount of $7.18 million, $5.42 million, and $13.66 million, respectively (Section 6.3.4, EA). As such, Alternative 1 is associated with the smallest reduction in revenues and Alternative 4 is associated with the largest reduction in revenues. However, as it was indicated in sections 6.3.4 of the EA and 5.1.3 of the RIR/IRFA, vessels that participate in these fisheries will likely redirect their effort onto other areas that are open or closed areas when they reopen, recouping any loss in revenues associated with the implementation of this alternative. Therefore, it is expected that social impacts are likely to be limited. However, impacts to profitability are possible if costs due to vessel operation increase.

Given the data limitations identified in section 6.3.4 of the EA and 5.1.3 of the RIR/IRFA it is not possible to provide a traditional threshold analysis of the affected entities similar to that provided under the analysis of the quota alternatives presented in this document. However, a general description of the participating entities is possible. According to VTR data for the 1998 calendar year, it is estimated that 172 vessels would be affected by the proposed GRA alternatives (see section 5.1.3 of the RIR/IRFA for details). As indicated in section 5.1.3 of the RIR/IRFA, this estimate of affected entities is likely to represent an upper limit of affected vessels. The affected entities can be categorized as follows: 12% of the vessels (20 vessels) are between 5 and 50 GRTs, 66% of the vessels (113 vessels) are between 51 and 150 GRTs, and 23% of the vessels (39) are larger than 151 GRTs. It is important to note that of the 20 vessels in the 5 to 50 GRTs range, only one vessel is between 11 and 15 GRTs, 7 vessels are between 23 and 33 GRTs, and the remaining 12 vessels are between 34 and 50 GRTs. Larger vessel often have more options than smaller vessels, due to increased range and more deck space for alternative gear configurations. This can help them to respond to GRAs more efficiently. Finally, it was estimated that approximately 97% (166 vessels) of the vessels affected by GRAs are part of the universe of vessels that were identified as being participants of the summer flounder, scup, and/or black sea bass fisheries evaluated under the quota alternatives. In addition, it was also estimated that only one of the 172 vessels affected by the proposed GRA alternatives will also be impacted by revenue losses of 5 percent or greater due to the proposed 2001 summer flounder, scup, and black sea bass quotas detailed in Alternative 1.

The management measure regarding GRAs will likely have minimal effect on ports and communities as fishermen will likely recoup losses in revenues by redirecting their effort into other areas that are open the closed areas when they reopen (sections 6.3.4 of the EA and 5.1.3 of the RIR/IRFA).

<u>Vessels affected under the most restrictive 2001 alternative (Alternative 4)</u>

The social impact analysis first examined the anticipated impacts under that which was recommended by the Council and Board, and then further examined Alternative 4 - the most restrictive combined alternative. It is presumed that impacts of other alternatives will be less than impacts under this alternative. Under Alternative 4, 214 vessels would be affected with revenue reductions greater than 5 percent (section 5.4, RIR/IRFA). Of these, 140 are readily identified as holders of Federal summer flounder, scup or black sea bass permits. The remaining 74 are vessels that conducted landings in 1999, but did not hold a Federal permit for either of these species in 2000. These vessels are presumed to be fishing exclusively in state waters for the quota species or do not hold a Federal permit to participate in these fisheries any longer. The 140 vessels holding various combinations of FLK, BSB, and SCP permits are described in Table 33. It is most common for vessels to hold black sea bass only permit. Other common combinations include all three permits combined and scup/black sea bass permits, which would allow a vessel to maintain diverse fishing opportunities.

Table 33. Combinations of 2000 FLK, BSB, and SCP permits held, by commercial vessels impacted under Alternative 4.

	All 3	FLK only	BSB only	SCP only	SCP/ BSB	SCP/ FLK	BSB/ FLK	None*
Commercial	38	10	44	8	31	6	3	74

* “None” indicates no summer flounder, scup, or black sea bass permit held, and not necessarily no commercial permits held.

As was demonstrated in the previous analysis, many of these impacted vessels hold permits in other fisheries (Table 34). In particular, most vessels have bluefish, squid-mackerel-butterfish, and multispecies. They do, thus, have access to some alternative fisheries, though at least multispecies and scallop are already under heavy regulation and likely to have increasingly stringent catch limits for the near future.

Table 34. Other 2000 permits held by the 140 vessels holding summer flounder, scup and black sea bass permits impacted under the most restrictive alternative (Alternative 4).

	Northeast Region Permit Status	Number of Vessels	Percent of Permitted Vessels
Commercial	Multispecies	55	40
	Surfclam	38	27
	Scallop	4	3

	Lobster, trap gear	52	37
	Lobster, non-trap gear	29	21
	Squid/Mackerel/ Butterfish	102	73
	Quahog	31	22
	Bluefish	118	84
Recreational	FLK, SCP, and/or BSB	21	15
	Multispecies	54	39
	Lobster	2	1
	Squid/Mackerel/ Butterfish	14	10
	Bluefish	18	13

The 140 vessels with Federal permits for summer flounder, scup and/or black sea bass are h-ported principally in Massachusetts, New York, Virginia, and New Jersey. By p-port of landing, impacted vessels are mainly located in New Jersey, Virginia, Massachusetts, and New York (Table 35).

While the summer flounder quota is allocated to the individual states, vessels are not necessarily constrained to land in their home state. It is useful, therefore, to examine the degree to which vessels from different states make it a practice to land in states other than their home state. Thus, of the four states h-porting the highest number of impacted vessels (Massachusetts, New York, and Virginia), vessels in those states are highly likely to land in their h-port state (96 to 100 percent). Conversely, vessels h-ported in New Jersey land in their state 89 percent. This information is important because impacts will occur both in the community of residence and in the community where the vessel’s catch is landed and sold.

The largest vessels are found in North Carolina and New Jersey (Table 35). Larger vessels often have more options than smaller vessels, due to increased range and more deck space for alternative gear configurations. This can help them to respond to cuts in quota in particular states. They also, however, need larger volumes to remain profitable.

Table 35. Impacted commercial vessels based on 2000 descriptive data from NMFS permit files - No vessel characteristics data are reported for states with fewer than 3 permits.

	DE	MA	MD	NC	NJ	NY	PA	RI	VA	Other
# Permits by H-port state	6	28	8	11	23	26	4	7	25	2
# Permits by P-port state	4	24	12	9	30	23	0	9	25	4
# Permits by Mailing Address state	7	24	10	10	28	22		9	24	6

Avg. Length in Feet by P-port	41	36	48	59	49	35		48	39	
Avg. GRT by P-port	16	17	28	77	43	15		28	23	
% of vessels where h-port state = p-port state	57	100	9	8	89	100	0	56	96	

Impacted vessels are concentrated in New York, Massachusetts, Virginia, and New Jersey (Table 36). Within these states, the most impacted counties are: Massachusetts — Bristol and Suffolk; New Jersey — Cape May and Ocean; New York — Suffolk; and Virginia - Norfolk City and Virginia Beach City. Within these counties, some individual ports have concentrations of vessels; in other cases only one or two vessels may be found per port but the overall number in the county is large. Some individual ports with large numbers of impacted vessels are: Boston, Massachusetts; Cape May, New Jersey; Montauk, New York; Norfolk and Virginia Beach, Virginia. If communities having larger numbers of impacted vessels also have larger total numbers of vessels, the proportion that may be impacted thus may be lower. This effect may mitigate the impacts on the community as a whole. Lastly, even though not categorized as one of the states with large concentration of vessels, Maryland has eight impacted vessels concentrated in the ports of Ocean City/West Ocean City.

Table 36. Distribution of all impacted vessels (holding permits for FLK, SCP, and BSB) by state, county and h-port, from 2000 NMFS permit files - h-ports with fewer than three vessels are not reported - only county-level data supplied; counties with fewer than three vessels are not reported.

State	County	Home port	Number of Vessels
Delaware	Sussex[a]		4
Massachusetts	Barnstable[a]		4
	Bristol	New Bedford	4
		Fairhaven	3
		Other[a]	3
	Plymouth[a]		4
	Suffolk	Boston	7

Maryland	Worcester	Ocean City/ West Ocean City	8
North Carolina	Dare	Wanchese	5
		Other	1
New Jersey	Atlantic	Atlantic City	3
		Other	1
	Cape May	Cape May	8
		Sea Isle City	3
	Ocean	Barnegat Light	3
		Point Pleasant	3
New York	Kings[a]		4
	Nassau		3
	Suffolk	Montauk	13
		New York	4
		Other	2
Virginia	Accomack	Chincoteague	4
	Norfolk City	Norfolk	7
	Virginia Beach City	Virginia Beach	7
		Other	1

[a]All located in different h-ports.

Effects of the Research Set-Aside Quota

The Council is in the process of establishing a research set-aside program that will include the summer flounder, scup, and black sea bass fisheries. Its purpose is to support research and the collection of additional data that may be used to improve fisheries management. Collaborative efforts between the public, research institutions, and the government will be subsidized by a percentage set-aside from the total allowable landings (TAL) of selected species under management by the Mid-Atlantic Council.

At the August 2000 Council meeting, the Council voted to set-aside 2% of the Total Allowable Landings (TAL) of summer flounder, scup, and black sea bass for 2001 pending approval of the enabling framework adjustment. If projects making use of these set-aside amounts are submitted and approved prior to the end of 2000, then the appropriate set-aside amounts will be withheld from the following year's quota for each species. If projects are not approved that make use of a particular species' set-aside prior to year's end, then the set-aside will be released back to the overall TAL and made available to commercial and recreational fishermen.

To use the summer flounder fishery as an example, if the initial summer flounder TAL for 2001 is 17.912 million lb (10.748 million lb commercial quota; 7.165 million lb recreational harvest limit), then approximately 358,240 lb would be set-aside for research purposes. Therefore, the final TAL allocation (after a set-aside has been deducted) would be approximately 17.554 million lb (10.532 million lb commercial quota; 7.022 million lb recreational harvest limit). If in a given year no research projects were submitted to the Council by a certain time, the set-aside for that year would be added back to the overall TAL and made available to commercial and recreational fishermen.

In this specification package four sets of quota alternatives were evaluated. In this section impacts of the recommended alternative (Alternative 1) and the most restrictive alternative (Alternative 4) were analyzed. It is assumed that impacts of other alternatives will be less than impacts under the most restrictive alternative and above the recommended or preferred alternative. The potential range of impacts from the implementation of the set-aside program can be evaluated in similar fashion. Reducing the 2% set-aside form the overall TAL for summer flounder and black sea bass and from the TAC for scup would set the final amount of commercial quotas and recreational harvest limits somewhere in between the quotas and recreational harvest limits discussed in Alternatives 1 (Preferred Alternative) and 4 (Most restrictive Alternative). As such, it is expected that the range of results will be within the discussions presented for the preferred and most restrictive alternatives.

7.0 Essential Fish Habitat Assessment

Summer flounder, scup and black sea bass have Essential Fish Habitat (EFH) designated in many of the same bottom habitats that have been designated as EFH for most of the MAFMC managed species of surfclams/ocean quahogs, squid/mackerel/butterfish, bluefish, and dogfish, as well as the NEFMC species of groundfish within the Northeast Multispecies FMP, including: Atlantic cod, haddock, monkfish, ocean pout, American plaice, pollock, redfish, white hake, windowpane flounder, winter flounder, witch flounder, yellowtail flounder, Atlantic halibut and Atlantic sea scallops. Numerous species within the NMFS Highly Migratory Species Division and the SAFMC have EFH identified in areas also identified as EFH for summer flounder, scup and black sea bass. Broadly, EFH is designated as the pelagic and demersal waters along the continental shelf from off southern New England through the south Atlantic to Cape Canaveral, Florida. Specifically, the definitions as approved in Amendment 12 (MAFMC 1999) are:

Identification and Description

Summer flounder

Eggs: 1) North of Cape Hatteras, EFH is the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of the all the ranked ten-minute squares for the area where summer flounder eggs are collected in the MARMAP survey. 2) South of Cape Hatteras, EFH is the waters over the Continental Shelf (from the coast out to the limits of the EEZ), from Cape Hatteras, North Carolina to Cape Canaveral, Florida, to depths of 360 ft. In general, summer flounder eggs are found between October and May, being most abundant between Cape Cod and Cape Hatteras, with the heaviest concentrations within 9 miles of shore off New Jersey and New York. Eggs are most commonly collected at depths of 30 to 360 ft.

Larvae: 1) North of Cape Hatteras, EFH is the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of all the ranked ten-minute squares for the area where summer flounder larvae are collected in the MARMAP survey. 2) South of Cape Hatteras, EFH is the nearshore waters of the Continental Shelf (from the coast out to the limits of the EEZ), from Cape Hatteras, North Carolina to Cape Canaveral Florida, in nearshore waters (out to 50 miles from shore. 3) Inshore, EFH is all the estuaries where summer flounder were identified as being present (rare, common, abundant, or highly abundant) in the ELMR database, in the "mixing" (defined in ELMR as 0.5 to 25.0 ppt) and "seawater" (defined in ELMR as greater than 25 ppt) salinity zones. In general, summer flounder larvae are most abundant nearshore (12-50 miles from shore) at depths between 30 to 230 ft. They are most frequently found in the northern part of the Mid-Atlantic Bight from September to February, and in the southern part from November to May.

Juveniles: 1) North of Cape Hatteras, EFH is the demersal waters over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of all the ranked ten-minute squares for the area where juvenile summer flounder are collected in the NEFSC trawl survey. 2) South of Cape Hatteras, EFH is the waters over the Continental Shelf (from the coast out to the limits of the EEZ) to depths of 500 ft, from Cape Hatteras, North Carolina to Cape Canaveral, Florida. 3) Inshore, EFH is all of the estuaries where summer flounder were identified as being present (rare, common, abundant, or highly abundant) in the ELMR database for the "mixing" and "seawater" salinity zones. In general, juveniles use several estuarine habitats as nursery areas, including salt marsh creeks, seagrass beds, mudflats, and open bay areas in water temperatures greater than 37 ^{o}F and salinities from 10 to 30 ppt range.

Adults: 1) North of Cape Hatteras, EFH is the demersal waters over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of all the ranked ten-minute squares for the area where adult summer flounder are collected in the NEFSC trawl survey. 2) South of Cape Hatteras, EFH is the waters over the Continental Shelf (from the coast out to the limits of the EEZ) to depths of 500 ft, from Cape Hatteras, North Carolina to Cape Canaveral, Florida. 3) Inshore, EFH is the estuaries where summer flounder were identified as being common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. Generally summer flounder inhabit shallow coastal and estuarine waters during warmer months and move offshore on the outer Continental Shelf at depths of 500 ft in colder months.

Scup

Eggs: EFH is estuaries where scup eggs were identified as common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. In general scup eggs are found from May through August in southern New England to coastal Virginia, in waters between 55 and 73 ^{o}F and in salinities greater than 15 ppt.

Larvae: EFH is estuaries where scup were identified as common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. In general scup larvae are most abundant nearshore from May through September, in waters between 55 and 73 ^{o}F and in salinities greater than 15 ppt.

Juveniles: 1) Offshore, EFH is the demersal waters over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of all the ranked ten-minute squares of the area where juvenile scup are collected in the NEFSC trawl survey. 2) Inshore, EFH is the estuaries where scup are identified as being common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. Juvenile scup, in general during the summer and spring are found in estuaries and bays between Virginia and Massachusetts, in association with various sands, mud, mussel and eelgrass bed type substrates and in water temperatures greater than 45 ^{o}F and salinities greater than 15 ppt.

Adults: 1) Offshore, EFH is the demersal waters over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of all the ranked ten-minute squares of the area where adult scup are collected in the NEFSC trawl survey. 2) Inshore, EFH is the estuaries where scup were identified as being common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. Generally, wintering adults (November through April) are usually offshore, south of New York to North Carolina, in waters above 45 ^{o}F.

Black sea bass

Eggs: EFH is the estuaries where black sea bass eggs were identified in the ELMR database as common, abundant, or highly abundant for the "mixing" and "seawater" salinity zones. Generally, black sea bass eggs are found from May through October on the Continental Shelf, from southern New England to North Carolina.

Larvae: 1) North of Cape Hatteras, EFH is the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of all ranked ten-minute squares of the area where black sea bass larvae are collected in the MARMAP survey. 2) EFH also is estuaries where black sea bass were identified as common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. Generally, the habitats for the transforming (to juveniles) larvae are near the coastal areas and into marine parts of estuaries between Virginia and New York. When larvae become demersal, they are generally found on structured inshore habitat such as sponge beds.

Juveniles: 1) Offshore, EFH is the demersal waters over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of all the ranked squares of the area where juvenile black sea bass are collected in the NEFSC trawl survey. 2) Inshore, EFH is the estuaries where black sea bass are identified as being common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. Juveniles are found in the estuaries in the summer and spring. Generally, juvenile black sea bass are found in waters warmer than 43 ^{o}F with salinities greater than 18 pp and coastal areas between Virginia and Massachusetts, but winter offshore from New Jersey and south. Juvenile black sea bass are usually found in association with rough bottom, shellfish and eelgrass beds, man-made structures in sandy-shelly areas; offshore clam beds and shell patches may also be used during the wintering.

Adults: 1) Offshore, EFH is the demersal waters over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of all the ranked ten-minute squares of the area where adult black sea bass are collected in the NEFSC trawl survey. 2) Inshore, EFH is the estuaries where adult black sea bass were identified as being common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. Black sea bass are generally found in estuaries from May through October. Wintering adults (November through April) are generally offshore, south of New York to North Carolina. Temperatures above 43 ^{o}F seem to be the minimum requirements. Structured habitats (natural and man-made), sand and shell are usually the substrate preference.

Fishing impacts to summer flounder, scup, and black sea bass EFH

Auster and Langton (1998) state that, “One of the most difficult aspects of estimating the extent of fishing impacts on habitat is the lack of high resolution data on the distribution of fishing effort.” Currently, there is no way to fully gauge the present intensity and severity of mobile gear in contact with the bottom (bottom otter trawl, clam dredge, scallop dredge, and dredge-other), therefore these gears are characterized as having a “potential adverse impact” on summer flounder, scup, and black sea bass EFH (MAFMC 1999).

The types of habitat in which these gears are fishing and with what kind of intensity is unquantified in the Mid-Atlantic. Auster and Langton (1998) cite studies that indicate that mobile clam dredges, traps and pots being drug and dropped, and bottom otter trawls coming into contact with the bottom have impacted structural habitat, community structure, and ecosystem process. They also cite several conceptual models to determine the impacts of gears on different types of habitat. However, without high resolution data on fishing effort and the habitat complexity that is being fished, it is currently difficult to predict impact of these gears.

Summer flounder, scup, and black sea bass are demersal species that have associations with substrates, SAV, and structured habitat (Packer and Griesbach 1998, Steimle *et al.* 199a-b). Specific habitats that are designated as EFH and are important to these species are as follows:

Summer Flounder: pelagic waters, demersal waters, saltmarsh creeks, sea grass beds, mudflats, open bay areas

Scup: demersal waters, sands, mud, mussel and eelgrass beds

Black Sea Bass: pelagic waters, structured habitat (e.g. sponge beds), rough bottom shellfish, sand and shell

Both mobile and stationary gear are characterized as having a potential impact on summer flounder, scup, and black sea bass EFH. Auster and Langton (1998) cited studies that indicate impacts mobile gear on the structural components and community structure in both long- and short- terms, of these habitat types. Stationary gears such as pots, traps, and gill nets can continue to fish once they are lost, i.e., ghost gear. The impact of ghost gear is also poorly quantified, therefore these gears are also characterized as having a "potential adverse impact" on summer flounder, scup, and black sea bass EFH (MAFMC 1999).

Options for Managing Adverse Effects from Fishing

According to section 600.815 (a)(3) Councils must act to prevent, mitigate, or minimize adverse effects from fishing, to the extent practicable, if there is evidence that a fishing practice is having an identifiable adverse effect on EFH.

Section 600.815 (a)(4) states that, fishery management options may include, but are not limited to: (i) fishing equipment restrictions, (ii) time/area closures, and (iii) harvest limits.

The Council designated both mobile bottom gear and stationary gear as having a potential adverse impact (MAFMC 1999) on summer flounder, scup, and black sea bass EFH. The Council has implemented many regulations in the past that have indirectly acted to reduce impacts to habitat. Since numerous regulations are already in place, the Council is not presently planning on implementing any additional management measures associated with these proposed quotas. The Council will implement new management measure to reduce habitat impacts, if data become available that indicate that current measures are inadequate to reduce impact to habitat. The Council can propose management measures through the framework procedures described in Section 3.1.1.1 of Amendment 12 at any time and must review all of their EFH at least every 5 years.

Currently, there are 32 stocks managed by NEFMC, MAFMC, and SAFMC in the Atlantic Ocean that are designated as overfished (NMFS 1998). All of NMFS's HMS species with the exception of the group "pelagic sharks" are overfished. These designations result in a general reduction of fishing effort from Maine through Florida in order to rebuild these stocks. This reduction of effort translates into less of an impact on habitat throughout the western Atlantic coast.

In addition to a general reduction of fishing effort there are other mechanisms in place to reduce the impact of bottom otter trawls and other types of bottom mobile gear on habitat. The summer flounder, scup, and black sea bass FMP includes a mechanism to implement Special Management Zones (SMZ) which allows the restriction of certain types of fishing gear that are not compatible with artificial reefs or fish attraction devices permitted by the Army Corps of Engineers. In addition, the Council is proposing GRAs for scup in the year 2001 to reduce scup discards. The tilefish FMP proposes to close an area to trawling that intersects with EFH for summer flounder, scup, and black sea bass beyond 300 feet. The preferred alternative would prohibit directed tilefish fishing with bottom tending mobile gear in statistical areas 616 and 537 between 300 and 850 feet. In addition, any other gear in those areas must be modified to reduce bottom habitat impacts.

Dredges accounted for 79% of the MAFMC landings from Maine through North Carolina in 1997. The surfclam and ocean quahog fisheries are managed under an Individual Transferable Quota (ITQ) system. ITQ's instill a sense of ownership of the resource. Fishermen in these fisheries understand that they are not time driven to deplete the resource and that by protecting the resource and the surrounding habitat they are protecting their long term livelihoods. In addition to the indirect benefits of ITQs, the numbers of surfclam and ocean quahog fishermen have also decreased significantly with the implementation of ITQs. In 1979 there were 162 permitted surf clamming vessels, by 1995 that number had fallen to 37. The number of ocean quahog vessels decreased from 59 in 1979 to 36 in 1995. Many vessels fish for both surfclams and ocean quahogs and in fact the total number of clam dredge vessels that fished in 1998 was only 47.

Some discussions of various gear impacts on bottom in the Mid-Atlantic region has been presented to the Council over the past several years. It is because of this anecdotal information that the Council is considering that all mobile gear coming into contact with the seafloor within summer flounder, scup, and black sea bass EFH is characterized as having a potential impact on their EFH (MAFMC 1999). However, the effort of these bottom tending gears is largely unquantified from data that are presently collected by the NEFSC as summarized by Auster and Langton (1998). Dr. Joe DeAlteris (University of Rhode Island) is presently attempting to synthesize the historical (1983 to 1993) fishing effort data by area and hopes to have this project complete in the next two years. When specific gear-effort data by area are available the Council will review them and consider whether additional specific management measures will be useful.

The requirement concerning gear impact management is to the extent practicable given the evidence that the fishing practice is having an identifiable adverse effect. The Council feels strongly that very little evidence was provided in the synthesis document of Auster and Langton (1998) relative to identifiable adverse effects to EFH in FMPs managed by this Council at this time. Fishing gear impacts along with the description and identification of EFH are frameworked management measures which can easily and readily be changed as more information becomes available (MAFMC 1999). The Council feels it would be premature, given the lack of identifiable adverse effects of gear impacts to these managed species EFH, to propose gear management measures at this time. The Council will consider implementing management measures to protect EFH if and when adverse gear impacts are identified.

In summary, the proposed adjusted quotas for summer flounder and black sea bass, for 2001 are almost identical to those specified for 2000 and therefore should cause no change in any habitat impacts. The scup quota for 2001 is about 112 percent higher than the quota specified for 2000. As such, it is possible that increased effort associated with the scup quota may change habitat impacts. However, these changes are expected to be minimal. The proposed GRAs for scup include areas of EFH for summer flounder, scup, and black sea bass. These regulations could benefit summer flounder, scup, and black sea bass EFH by reducing fishing effort in these habitats, however the GRAs most likely shift fishing effort to other areas of EFH and result in no overall change in impacts. Therefore, it has been determined that this action will have no more than minimal adverse impact upon the listed EFH.

8.0 List of agencies and persons consulted in formulating the action

The summer flounder, scup and black sea bass specifications were submitted to the National Marine Fisheries Service (NMFS) by the Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission.

9.0 List of preparers of the environmental assessment

This environmental assessment was prepared by the Mid-Atlantic Council and the Northeast Regional Office of NMFS, and is based, in part, on information provided by the Northeast Fisheries Science Center (Center).

10.0 Finding of no significant environmental impact

Having reviewed the environmental assessment on the specifications for the 2001 Summer Flounder fishery, and the available information relating to the action, I have determined that there will be no significant adverse environmental impact resulting from the action and that preparation of an environmental impact statement on the action is not required by Section 102(2)(c) of the National Environmental Policy Act or its implementing regulations.

Assistant Administrator for
Fisheries, NOAA

Date

OTHER APPLICABLE LAWS

1.0 PAPERWORK REDUCTION ACT OF 1995

The Paperwork Reduction Act (PRA) concerns the collection of information. The intent of the PRA is to minimize the Federal paperwork burden for individuals, small business, state and local governments, and other persons as well as to maximize the usefulness of information collected by the Federal government.

This action contains a collection-of-information requirement subject to the Paperwork Reduction Act (PRA). The request for an experimental fishing exemption has been approved by OMB under Control Number 0648-0309. Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. There are no changes to the existing reporting requirements previously approved under OMB Control Nos. 0648-0202 (Vessel permits), 0648-0229 (Dealer reporting) and 0648-0212 (Vessel logbooks).

As stated above, this action does not implement new reporting or record keeping measures. There are no changes to existing reporting requirements. Currently, all summer flounder, scup and/or black sea bass Federally-permitted dealers must submit weekly reports of fish purchases. The owner or operator of any vessel issued a moratorium vessel permit for summer flounder, scup, black sea bass, must maintain on board the vessel, and submit, an accurate daily fishing log report for all fishing trips, regardless of species fished for or taken. The owner of any party or charter boat issued a summer flounder or scup permit other than a moratorium permit and carrying passengers for hire shall maintain on board the vessel, and submit, an accurate daily fishing log report for each charter or party fishing trip that lands summer flounder or scup, unless such a vessel is also issued another permit that requires regular reporting, in which case a fishing log report is required for each trip regardless of species retained. These reporting requirements are critical for monitoring the harvest level of these fisheries.

2.0 RELEVANT FEDERAL RULES

This action will not duplicate, overlap or conflict with any other Federal rules.

REGULATORY IMPACT REVIEW, AND FINAL REGULATORY FLEXIBILITY ANALYSIS

1.0 INTRODUCTION

The National Marine Fisheries Service (NMFS) requires the preparation of a Regulatory Impact Review (RIR) for all regulatory actions that either implement a new Fishery Management Plan (FMP) or significantly amend an existing plan. This RIR is part of the process of preparing and reviewing FMPs and provides a comprehensive review of the changes in net economic benefits to society associated with proposed regulatory actions. This analysis also provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problems. The purpose of this analysis is to ensure that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way. This RIR addresses many items in the regulatory philosophy and principles of Executive Order (E.O.) 12866.

Also included is an Final Regulatory Flexibility Analysis (FRFA). This analysis is being undertaken in support of a complete analysis for the 2001 specifications for fishing for summer flounder, scup and black sea bass. A complete description of the need for, and objectives of, this rule can be found in the Introduction of the EA. In addition, a description of ports and communities, an analysis of permit data, and a description of the fisheries are presented in sections 4.1, 4.2, and 5.0 of the EA, respectively. The legal basis of this rule can be found in section 1.0 of the EA.

2.0 EVALUATION OF E.O. 12866 SIGNIFICANCE

The economic benefits of the summer flounder, scup and black sea bass FMP have been evaluated periodically as amendments to the FMP have been implemented to either change the effort reduction schedule or as new species have been added. These analyses have been conducted at the time a major amendment is developed and interim actions (framework adjustments or quota specifications) may be presumed to leave the conclusions reached in the initial benefit-cost analyses unchanged provided the original conservation and economic objectives of the plan are being met.

The economic effects of the black sea bass effort reductions were evaluated at the time black sea bass was added to the FMP through Amendment 9. The economic analysis presented at that time was largely qualitative in nature. Given the fact that the black sea bass quota was implemented for the first time in 1998 it is too early to determine whether or not the black sea bass objectives are being met. Nevertheless, assessment of the black sea bass quota indicates that overall landings have been within the quota specifications in 1998 and 1999. However, preliminary assessment of the 2000 fishing season indicate that 2000 landings will be about 25 percent above the overall quota (assuming that overages do not occur in the fourth quarter and that the entire quota is taken during the fourth quarter; See section 3.1 below). This is the first time since the black sea bass quota was implemented that overall landings are projected to be above the established commercial quota. Since quota adjustments will be made to the 2001 quota in order to account for the overages in 2000, there is a reasonable expectation that the management objectives will be met and the expected economic benefits will not be compromised.

The economic effects of the scup effort reductions were evaluated at the time scup was added to the FMP through Amendment 8. The expected economic benefits and costs for the scup effort reduction were also described in qualitative terms. Similar to black sea bass, the coastwide scup quota has only been implemented from 1997 to 2000. Preliminary assessment of the 2000 fishing season indicate that 2000 landings will be approximately 27 percent over the quota specification. Thus, it is too early to determine whether or not the management objectives for scup are being met. At this time, the plan objectives appear to be met so there is a reasonable expectation that the expected economic benefits of managing scup will not be compromised. However, overages must be brought in control in order to meet the benefits of the proposed management objectives. Attainment of the management objectives may require more rigorous actions to reduce effort than what has been adopted to date.

The economic benefits of the summer flounder effort reduction were last formally analyzed in 1995 for Amendment 7 to the Summer Flounder FMP. Amendment 7 revised the effort reduction schedule established in Amendment 2 to the Summer Flounder FMP. The economic analysis was limited to an estimate of gross revenues from the sale of summer flounder projected over a six-year period (1995-2000) at the selected effort reduction schedule. The estimated present value of gross revenues were $77 million at a discount rate of 7 percent. This estimate was predicated on known stock conditions at the time and an effort reduction schedule that would reduce fishing mortality to the target rate of F=0.24 by 1996 and continuing through 2000.

Summer flounder fishing mortality rate declined from 0.89 in 1995 to 0.52 in 1998 but is still in excess of the target and threshold F of 0.26. Note that the latter rate is approximately equal to the effort reduction targets established under Amendment 7. Given these estimates of fishing mortality rates, the 2000 quota specifications are below that projected in Amendment 7 and if the fishing mortality rates continue to remain above the target rate, quota specifications will have to continue to lie below projected quotas in Amendment 7. This means that current and future benefit streams from summer flounder may differ from earlier assessments upon which the present effort reduction schedule was based. The essence of the management plan remains in place and the conservation targets have not changed so the opportunity to achieve the intended conservation and economic objectives remain intact. In addition to this, preliminary assessment of the 1999 fishing season indicate that 1999 landings will be approximately 0.5 percent above the 1999 quota.

In addition to the potential deviation from projected benefits, the state-by-state quota system has introduced a number of unanticipated costs associated with constraining the derby effects of the quota system. These costs are largely comprised of a variety of transactions costs associated with administering, monitoring and enforcing openings and closings, trip limits and other measures that have been implemented in an attempt to spread out available quota throughout the year.

For each scenario potential impacts on several areas of interest are discussed. The objective of this analysis is to describe clearly and concisely the economic effects of the various alternatives. The types of effects that should be considered include the following changes in landings, prices, consumer and producer benefits, harvesting costs, enforcement costs, and distributional effects. Due to the lack of an empirical model for these fisheries and knowledge of elasticities of supply and demand, a qualitative approach to the economic assessment was adopted. Nevertheless, quantitative measures are provided whenever possible.

A more detailed description of the economic concepts involved can be found in "Guidelines for Economic Analysis of Fishery Management Actions" (USDC 2000), as only a brief summary of key concepts will be presented here.

Benefit-cost analysis is conducted to evaluate the net social benefit arising from changes in consumer and producer surpluses that are expected to occur upon implementation of a regulatory action. Total Consumer Surplus (CS) is the difference between the amounts consumers are willing to pay for products or services and the amounts they actually pay. Thus CS represents net benefits to consumers. When the information necessary to plot the supply and demand curves for a particular commodity is available, consumer surplus is represented by the area that is below the demand curve and above the market clearing price where the two curves intersect. Since an empirical model describing the elasticities of supply and demand for these species is not available, it was assumed that the price for these species was determine by the market clearance price market or the interaction of the supply and demand curves. These prices were the base prices used to determine potential changes in prices due to changes in landings.

Net benefit to producers is producer surplus (PS). Total PS is the difference between the amounts producers actually receive for providing goods and services and the economic cost producers bear to do so. Graphically, it is the area above the supply curve and below the market clearing price where supply and demand intersect. Economic costs are measured by the opportunity cost of all resources including the raw materials, physical and human capital used in the process of supplying these goods and services to consumers.

One of the more visible costs to society of fisheries regulation is that of enforcement. From a budgetary perspective, the cost of enforcement is equivalent to the total public expenditure devoted to enforcement. However, the economic cost of enforcement is measured by the opportunity cost of devoting resources to enforcement vis à vis some other public or private use and/or by the opportunity cost of diverting enforcement resources from one fishery to another.

<u>Alternative 1 (Preferred Alternative)</u>

For purposes of this analysis, the status quo and all other alternatives will be evaluated under the assumption that the primary measure for achieving the conservation objectives will be through changes in quota levels. This alternative as well as the other alternatives will be evaluated against a base line. The base line condition provides the standard against which all other alternative actions are compared. In this analysis, the base line condition is the final adjusted quotas for 2000. This comparison will allow for the evaluation of the potential fishing opportunities associated with each alternative versus the fishing opportunities that were in place in 2000. Aggregate changes in fishing opportunities in 2001 (adjusted quotas) versus quotas specified for 2000 are shown in Table 37. The information presented in Table 37 was used to determine potential changes in landings associated with the proposed quota levels associated with each of the alternatives evaluated in this analysis.

Landings

Under the preferred alternative aggregate landings for summer flounder, scup, and black sea bass are expected to be 1% lower, 112% higher, and 3% higher in 2001 when compared to 2000 adjusted quota, respectively.

Prices

Given the likelihood that this alternative will result in small changes in summer flounder and black sea bass landings, it is assumed that there will not be a change in the price for these species. However, it is possible that giving the substantial increase in scup landings, price for this species may decrease holding all other factors equal.

Consumer Surplus

Assuming summer flounder and black sea bass prices will not be affected under the scenario constructed above, there will be no corresponding change in consumer surplus associated with these fisheries. However, given the potential decrease in scup prices, consumer surplus associated with this fishery may increase.

Harvest Costs

No changes in harvest costs are identified under this alternative.

Producer surplus

Assuming summer flounder and black sea bass prices will not be affected under the scenario constructed above, there will be no corresponding change in producer surplus associated with these fisheries. However, given the potential decrease in scup prices, producer surplus associated with this fishery may decrease.

Enforcement Costs

This alternative does not introduce additional enforcement measures. As such, no changes in enforcement costs are identified under this alternative.

Distributive Effects

There are no changes to the quota allocation process for any of the species. As such, no distributional effects are identified under this alterative.

Table 37. Percentage changes associated with allowable commercial landings for various alternatives in 2001 (adjusted for overages) relative to the quotas specified for 2000.

	Total Reductions Including Overages			
Geographic Area or Time Period	**Quota Alternative 1 (Preferred)**	**Quota Alternative 2 (Status Quo)**	**Quota Alternative 3 (Least Restrictive)**	**Quota Alternative 4 (Most Restrictive)**
Summer Flounder				
States other than Maine	-1.25%	+2.09%	+12.79%	-8.67%
Maine	-22.17%	-17.80%	-3.79%	-31.88%
Aggregate Change	-1.26%	+2.08%	+12.79%	-8.68%
Scup				
Winter 1	+52.86%	-22.74%	+80.04%	+15.22%

Summer	+141.93%	+24.94%	+183.98%	+83.68%
Winter 2	+563.03%	+277.58%	+665.66%	+420.91%
Aggregate Change	+111.86%	+10.38%	+148.34%	+61.33%
Black Sea Bass				
Quarter 1	0%	0%	+28.14%	-33.91%
Quarter 2	-11.21%	-11.21%	+22.50%	-51.83%
Quarter 3	+48.45%	+48.45%	+96.01%	-8.84%
Quarter 4	+10.70%	+10.70%	+41.86%	-26.83%
Aggregate Change	+3.07%	+3.07%	+34.97%	-35.36%

<u>Alternative 2, Status Quo or "No Action" Alternative</u>

The status quo or "no action" alternative refers to what most likely will occur in the absence of implementing the proposed regulation. The implementation of this action means that the current 2000 rules will apply to 2001. That is, the 2001 quota levels for each fishery would be identical to the quotas established in 2000. Then projected overages in 2000 would have to be deducted from the 2001 quota to determine the specified quota for 2001. The same assumptions regarding landings relative to the base line and changes in fishing opportunities discussed under Alternative 1 also apply here. The "no action" alternative does not necessarily mean a continuation of the present, but instead is the most likely scenario for the future in the absence of other alternatives.

Landings

Under the status quo or "no action" Alternative aggregate landings for summer flounder, scup, and black sea bass are expected to be 2%, 10%, and 3% higher in 2001 when compared to the 2000 adjusted quota, respectively.

Prices

Given the likelihood that this alternative will result in small changes in summer flounder and black sea bass landings, it is assumed that there will not be a change in the price for these species. However, it is possible that giving the increase in scup landings, price for this species may decrease holding all other factors equal.

Consumer Surplus

Assuming summer flounder and black sea bass prices will not be affected under the scenario constructed above, there will be no corresponding change in consumer surplus. However, given the potential decrease in scup prices, consumer surplus associated with this fishery may increase.

Harvest Costs

No changes in harvest costs are identified under this alternative.

Producer surplus

Assuming summer flounder and black sea bass prices will not be affected under the scenario constructed above, there will be no corresponding change in producer surplus. However, given the potential decrease in scup prices, producer surplus associated with this fishery may decrease.

Enforcement Costs

This alternative does not introduce additional enforcement measures. As such, no changes in enforcement costs are identified under this alternative.

Distributive Effects

There are no changes to the quota allocation process for any of the species. As such, no distributional effects are identified under this alterative.

<u>Alternative 3 (Least Restrictive)</u>

The same assumptions regarding landings relative to the base line and changes in fishing opportunities discussed under Alternative 1 also apply here. This alternative evaluates the least restrictive quotas among all quotas evaluated.

Landings

Under Alternative 3 aggregate landings for summer flounder, scup, and black sea bass are expected to be 13%, 148%, and 35% higher in 2001 when compared to 2000 adjusted quota, respectively.

Prices

Given the likelihood that this alternative will result in substantial increase in the landings of all three species, it would be anticipated that there will be a decrease in the price for these species holding all other factors constant.

Consumer Surplus

Given the potential decrease in the price for these species under this scenario, it is expected that consumer surplus associated with these fisheries may decrease.

Harvest Costs

No changes in harvest costs are identified under this alternative.

Producer surplus

Given the potential decrease in the price for these species under this scenario, it is expected that producer surplus associated with these fisheries may decrease.

Enforcement Costs

This alternative does not introduce additional enforcement measures. As such, no changes in enforcement costs are identified under this alternative.

Distributive Effects

There are no changes to the quota allocation process for any of the species. As such, no distributional effects are identified under this alterative.

<u>Alternative 4 (Most Restrictive)</u>

The same assumptions regarding landings relative to the base line and changes in fishing opportunities discussed under Alternative 1 also apply here. This alternative evaluates the overall quotas that are most restrictive among all quotas evaluated (except for scup, the most restrictive scup quota is evaluated under the preferred Alternative 1).

Landings

Under Alternative 4 aggregate landings for summer flounder, scup, and black sea bass are expected to be 9% lower, 61% higher, and 35% lower in 2001 when compared to the 2000 adjusted quota, respectively.

Prices

Given the likelihood that this alternative will result in substantial changes in summer flounder, scup, and black sea bass landings, it is anticipated that there will be a change in the price for these species. More specifically, prices are expected to increase for summer flounder and black sea bass and to decrease for scup holding all other factors equal.

Consumer Surplus

Assuming that prices behave as stated above, consumer surplus is expected to decrease for the summer flounder and black sea bass fisheries and to increase for the scup fishery.

Harvest Costs

No changes in harvest costs are identified under this alternative.

Producer surplus

Assuming that prices behave as stated above, producer surplus is expected to increase for the summer flounder and black sea bass fisheries and to decrease for the scup fishery.

Enforcement Costs

This alternative does not introduce additional enforcement measures. As such, no changes in enforcement costs are identified under this alternative.

Distributive Effects

There are no changes to the quota allocation process for any of the species. As such, no distributional effects are identified under this alterative. However, it is possible that when quotas are substantially reduced from one period to another, the competitive structure of the fishery may be affected. For example, assume that the overall summer flounder quota is substantially reduced and since the quota is allocated to individual states, the state's allocations would also be reduced accordingly. However, vessels are not necessarily constrained to land in their home states. Therefore, larger vessels often have more options than smaller vessels, due to increased range and more deck space for alternative gear configurations. This can help them to respond to cuts in quota in particular states. They also, however, need larger volumes to remain profitable.

<u>Summary of Impacts</u>

The overall impacts of summer flounder, scup, and black sea bass landings on prices, consumer surplus, and consumer surplus are difficult to determine without detailed knowledge of the relationship between supply and demand factors for these fisheries. In the absence of detailed empirical models for these fisheries and knowledge of elasticities of supply and demand, a qualitative approach was employed to assess potential impacts of the proposed management measures.

The impact of each the regulatory alternatives relative to the base year is summarized in Table 38. When potential outcomes from implementing a specific alternative are equal for all three species in direction, the resulting directional effect is presented as one. However, when outcomes from implementing a specific alternative differ across species, the directional effects will be presented separately for each species. A "-1" indicates that the level of the given feature would be reduced given the action as compared to the base year. A "+1" indicates that the level of the given feature would increase relative to the base year and a "0" indicates no change. In this analysis, the base line condition is the final adjusted quotas for 2000. This comparison will allow for the evaluation of the potential fishing opportunities associated with each alternative in 2001 versus the fishing opportunities that were in place in 2000.

The preferred alternative and the status quo may be expected to have similar overall directional impacts. Both alternatives show a potential decrease in scup prices associated with higher scup landings in 2001 compared to the base year. As such, consumer surplus is expected to increase and producer surplus is expected to decrease. No changes in prices, consumer surplus and/or producer surplus are expected under these two alternatives for the summer flounder and black sea bass fisheries.

Alternative 3 shows a potential decrease in prices for all three species associated with higher fishing opportunities in 2001 compared to the base year. As such, the overall consumer surplus is expected to increase and producer surplus is expected to decrease. Alternative 4 shows a potential decrease in scup prices and an increase in summer flounder and black sea bass prices. Consumer surplus is expected to decrease in the summer flounder and black sea bass fisheries and to increase in the scup fishery. The opposite is expected regarding producer surpluses.

No changes in the competitive nature of these fisheries is expected to occur if any of these management measures were implemented. All the alternatives would maintain the competitive structure of the fishery, that is, there are no changes in the manner the quotas are allocated by region or state from the base year. However, large reductions in quota levels from year to year may affect vessels differently due to their capability to adjust to quota changes.

No changes in enforcement costs or harvest costs have been identified for any of the evaluated alternatives.

It is important to mention that although the measures that are evaluated in this specification package are for the year 2001 fisheries, the annual specification process for these fisheries could have potential cumulative impacts. The extent of any cumulative impacts from measures established in previous years is largely dependent on how effective those measures were in meeting their intended objectives and the extent to which mitigating measures compensated for any quota overages. Section 6.0 of the EA has a detailed description or historical account or commutative impacts of the measures established in previous years. This information is important because it allows to the evaluate projected results from the implementation of specific management measures versus actual results.

Table 38. Qualitative comparative summary of economic effects of regulatory alternatives relative to the base line “adjusted quotas for 2000".

Feature	Alternative 1 Preferred Alternative	Alternative 2 Status Quo	Alternative 3 Least Restrictive	Alternative 4 Most Restrictive
Landings	FLK -1	FLK +1	FLK +1	FLK -1
	SCUP +1	SCUP +1	SCUP +1	SCUP +1
	BSB +1	BSB +1	BSB +1	BSB -1
Prices	FLK 0	FLK 0	FLK -1	FLK +1
	SCUP -1	SCUP -1	SCUP -1	SCUP -1
	BSB 0	BSB 0	BSB -1	BSB +1
Consumer Surplus	FLK 0	FLK 0	FLK +1	FLK -1
	SCUP +1	SCUP +1	SCUP +1	SCUP +1
	BSB 0	BSB 0	BSB +1	BSB -1
Harvest Costs	0	0	0	0
Producer Surplus	FLK 0	FLK 0	FLK -1	FLK +1
	SCUP -1	SCUP -1	SCUP -1	SCUP -1
	BSB 0	BSB 0	BSB -1	BSB +1
Enforcement Costs	0	0	0	0
Distributive Impacts	0	0	0	0(?)
“-1" denotes a reduction relative to the base line; “0" denotes no change relative to the base line; and “+1" denotes an increase relative to the base line.				

The proposed action does not constitute a significant regulatory action under E.O. 12866 for the following reasons. First, it will not have an annual effect on the economy of more than $100 million. Based on unpublished NMFS weighout (dealer) data and general canvass data, the 1999 total commercial value for summer flounder was estimated at $19.4 million form Maine to North Carolina and at $4.2 million and $5.3 million for scup and black sea bass from Maine to Cape Hatteras, NC, respectively. Assuming 1999 exvessel prices and the effect of potential changes in prices due to changes in landings in 2001 versus 2000 discussed under Alternative 1 above, the proposed quotas for 2001 (after overages have been applied) would increase scup exvessel revenues by approximately $2 million relative to 2000 revenues.

The proposed GRA alternative is projected to reduce exvessel revenue in the black sea bass, whiting, and *Loligo* fisheries by $0.50 million, $0.73 million, and $5.5 million, respectively. Based on unpublished NMFS weighout data (Maine-North Carolina) the total commercial value in 1998 for herring, mackerel, whiting, and *Loligo* were $10.8 million, $4.7 million, $17.9 million, and $32.2 million, respectively. However, as it was indicated in section 6.7 of the EA, the decrease in landings associated with these species as a consequence of the proposed GRA measure is expected to be minimal as vessels can redirect effort into other areas. As such, it is likely that most of these revenues will be recouped as vessels redirect effort into these other areas.

The measures considered in this quota paper will not affect total revenues generated by the commercial sector to the extent that a $100 million annual economic impact will occur in any of these fisheries. The actions are necessary to advance the recovery of these stocks, and to establish the harvest of these species at sustainable levels. The action benefits in a material way the economy, productivity, competition and jobs. The action will not adversely affect, in the long-term, competition, jobs, the environment, public health or safety, or state, local, or tribal government communities. Second, the action will not create a serious inconsistency or otherwise interfere with an action taken or planned by another agency. No other agency has indicated that it plans an action that will affect the summer flounder, scup or black sea bass fisheries in the EEZ. Third, the actions will not materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of their participants. And, fourth, the actions do not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866.

3.0 FINAL REGULATORY FLEXIBILITY ANALYSIS

3.1 INTRODUCTION AND METHODS

The Regulatory Flexibility Act (RFA) requires the Federal rulemaker to examine the impacts of proposed and existing rules on small businesses, small organizations, and small governmental jurisdictions. In reviewing the potential impacts of proposed regulations, the agency must either certify that the rule “will not, if promulgated, have a significant economic impact on a substantial number of small entities.” The Small Business Administration (SBA) defines a small business in the commercial fishing and recreational fishing activity, as a firm with receipts (gross revenues) of up to $3.0 million. The proposed measures regarding the 2001 quotas could affect any vessel holding an active Federal permit for summer flounder, scup, or black sea bass as well as vessels that fish for any one of these species in state waters. Data from the Northeast permit application database shows that as of September 5, 2000 there were 1969 vessels that were permitted to take part in the summer flounder, scup, and/or black sea bass fisheries (both commercial and charter/party sectors). These permitted vessels may be further categorized depending upon which permits or combinations of permits that were held. Table 38 reports the number of vessels for all possible combinations of permits. The proposed measure regarding the GRAs could affect any vessel fishing in the proposed GRAs. It was estimated that approximately 172 vessels (1998 VTR data) would be affected by the proposed GRAs (section 5.1.3 of the RIR/IRFA for details). All permitted vessels readily fall within the definition of small business.

Since all permit holders may not actually land any of the three species the more immediate impact of the rule may be felt by the 1087 commercial vessels that are actively participating in these fisheries (Table 39). An active participant was defined as being any vessel that reported having landed one or more pounds of any one of the three species in the Northeast dealer data during calendar year 1999. The dealer data covers activity by unique vessels that hold a Federal permit of any kind and provides summary data for vessels that fish exclusively in state waters. This means that an active vessel may be a vessel that holds a valid Federal summer flounder, scup, or black sea bass permit; a vessel that holds a valid Federal permit but no summer flounder, scup or black bass permit; a vessel that holds a Federal permit other than summer flounder, scup, or black sea bass and fishes for those species exclusively in state waters; or may be vessel that holds no Federal permit of any kind. Of the four possibilities the number of vessels in the latter two categories cannot be estimated because the dealer data provides only summary information for state waters vessels and because the vessels in the last category do not have to report landings. Of the active vessels reported in Table 39, 254 commercial vessels did not hold a valid Federal permit for summer flounder, scup, or black sea bass during calendar year 2000. Note that in a manner similar to that of Table 38 these active vessels are also reported by all possible combinations of reported landings.

In the present IRFA the primary unit of observation for purposes of performing a threshold analysis is vessels that participated in any one or more of the three fisheries (summer flounder, scup, and black sea bass) during calendar year 1999 irrespective of their permit status.

Not all landings and revenues reported through the Federal dealer data can be attributed to a specific vessel. Vessels with no Federal permits are not subject to any Federal reporting requirements with which to corroborate the dealer reports. Similarly, dealers that buy exclusively from state waters only vessels and have no Federal permits, are also not subject to Federal reporting requirements. Thus, it is possible that some vessel activity cannot be tracked with the landings and revenue data that are available. Thus, these vessels cannot be included in the threshold analysis, unless each state were to report individual vessel activity through some additional reporting system - which currently does not exist. This problem has two consequences for performing threshold analyses. First, the stated number of entities subject to the regulation is a lower bound estimate, since vessels that operate strictly within state waters and sell exclusively to non-Federally permitted dealers cannot be counted. Second, the portion of activity by these uncounted vessels may cause the estimated economic impacts to be over- or underestimated.

The effects of actions were analyzed by employing quantitative approaches to the extent possible. Where quantitative data were not available, qualitative analyses were conducted.

In order to conduct a more complete analysis, cumulative impacts were examined in four ways to represent four potential quota "alternatives." The first analysis (alternative) examined the measures recommended by the Council for each of the three species. The second alternative considered the measures proposed under the "no action" or Status Quo Alternative for each of the fisheries, this analysis considers the same black sea bass harvest levels as Alternative 1. The third and fourth alternatives looked at the highest quotas (least restrictive) and the lowest quotas (most restrictive) considered, respectively. Cumulative impacts were examined because many of the vessels active in these fisheries participate in one or even all three of these fisheries (section 4.2 of the EA). Actions in one fishery, e.g. a decrease in quota, could have an impact on levels of participation in other fisheries. A full description of these alternatives is given in sections 4 and 5, below.

Procedurally, the economic effects of the quota alternatives were estimated using five steps. First, the Northeast dealer data were queried to identify all vessels that landed at least one or more pounds of summer flounder, scup, or black sea bass in calendar year 1999. The fact that individual owners' business organization may differ from one another is reflected in the different combinations of species landed by these vessels. Thus, for purposes of the threshold analysis, active vessels were grouped into seven classes or tiers (Table 39) based on combinations of summer flounder, scup and black sea bass landings. In this manner, the original universe of vessels is treated as seven distinct "sub-universes" with a separate threshold analysis conducted for each. Note that the States of Connecticut and Delaware report canvas (summary) data to NMFS, so landings and revenues by individual vessels cannot be included. Thus, vessels that land exclusively in those states cannot be analyzed. Vessels that land in these, plus other states, are analyzed - but landings and revenues represent only that portion of business conducted in states other than Connecticut and Delaware. It is presumed that the impacts on vessels that cannot be identified will be similar to the participating vessels that are analyzed herein.

The second step was to estimate total revenues from all species landed by each vessel during calendar year 1999. This estimate provides the base from which subsequent quota changes and their associated effects on vessel revenues were compared. Since 1999 is the last full year from which data are available (partial year data could miss seasonal fisheries), it was chosen as the base year for the analysis. That is, partial landings data for 2000 were not used in this analysis because the year is not complete. As such, 1999 data were used as a proxy for 2000.

The third step was to deduct or add, as appropriate, the expected change in vessel revenues depending upon which of the four quota alternatives were evaluated. This was accomplished by estimating proportional reductions or increases in the four quota alternatives versus the base quota year 1999 (2000 proxy). Landings to date, indicate that there will be overages in the summer flounder, scup, and black sea bass commercial fisheries. The estimated overages were used to adjust the final 2001 quotas for all evaluated alternatives to reflect the expected fishing opportunities. NMFS quota summary reports at the time this analysis was conducted (August 12, 2000) indicate that in the scup fishery an overage of approximately 259,991 lbs (23%) and 190,116 lbs (30%) occurred during Winter 1 and Summer periods, respectively; in the black sea bass fishery an overage of 229,075 lbs (31%) and 45,333 lbs (21%) occurred during Quarters 2 and 3, respectively; and in the summer flounder fishery an overage of 2,933 lbs (51%) occurred in Maine. Vessel landings and revenues of summer flounder, scup, and black sea bass were prorated by state (summer flounder) or period (scup and black sea bass) according to the proportional change in quota in each state (summer flounder) or periods (scup and black sea bass) (section 4.0 below). In addition to this, for the purpose of estimating the 2001 quotas and revenue changes, the following assumptions were made: a) that the states with overages at the time of the analysis will harvest no additional summer flounder, and that the industry will fully harvest, and not exceed, the remaining 2000 state allocations; b) that the scup overages that occurred in the Winter 1 and Summer periods will remain and that the industry will fully harvest, and not exceed, the remaining 2000 allocation; and c) that the black sea bass underages in Quarter 1 and overages in Quarters 2 and 3 will remain, and that the industry will fully harvest, and not exceed, the remaining 2000 allocation.

The fourth step was to divide the estimated 2001 revenues from all species by the 1999 base revenues for every vessel in each of the classes. For step five, if the dividend from step 3 was less than or equal to 0.95 then the vessel was defined as being impacted (i.e. had an expected loss of gross revenues of 5 percent or more) for purposes of the RFA. For each quota alternative a summary table was constructed that report the results of the threshold analysis by class. These results were further summarized by home state as defined by permit application data.

The threshold analysis just described is intended to identify impacted vessels and to characterize the potential economic impact on directly affected entities. To further characterize the potential impacts on indirectly impacted entities and the larger communities within which owners of impacted vessels reside, selected county profiles were constructed. Each profile was based on impacts under quota Alternative 4 - the most restrictive possible alternative. Alternative 4 was chosen to identify impacted counties because it would identify the maximum number possible and thus include the broadest possible range of counties in the analysis. Counties included in the profile had to meet the following criteria: the number of impacted vessels (vessels with revenue loss exceeding 5 percent) per county was either greater than 4, or all impacted vessels in a given state were from the same home county.

Based on these criteria, a total of 16 counties-make changes were identified: Sussex County, DE; Barnstable, Bristol, Plymouth, and Suffolk Counties, MA; Worcester County, MD; Dare County, NC; Atlantic, Cape May, and Ocean Counties, NJ; Kings, Nassau, and Suffolk Counties, NY; and Accomack, Norfolk, and Virginia Beach Counties, VA. Counties not included in this analysis (e.g. in CT, RI, and PA) did not have enough impacted vessels to meet the criteria specified, i.e., there were less than 4 impacted vessels per county, or all impacted vessels in a state were not home ported within the same county.

It should be noted that the county profiles are intended to characterize the relative importance of commercial fishing and fishing related industries in the home counties. As such, the county profiles provide a link to the Social Impact Analysis (section 6.7, of the EA) but are not intended to be a substitute for that analysis. The target counties were identified based on the county associated with the vessels homeport as listed in the owner's 2000 permit application. Since county is not a field in the permit application the self-reported homeport was first matched against port names listed in data tables maintained in the Northeast region to assign a home county. Where no such match existed.

Counties were selected as the unit of observation because a variety of secondary economic and demographic statistical data were available from several different sources. Limited data are available for place names (i.e. by town or city name) but in most instances reporting is too aggregated or is not reported due to confidentiality requirements. Reported statistics include summaries of landings, Federal permits, demographic statistics, and employment, wages, and number of establishments for each county.

Table 39. Numbers of vessels landing scup, black sea bass and/or summer flounder in 1999.

Landings Class	Landings Combinations	Commercial Vessels (#)
1	Scup Only	10
2	Black Sea Bass Only	176
3	Fluke Only	264
4	Scup/Black Sea Bass	64
5	Scup/Fluke	17
6	Black Sea Bass/Fluke	218
7	Scup/Black Sea Bass/Fluke	338
	Total	1087
Data from Northeast Region dealer data.		

4.0 DESCRIPTION OF QUOTA ALTERNATIVES OR ALTERNATIVES

All quota alternatives considered in this IRFA are based on three harvest levels for each of the species (a high, medium, and low level of harvest). These recommendations, and their impact relative to the 1999 landings, are shown in Table 40. Table 41 shows the proposed quota specifications as a proportion of the 2000 quotas. Estimated overages for 2000 were used to adjust the final 2001 quotas which reflect expected fishing opportunities. Table 37 shows the percentage change of the 2001 adjusted allowable commercial landings relative to the quotas specified for 2000. The analysis for comparison in this IRFA was conducted employing adjusted final 2001 quotas and these were compared against the adjusted quotas for 2000.

Table 40. 2001 quota recommendations for each alternative versus the 1999 landings.

	Commercial Quota Recommendations	1999 Weighout Landings	2001 Quota as a Percent of 1999 Landings
Summer Flounder			
Preferred Alternative	10,747,535	10,722,684	100.23
Status Quo Alternative	11,111,298	10,722,684	103.62
Alternative 3 Least Restrictive	12,276,662	10,722,684	114.49
Alternative 4 Most Restrictive	9,940,643	10,722,684	92.71
Scup			
Preferred Alternative	4,444,600	3,322,945	133.75
Status Quo Alternative	2,534,160	3,322,945	72.96
Alternative 3 Least Restrictive	5,138,800	3,322,945	154.65
Alternative 4 Most Restrictive	3,496,120	3,322,945	105.21
Black Sea Bass			
Preferred Alternative	3,024,742	2,974,021	101.71
Status Quo Alternative	3,024,742	2,974,021	101.71
Alternative 3 Least Restrictive	3,875,900	2,974,021	130.33
Alternative 4 Most Restrictive	1,999,200	2,974,021	67.22

Table 41. Comparison of the alternatives of quota combinations reviewed. “FLK” is summer flounder.

	Commercial Quota	**Quota Specification as a Proportion of the 2000 Quotas**	**Percent Change**
Quota Alternative 1 (Preferred Alternative)			
FLK Preferred Alternative	10,747,535	0.967	-3.27
Scup Preferred Alternative	4,444,600	1.754	75.38
Black Sea Bass Preferred Alternative	3,024,742	1	0
Quota Alternative 2 (Status Quo)			
FLK Status Quo	11,111,298	1	0
Scup Status Quo	2,534,160	1	0
Black Sea Bass Status Quo	3,024,742	1	0
Quota Alternative 3 (Least Restrictive)			
FLK Non-Selected Alternative 3	12,276,662	1.105	10.49
Scup Non-Selected Alternative 3	5,138,800	2.028	102.78
Black Sea Bass Non-Selected Alternative 3	3,875,900	1.281	28.14
Quota Alternative 4 (Most Restrictive)			
FLK Non-Selected Alternative 4	9,940,643	0.895	-10.54
Scup Non-Selected Alternative 4	3,496,120	1.380	37.96
Black Sea Bass Non-Selected Alternative 4	1,999,200	0.661	-33.91

4.1 QUOTA ALTERNATIVE 1 (Preferred Alternative)

Alternative 1 analyzes the cumulative impacts of the harvest limits recommended by the Council and Board for summer flounder, scup, and black sea bass on vessels that are permitted to catch any of these three species. Harvest limits were recommended to best achieve the target fishing mortality or exploitation rates specified in each fisheries respective rebuilding schedule.

Specifically, this alternative examines the impacts on industry that would result from a TAL 17.912 million lb for summer flounder (10.748 million lb commercial; 7.165 million lb recreational); a total allowable catch of 8.37 million lbs for scup (which results in a TAL of 4.44 million lbs commercial; 1.77 million lbs recreational), and a TAL of 6.17 million lbs for black sea bass (3.02 million lbs commercial; 3.15 million lbs recreational). Notice that the commercial allowable landings presented here and in the next 3 alternatives will be adjusted to account for overages in 2000.

Gear Restricted Areas - Alternative 1

As indicated in the analysis presented in section 6.3.4 of the EA, the preferred alternative would reduce landings of black sea bass, whiting, and *Loligo* by 0.02 million lb (0.01 million kg), 0.19 million lb (0.09 million kg), and 0.2 million lbs (0.09 million kg), respectively.

4.2 QUOTA ALTERNATIVE 2 (Status Quo)

Alternative 2 includes the same harvest limits that were implemented in 2000 for all three species. This alternative includes the same black sea bass harvest levels in presented Alternative 1. This alternative would set the 2001 summer flounder TAL at 18.52 million lb (11.11 million lb commercial; 7.41 million lb recreational), a TAL of 3.77 million lb for scup (2.53 million commercial; 1.24 million recreational), and a TAL of 6.17 million lb for black sea bass (3.02 million lb commercial; 3.15 million recreational).

4.3 QUOTA ALTERNATIVE 3 (Least Restrictive)

Alternative 3 analyzes the cumulative impacts of the least restrictive possible harvest levels - those that would result in the least reductions (or greatest increases) in landings (relative to 2000) for all species. These limits resulted in the highest possible landings for 2001, regardless of their probability of achieving the biological targets. Thus, this alternative includes non-selected alternatives for all three species. Specifically, this alternative considers a TAL of 20.46 million lb for summer flounder (12.28 million lb commercial; 8.18 million lb recreational), a 5.14 million lb commercial quota for scup (1.97 million lb recreational), and a 7.91 million lb TAL for black sea bass (3.88 million lb commercial; 4.03 million lb recreational) in 2001.

4.4 QUOTA ALTERNATIVE 4 (Most Restrictive)

Alternative 4 analyzes the cumulative impacts of the most restrictive possible harvest levels - those that would result in the greatest reductions in landings (relative to 2000) for summer flounder and black sea bass (the most restrictive scup quota level is evaluated under the preferred Alternative 1). Alternative 4 evaluates the most restrictive overall harvest levels. This alternative includes non-selected alternatives for all three species. Specifically, this alternative considers a TAL of 16.57 million lb for summer flounder (9.94 million lb commercial; 6.63 million lb recreational), a 3.5 million lb commercial quota for scup (1.50 million lb recreational), and a 4.08 million lb TAL for black sea bass (2.0 million lb commercial; 2.08 million lb recreational) in 2001.

5.0 ANALYSES OF IMPACTS OF ALTERNATIVES

For the purpose of analysis under the following alternatives, several assumptions must be made. First, average revenue changes noted in this analysis are made using 1999 dealer data and participation. In addition to this, 2000 permit files were used to describe permit holders in these fisheries. It is importance to mention, that, revenue changes for 2001 are dependent upon landings in 2000. This dependence occurs because the commercial quotas for all three species require that overages in the quota from the prior year to be deducted from the allocation in the current year. Hence, overages in 2001 will decrease the 2001 allocations. As such, for the purpose of analyzing the 2001 revenue changes, the assumptions made in section 3.1 of the RIR/IRFA regarding 2000 landings apply.

For the analyses themselves, reductions are estimated by examining the total revenue earned by an individual vessel in 1999, and comparing it to its potential revenue in 2001, given the 2001 harvest levels. Generally, the percent of revenue reduction for impacted vessels varied considerably based on permits it held (i.e., based on the fisheries in which it was able to participate) and species it landed. Diversity in the fleet, perhaps, helps to balance loss in one fishery with revenue generated from other fisheries. Lastly, it is important to keep in mind that while the analyses are based on landings for Federally permitted vessels only, those vessels may be permitted to, and frequently do, fish in state waters for a species of fish for which it does not hold a Federal permit.

The assumptions employed to analyzed the GRA alternatives are fully described in section 6.3.4 of the EA. Changes in revenue associated with the various GRA alternatives were estimated by applying projected reduction in landings based on sea sampling data (January 1989 thru May 2000, combined)and 1998 prices in NMFS General Canvass Data to total otter trawl landings in 1998 VTR data. Assuming that reductions in discards from sea sampling data are representative of reductions in discards in the VTR data, then, the estimated loss in revenue associated with this alternative represents an upper limit estimate. Given the data limitation identified in section 6.3.4 of the EA, it is not possible to provide a description of the entities participating in these fisheries at the season/area level proposed in the alternative.

5.1 QUOTA ALTERNATIVE 1

This alternative examines the impacts on industry that would result from total harvest limits for summer flounder, scup and black sea bass. To analyze the economic effects of this alternative, the total harvest limits specified in section 4.0 of the RIR/IRFA were employed.

The summer flounder specifications would result in an aggregate 1.3 percent decrease in allowable commercial landings relative to the 2000 quota and a

14.4 percent reduction in recreational harvest relative to 1999 landings (Tables 37 and 44). The scup specifications would result in an aggregate 111.9 percent increase in allowable commercial landings and a 6.9 percent decrease in recreational harvest relative to 1999 landings (Tables 37 and 45). The black sea bass specifications would result in an aggregate 3.0 percent increase in allowable commercial landings and a 85.3 percent increase in the recreational harvest relative to 1999 landings (Tables 37 and 46).

5.1.1 COMMERCIAL IMPACTS

5.1.1.1 Threshold Analysis for Participating Vessels

The results of the threshold analysis are reported in Table 42. Across all vessel classes a total of 8 vessels were projected to be impacted by revenue losses of 5 percent or greater. The economic impacts for the 1087 vessels participating in these fisheries range from expected revenue losses on the order of 10 to 19 percent for a total of 5 vessels (relative to 2000) to no change in revenues for 6 vessels and increase revenue for 529 vessels. Most of the vessels with projected revenue losses of 5 percent or greater landed black sea bass only, followed by scup and black sea bass, and a combination of black sea bass, and summer flounder. The reduction in revenues is attributed to the overages that are projected to occur in 2000. This is due to the decrease in fishing opportunities in 2001 versus 2000 associated with the overages. It is important to notice that even though overages were deducted in each of the three fisheries analyzed and the overall 2001 quota for summer flounder is marginally below (1%) the fishing opportunity in 2000 and above for scup (112%) and black sea bass (3%), not all vessel that participated in these fisheries may be equally affected. This is because overages were deducted from specific time periods (scup and black sea bass) or area (summer flounder). For example, if a vessel only targets and landed black sea bass in Quarter 1, then this vessel would not be affected by the projected overage reductions in Quarters 2 or 3.

Table 42. Threshold analysis of revenue impacts for participating vessels, “FLK” is summer flounder, “BSB” is black sea bass, and “SCP” is scup.

Quota Alternative 1 Preferred Alternative				Increased Revenue (number)	No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (%)						
Class	Landings Combination	Total Vessels	Number of Vessels Impacted by ≥ 5 Reduction			<5	5-9	10-19	20-29	30-39	40-49	$50
1	SCP Only	10	0	10	0	0	0	0	0	0	0	0
2	BSB Only	176	6	138	6	26	1	5	0	0	0	0

3	FLK Only	264	0	0	0	264	0	0	0	0	0	0
4	SCP/BSB	64	1	56	0	7	1	0	0	0	0	0
5	SCP/FLK	17	0	12	0	5	0	0	0	0	0	0
6	BSB/FLK	218	1	42	0	175	1	0	0	0	0	0
7	SCP/BSB /FLK	338	0	271	0	67	0	0	0	0	0	0
	Totals	1087	8	529	6	544	3	5	0	0	0	0

Impacts of the quotas provisions were examined relative to a vessel's home state as reported on the vessel's permit application (Table 43). "Home state" indicates the state where a vessel is based and primarily ported, and is presumed to reflect to where the costs and benefits of management actions return. However, home state is self-reported at the time an individual applies for a Federal permit and may not necessarily indicate where the vessel subsequently conducts most of its activity. The number of impacted vessels (revenue reduction >5%) by home state ranged from none in Delaware, Maine, Maryland, North Carolina, and Rhode Island to one in each of the following states: Maine, New Jersey, New York, Pennsylvania, and Virginia.

Table 43. Review of revenue impacts under quota Alternative 1, by home state.

State	Participating Vessels	Number of Vessels Impacted ≥5 percent	Increased Revenue (number)	No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (percent)						
					<5	5-9	10-19	20-29	30-39	40-49	$50
DE	8	0	6	0	2	0	0	0	0	0	0
MA	206	1	84	0	121	0	1	0	0	0	0
MD	12	0	6	0	6	0	0	0	0	0	0
ME	6	0	2	0	4	0	0	0	0	0	0
NC	89	0	13	1	75	0	0	0	0	0	0
NJ	121	1	63	2	55	0	1	0	0	0	0

NY	163	1	126	1	35	1	0	0	0	0	0
PA	18	1	10	0	7	0	1	0	0	0	0
RI	101	0	77	0	24	0	0	0	0	0	0
VA	102	1	22	1	78	0	1	0	0	0	0
OTHER[a]	7	0	0	0	7	0	0	0	0	0	0
NOT KNOWN[b]	254	NK	NK	NK	NK	NK	NK	NK	NK	NK	NK
Total	1087	5	409	5	414	1	4	0	0	0	0

[a]States with fewer than 4 vessels were aggregated.
[b]Vessels have shown landings of either of those three species in 1999, but do not hold any of the requisite Federal permits in 2000. These vessels may be fishing exclusively in state waters fisheries for those species, and landings are indicated because of reporting requirements for their other Federal permits or they do not hold a Federal permit to participate in these fisheries any longer.

By virtue of holding a valid Federal permit for summer flounder, scup, or black sea bass a vessel is subject to any regulations that are promulgated under the FMP. From this perspective, these vessels are subject to any quota specification whether or not they actually choose to engage in any one of the three (summer flounder, scup, or black sea bass) fisheries. The decision to engage in any given fishery during a given time period is subject to numerous considerations from temporary suspension of fishing due to illness or vessel construction or repair to merely a reasoned decision to pursue other fisheries. Given the limited access nature of the fisheries a vessel may wish to continue to hold a permit to preserve the opportunity to engage in the fishery when circumstance allows.

5.1.2 RECREATIONAL IMPACTS

Landing statistics from the last several years show that recreational summer flounder landings have generally exceeded the recreational harvest limits, ranging from 5% in 1993 to 68% in 1998. In 1994 and 1995, summer flounder landings were below the recreational harvest limit by about 20% for both years combined (Table 44). In 1999, the recreational landings were 8.37 million lb. Under this alternative, the summer flounder 2001 recreational harvest limit would be 7.16 million lb. Thus, the harvest limit in 2001 would be a decrease of about 14.5 percent from 1999 recreational landings.

Table 44. Number of summer flounder recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2001.

Year	Number of Fishing Trips[a]	Recreational Harvest Limit (million lb)	Recreational Landings of Summer Flounder (million lb)[b]

1991	4,645,993	None	7.96
1992	3,751,815	None	7.15
1993	4,829,252	8.38	8.83
1994	5,761,918	10.67	9.33
1995	4,742,194	7.76	5.42
1996	5,086,347	7.41	9.82
1997	5,620,055	7.41	11.87
1998	5,296,982	7.41	12.48
1999	4,230,627	7.41	8.37
2000	N/A	7.41	N/A
2001	-	7.16	-

[a] Number of fishing trips as reported by anglers in the intercept survey indicating that the primary species group sought was summer flounder, North Atlantic, Mid-Atlantic, and South Atlantic regions combined. Estimates are not expanded. Source: MRFSS.
[b] From Maine to North Carolina. Source: MRFSS.
N/A = Data not available.

Scup recreational landings have declined over 89 percent for the period 1991 to 1998, then increased by 115% from 1998 to 1999 (Table 36). The number of fishing trips has also declined over 86 percent from 1991 to 1998, and then increased by 27% from 1998 to 1999. The decrease in the recreational fishery has occurred both with and without any recreational harvest limits, and it is perhaps a result from the stock's being over-exploited and at a low biomass level. In addition, it is possible that party/charter boats may be targeting other species that are relatively more abundant than scup (e.g., striped bass), thus accounting for the decrease in the number of fishing trips in this fishery. In 1999, recreational landings were 1.89 million lb. Under this alternative, the scup recreational harvest limit for 2001 would be 1.76 million lb. This is a 6.9 percent decrease over the 1999 recreational landings. The proposed recreational harvest limit for 2001 is about 42% higher than the recreational harvest limit implemented in 2000.

Table 45. Number of scup recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2001.

Year	Number of Fishing Trips[a]	Recreational Harvest Limit (million lb)	Recreational Landings of Scup (million lb)[b]
1991	763,284	None	8.09
1992	495,201	None	4.41
1993	252,017	None	3.20
1994	221,074	None	2.63
1995	153,008	None	1.34
1996	145,814	None	2.16
1997	118,266	1.95	1.20
1998	105,283	1.55	0.88
1999	133,703	1.24	1.89
2000	N/A	1.24	N/A
2001	-	1.76	-

[a] Number of fishing trips as reported by anglers in the intercept survey indicating that the primary species group sought was scup, North Atlantic, Mid-Atlantic, and South Atlantic regions combined. Estimates are not expanded. Source: MRFSS.
[b] From Maine to North Carolina. Source: MRFSS.
N/A = Data not available.

Black sea bass recreational fishing trips have shown a slight upward trend from the early to Mid-1990's (Table 37). Black sea bass recreational landings have also shown a slight upward trend from 1991 to 1997. However, landings have decreased considerably from 1995-1996 to 1999. In 1999, recreational landings were 1.70 million lb. In 1998, the first recreational harvest limit was implemented at 3.15 million lb. Under this alternative, the black sea bass recreational harvest limit for 2001 would be 3.15 million lb. This recreational harvest limit is equal to the recreational limit implemented in 1998, 1999, and 2000. The 2001 recreational harvest limit represents an increase of 85.3 percent from the 1999 recreational landings.

Table 46. Number of black sea bass recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2001.

Year	Number of Fishing Trips[a]	Recreational Harvest Limit (million lb)	Recreational Landings of BSB (million lb)[b]
1991	N/A	None	4.19
1992	218,700	None	2.71
1993	296,370	None	4.84
1994	265,402	None	2.95
1995	315,165	None	6.21
1996	282,972	None	4.00
1997	313,052	None	4.27
1998	N/A	3.15	1.15
1999	N/A	3.15	1.70
2000	N/A	3.15	N/A
2001	-	3.15	-

[a] Number of fishing trips as reported by anglers in the intercept survey indicating that the primary species group sought was black sea bass, North Atlantic, Mid-Atlantic, and South Atlantic regions combined. Estimates are not expanded. Source: MRFSS.
[b] From Maine to Cape Hatteras, North Carolina. Source: MRFSS.
N/A = Data not available.

At the present time, there is neither behavioral nor demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. For example, in the summer flounder fishery, there is no mechanism to deduct overages directly from the recreational harvest limit. Any overages must be addressed by way of adjustments to the management measures. While it is likely that proposed management measures may restrict the recreational fishery for 2001, and these measures may cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size or closed season), there is no indication that any of these measures would lead to a decline in the demand for party/charter boat trips. Currently, the market demand for this sector is relatively stable. It is unlikely measures will result in any substantive decreases in the demand for party/charter boat trips. It is most likely that party/charter anglers will target other species when faced with potential reductions in the amount of summer flounder, scup, or black sea bass that they are allowed to catch. As such, it is probable that the decrease in the harvest limit for summer flounder and scup relative to the 1999 landings, will not have a substantial impact on the number of party/charter fishing trips.

5.1.3 EFFECTS OF GEAR RESTRICTED AREAS

As indicated in the analysis presented in sections 6.3.4 of the EA, the GRA Alternative 1 would reduce landings of black sea bass, whiting, and *Loligo*. The reductions in landings would decrease exvessel revenue of participating entities in the amount of $2.43 million (section 6.3.4, EA). This figure was derived by applying estimated reduction in landings based on sea sampling data (January 1989 thru April 1999, combined) and 1998 prices in NMFS General Canvass Data to total otter trawl landings in 1998 VTR data for all areas combined. It was necessary to use average prices from NMFS General Canvass data when estimating changes in revenues because VTR data do not contain dollar values. Assuming that reductions in discards from sea sampling data are representative of reductions in discards in the VTR data, then the estimated loss in revenue associated with this alternative represents an upper limit estimate. GRA Alternatives 2 through 4 would also reduce landings of herring (Alternatives 3 and 4 only), mackerel, black sea bass, whiting, and *Loligo*. The reductions in landings associated with Alternatives 2 to 4 would decrease exvessel revenue of participating entities in the amount of $7.18 million, $5.42 million, and $13.66 million, respectively (Table 39).

According to 1998 VTR data, it is estimated that 172 vessels fished with otter trawl gear with codend mesh less than 4.5 inches in GRAs in statistical areas 537, 539, 613, 616, and 622. Since VTR data is not specified at the 10 minute square level nor does it include complete longitude and latitude information, it is not possible to identify the number of vessels that fished under the specific alternatives. However, given the number of vessels in these statistical areas represent more restrictive temporal-spatial limitations than the alternatives evaluated, it is possible that the upper limit of affected vessels under any specific alternative is 172. The affected entities can be categorized as follows: 12% of the vessels (20 vessels) are between 5 and 50 GRTs, 66% of the vessels (113 vessels) are between 51 and 150 GRTs, and 23% of the vessels (39) are larger than 151 GRTs. It is important to note that of the 20 vessels in the 5 to 50 GRTs range, only one vessel is between 11 and 15 GRTs, 7 vessels are between 23 and 33 GRTs, and the remaining 12 vessels are between 34 and 50 GRTs. Larger vessel often have more options than smaller vessels, due to increased range and more deck space for alternative gear configurations. This can help them to respond to GRAs more efficiently. Finally, it was estimated that approximately 97% (166 vessels) of the vessels affected by the GRAs are part of the universe of vessels that were identified as being participants of the summer flounder, scup, and/or black sea bass fisheries and were evaluated under the quota alternatives. In addition, it was also estimated that only one of the 172 vessels affected in these statistical areas would be impacted by revenue losses of 5 percent or greater due to the proposed 2001 summer flounder, scup, and black sea bass quotas detailed in quota Alternative 1.

On average, each vessel would lose $14,151 under Alternative 1 ($2.43 million divided by 172 vessels), approximately $65,000 less per vessel than Alternative 4. Under Alternative 4 each vessel would lose an average of $79,419 ($13.66 million divided by 172 vessels). Because 172 vessels is likely an overestimate of the number of vessels affected by Alternatives 1 through 4, it is possible that the revenue loss by each vessel is an underestimate. However, vessels that participate in these fisheries will likely redirect their effort into other areas that are open or the closed areas when they reopen, recouping any loss in revenues associated with the implementation of this alternative. As such, the number of vessels expected to be impacted by revenue losses of 5 percent or greater is likely to be minimal. However, impacts to profitability are possible if costs due to vessel operation increase.

As indicated in section 6.3.4 of the EA, there are various levels of revenue reductions and various levels of reductions in scup discards associated with each of the proposed GRA alternatives. The Council and Commission selected GRA Alternative 1 as the preferred alternative because it provides the largest reduction in scup discard while minimizing the loss in revenues due to GRA closures. Table 38 shows the Relative Performance Index associated with the proposed GRA alternatives. This relative index is estimated by dividing the percentage in scup discards associated with a specific alternative by the associated reduction in revenues. As such, the index provides a relative comparison among the various proposed alternatives. The higher the Relative Performance Index, the higher the percentage scup reduction relative to the reduction in revenues. According to this Relative Performance Index, Alternative 1 would provide the largest reduction in scup discards while providing the smallest reduction in revenues, followed by Alternatives 2, 3, 4, and 5. Alternative 1 would provide almost the same reduction in scup discards as Alternative 2 while providing a smaller reduction in revenues in other fisheries. As such, the potential impact on other fisheries associated with this reduction in scup discards in Alternative 1 is much less than those associated with the other alternatives.

Table 47. Relative Performance Index (RPI) associated with the proposed gear restricted area alternatives.

Alternative	**Reduction in Revenues[a] ($ million)**	**Reduction in Scup Discards[b] (%)**	**Relative Performance Index[c]**
1	2.434	51	20.95
2	5.420	59	10.88
3	7.177	61	7.66
4	13.663	71	5.12
5	0	0	0

[a]Reductions in revenues taken from Table 29.
[b]Percentage reductions in scup discards taken from Table 30.

[c]Relative Performance Index is estimated by dividing the percentage reduction in scup discards by the associated reduction in revenues. As such, the higher the RPI the higher the reduction in scup discards to revenue loss.

Given the most restrictive temporal-spatial limitations of the alternatives, the upper limit of affected vessels under any specific alternative is 172. On average, each vessel would lose $14,151 under Alternative 1, approximately $65,000 less per vessel than Alternative 4. However, vessels that participate in these fisheries will likely redirect their effort into other areas that are open or the closed areas when they reopen, recouping any loss in revenues associated with the implementation of this alternative. As such, the number of vessels expected to be impacted by revenue losses of 5 percent or greater is likely to be minimal. However, impacts to profitability are possible if costs due to vessel operation increase.

5.1.4 EFFECTS OF TRIP LIMITS AND MINIMUM MESH SIZE THRESHOLD

Scup Measures

The Council and Commission recommended scup landing limits for the two winter periods in 2001. For the first winter period (Jan-Apr), they recommended a landing limit of 10,000 pounds. When 75% of the landings are reached, the landing limit will drop to 1,000 pounds. For the second winter period (Nov-Dec), a 2,000 pounds landing limit was adopted (Table 48). The recommended landing limit for the Winter I period is the same as the landing limit implemented in year 2000, with the exception that in 2001 the landing limit will drop to 1,000 pounds when 75% of the landings are reached, instead of the 85% used in 2000. The 75% landing trigger in 2001 is expected to decrease landings from 10,000 pounds to 1,000 pounds early enough to allow for the equitable distribution of the quota over the Winter I period. It is not expected that the change in the landing trigger during the Winter I period will affect in some negative manner landings during this period. The recommended landing limit for the Winter II period is 50% smaller than the landing limit originally implemented in year 2000. However, due to overages in the Winter II period in 1999, the 2000 quota was only about 107 thousand pounds and the fishery will close 0001 hours November 3, 2000, 2 days after opening. In addition, due an ASMFC emergency rule action, the originally implemented landing limit for 2000 Winter II period was reduced from 4,000 pounds to 500 pounds.

Amendment 8 to the Summer Flounder and Scup FMP contains provisions that allow for changes in the minimum fish size and minimum net mesh provisions each year. Current regulations require a 9" TL minimum fish size in the commercial fishery and a 4.5" minimum mesh in the codend of the net for vessels possessing more than 200 pounds of scup from November through April and 100 pounds from May through October. The minimum fish size went into effect on September 23, 1996 with a minimum mesh size of 4.0". The minimum mesh size increased to 4.5" on April 14, 1997. The minimum fish size, mesh requirements, and threshold may be changed annually based on the recommendations of the Monitoring Committee.

As stated in the 2001 Specification document, the proposed scup quota for 2001 increases scup landings relative to the quotas specified for 2000. At the same time, the 2001 Specification document contains measures to reduce scup discards.

Black Sea Bass Measures

The current black sea bass regulations specify that trip limits be implemented for each period and that the trip limit does not change over the period. Trip limits would remain in effect until the fishery is closed by NMFS based on projections that the quarterly quota would be taken. The trip limits for 2000 were 9,000; 3,000; 2,000; and 3,000 pounds for quarters 1 through 4, respectively. However, due to an ASMFC emergency rule action, the originally implemented trip limit for 2000 Quarter IV period was reduced from 3,000 pounds to 2,000 pounds.

In 2000, like 1999, the commercial fishery closed prematurely in both the second and third quarters. Because of this closure, and likely increase in stock size and effort, trip limits for each of the quarters were modified to allow for landings over the entire period. The Council and Commission recommended that the trip limits be modified for 2001 to 9,000; 1,500; 1,000; and 2,000 for each quarter, respectively (Table 48). A such, the recommended landing limits for Quarters I and IV periods in 2001 are equal to the landings limits implemented in 2000. However, recommended landing limits for Quarters II and III periods in 2001 are 50% lower than the landings limits implemented in 2000.

Analysis of Impacts

In order to analyze the impacts of the proposed landing/trip limits a threshold analysis was conducted. This analysis compares potential changes associated with the proposed 2001 landing/trip limits to the base year. Since 1999 is the last full year from which data are available (partial year data could miss seasonal fisheries), it was chosen as the base year for this analysis. Partial data for 2000 were not used in this analysis because the data for the periods to be analyzed is not complete. As such, 1999 data were used as a proxy for 2000. The difficulty in using 1999 data arises from the fact that black sea bass landings in that year were constrained by trip limits that were substantially higher than those implemented in 2000 and proposed for 2001 (Table 48). As such, the results from this analysis would represent the upper bound or worse case impacts. Impacts of the proposed limits are evaluated by projecting potential changes in the number of trips made by the affected vessels and changes in revenues. In order to assess the potential change in the number of trips made by the affected entities, it is assumed that vessels constrained by limits in 2001 versus the base year will continue to make trips to allow them to land the same quantity of fish that was landed during the base year. In order to assess the potential change in revenues for the affected entities, it is assumed that vessels constrained by limits in 2001 versus the base year will not make additional trips to land the same quantity of fish that was landed during the base year, that is, the landing/trip limit is a strict limiting factor.

As it was indicated above, none of the recommended trip limits in the scup fishery are constraining fishermen in 2001 versus 2000. In fact, the recommended Winter II trip limit of 2,000 pounds is substantially higher than the 500 pounds trip limit implemented during that period in 2000 per ASMFC emergency action rule. This trip limit may have a positive impact on fishermen operations as fishermen may be able to land more scup per trip in 2001 compared to 2000. However, given that the Winter II fishery is expected to last a very short period, a threshold analysis was conducted.

Impacts of Proposed Landing Limits - Winter II Period

The proposed scup landing limit of 2,000 pounds in Winter II would affect 16% of the trips and 72% of the landings based on 1999 landings (Table 49). This landing limit would affect 49 (24%) of the known vessels that landed scup during this period. Given the same level of landings, if all trips were constrained to 2,000 pounds then the number of trips at this threshold level could increase from 142 to 232 (463,116 lb / 2,000 lb per trip). This would be the number of trips required in order to allow vessels to land the same amount of fish as in the base year. This could have a considerable effect on some fishing vessels. The effects on vessels would depend on fishing practices and vessel size. As an example, larger boats would have to make additional trips to compensate for reductions in landings associated with the proposed trip limit. On the other hand, assuming that the affected vessels were not able to make additional trips to compensate for the reduction in landings per trip derived from the proposed landing limit, then affected vessels would be constrained to make 142 trips at the 2,000 pound landings limit. As such, 179,116 pounds of scup would not be landed [(463,116 lb) minus (142 trips x 2,000 lb per trip)]. Assuming an average exvessel price of $1.01 per pound (average exvessel price for Winter II 1999, ME-VA), then each vessel would lose $3,692 [(179,116 lb x $1.01 per lb) / 49 vessels]. This loss in revenue is likely to be overestimated since vessels could make additional trips to compensate for landings reductions associated with the proposed landing limit.

Most of the affected vessels are smaller vessels. Three vessels (6.1%) were less than 5 GRTs and the number of trips made by those vessels ranged from 1 trip for 2 of the 3 vessels to 3 trips for the other vessel, averaging 1.7 trips per vessel. Nine vessels (18.4%) were between 5-50 GRTs and the range of trips made by those vessels ranged from 1 (5 vessels) to 7 (1 vessel), averaging 2.6 trips per vessel. Twenty-seven vessels (55.1%) were between 51-150 GRTs and the trips made by those vessels ranged from 1 (9 vessels) to 10 (2 vessels), averaging 3 trips per vessel. Ten vessels (20.4%) have over 150 GRTs and trips made by those vessels ranged from 1 (1vessel) to 6 (2vessels), averaging 3.4 trips per vessel. By gear type, 100% of the trips were made with bottom otter trawl gear.

These vessels were compared to the small entities projected to be impacted by revenue losses of 5% or greater under the preferred alternative (Section 5.1.1) of the 2001 Specification document.

It was found none of 42 vessels identified as affected by the recommended scup landing limit in Winter II 2001 were identified as having revenue reductions of 5% or greater due to the proposed summer flounder, scup, and black sea bass quotas for 2001.

Over the years, there has been considerable discussion regarding the threshold level used to trigger the minimum mesh requirements. The appropriate threshold level would allow the bycatch of legal sized fish harvested in small mesh fisheries to be landed while at the same time discouraging the use of small mesh by directed scup fishermen.

In 1999, the Council and Commission dropped the threshold to 200 pounds in the winter and 100 pounds in the summer to encourage the use of 4.5" mesh and protect the 1997 year class. In 1998, when the thresholds were 4,000/1,000 pounds, 39% of the scup landings and 91% of the discards were associated with mesh less than 4.5". In 1999, 25% of the landings and 37% of the discards were associated with mesh less than 4.5". After consideration of this information, the Council and Commission recommended that the threshold increase to 500 pounds for the winter period and remain at 100 pounds for the summer period (Table 50).

The recommended minimum fish size and minimum mesh provision during the summer period is identical to that implemented in 2000. As such, no negative impacts are expected. On the other hand, the recommended minimum mesh threshold during the winter period is higher than the minimum mesh threshold implemented in 2000. Since, a lower trigger level has been in place for years, the proposed trigger level cannot be analyzed quantitatively. However, it is likely that this measure will have a positive impact on small mesh vessels since more scup will be retained in the small mesh fisheries than before.

Other Impacts

The potential impacts of both the proposed scup quota and the proposed measures to control scup discards (i.e., GRAs) were analyzed in the 2001 Specification document. The preferred scup quota and GRA system presented in the 2001 Specification document increases the scup quota versus the base year, at the same time it contains proposed measures to reduce scup discards, respectively. These actions taken together could shift income away from vessels engaged in non-scup directed fisheries to vessels targeting scup if vessels that previously landed scup harvested from areas under the proposed GRA system are not to land scup caught in non GRAs areas. This is unlikely to be a major problem as vessels engaged in non-scup directed fisheries are still allowed to land scup harvested in non GRAs areas. However, due to lack of data this cannot be estimated.

Such an income transfer may be an acceptable but an unintended by-product of the conservation measure. This would depend on whether the conservation effect of reducing discards more than offsets the fishing mortality in the directed scup fishery. The tradeoff of income derived from different fisheries might also be desirable if the fisheries involved were prosecuted by the same vessels. The preferred scup quota for 2001 would increase overall scup landings by about 2.2 million pounds relative to the quotas specified for

2000. Assuming 1999 scup exvessel price of $1.27 (average price for 1999, ME-NC), this would represent an increase in exvessel revenue of $2.8 million. The preferred GRA (Alternative 7a) analyzed in the 2001 specification document indicates that this measure would reduce scup discards by approximately 2.9 million pounds. It is not possible to assess the monetary value associated with the scup unharvested as a result of the proposed GRA system because most of these fish are likely to be of non marketable size. However, as these fish reached marketable size fishermen would be able to land them and generate revenues.

BLACK SEA BASS

As it was indicated above, the proposed trip limits for Quarters II and III in the black sea bass fishery are the only proposed trip limits in 2001 that will constraint commercial fishermen landings when compared to 2000. The proposed trip limits for Quarters I and IV are identical to the trip limits implemented in year 2000. As such, these trip limits are not expected to affect fishermen operations in 2001 compared to 2000.

Impacts of Proposed Trip Limits - Quarter II Period

The proposed black sea bass trip limit of 1,500 pounds in Quarter II would affect 4% of the trips and 52% of the landings based on 1999 landings (Table 51). This trip limit would affect 32 (7%) of the known vessels that landed black sea bass during this period. Given the same level of landings, if all trips were constrained to 1,500 pounds then the number of trips at this threshold level could increase from 144 to 256 (384,693 lb / 1,500 lb per trip). This would be the number of trips required in order to allow vessels to land the same amount of fish as in the base year. This could have a considerable effect on some fishing vessels. The effects on vessels would depend on fishing practices and vessel size. As an example, larger boats would have to make additional trips to compensate for reductions in landings associated with the proposed trip limit. However, it is important to mention that during Quarter II 1999 a trip limit of 7,000 pounds was in place and during Quarter II 2000 a trip limit of 3,000 was implemented (Table 48). As such, the impacts stated above are likely to be overestimating impacts since adjustments to change in trip limits were made from 1999 to 2000. On the other hand, assuming that the affected vessels were not able to make additional trips to compensate for the reduction in landings per trip derived from the proposed trip limit, then affected vessels would be constrained to make 144 trips at the 1,500 pound trip limit. As such, 168,693 pounds of black sea bass would not be landed [(384,693 lb) minus (144 trips x 1,500 lb per trip)]. Assuming an average exvessel price of $1.48 per pound (average price for Quarter II 1999, ME-VA), then each vessel would lose $7,802 [(168,693 lb x $1.48 per lb) / 32 vessels]. This loss in revenue is likely to be overestimated since vessels could make additional trips to compensate for landings reductions associated with the proposed trip limit.

Most of the affected vessels are smaller vessels. Four vessels (12.5%) were less than 5 GRTs and the number of trips made by those vessels ranged from 2 trips for 2 of the 4 vessels to 6 trips for the other 2 vessels, averaging 4 trips per vessel. Eighteen vessels (56.3%) were between 5-50 GRTs and the range of trips made by those vessels ranged from 1 (4 vessels) to 15 (1 vessel), averaging 5.2 trips per vessel. Six vessels (18.8%) were between 51-150 GRTs and the trips made by those vessels ranged from 1 (2 vessels) to 10 (1 vessel), averaging 3.5 trips per vessel. Four vessels (12.5%) have over 150 GRTs and trips made by those vessels ranged from 1 (1vessel) to 5 (2vessels), averaging 3.5 trips per vessel.

By gear type, over 99% of the trips made by vessels of 50 or less GRTs employed pots and traps. About 50% of the trips made by vessels with 51-150 GTRs were made with pots and traps and the rest of the trips were made with bottom otter trawl gear. About 93% of the trips made by vessels with over 150 GRTs were made with bottom otter trawl gear.

These vessels were compared to the small entities projected to be impacted by revenue losses of 5% or greater under the preferred alternative (Section 5.1.1) of the 2001 Specification document. It was found that 2 out of 32 vessels identified as affected by the recommended black sea bass trip limit in Quarter II were also identified as having revenue reductions of 5% or greater due to the proposed summer flounder, scup, and black sea bass quotas for 2001. In fact, revenue losses for those two vessels as a consequence of the proposed summer flounder, scup, and black sea bass quotas for 2001 ranged from 7.7% to 11.2%. Both of these vessels are vessels with less than 50 GRTs.

Impacts of Proposed Trip Limits - Quarter III Period

The proposed black sea bass trip limit of 1,000 pounds in Quarter III would affect 5% of the trips and 44% of the landings based on 1999 landings (Table 52). This trip limit would affect 21 (6%) of the known vessels that landed black sea bass during this period. Given the same level of landings, if all trips were constrained to 1,000 pounds then the number of trips at this threshold level could increase from 102 to 177 (177,699 lb / 1,000 lb per trip). This would be the number of trips required in order to allow vessels to land the same amount of fish as in the base year. This could have a considerable effect on some fishing vessels. The effects on vessels would depend on fishing practices and vessel size. As an example, larger boats would have to make additional trips to compensate for reductions in landings associated with the proposed trip limit. However, it is important to mention that during Quarter III 1999 a trip limit of 3,000 pounds was in place and during Quarter III 2000 a trip limit of 2,000 pounds was implemented (Table 48). As such, the impacts stated above are likely to be overestimating impacts since adjustments to change in trip limits were made from 1999 to 2000. On the other hand, assuming that the affected vessels were not able to make additional trips to compensate for the reduction in landings per trip derived from the proposed trip limit, then affected vessels would be constrained to make 102 trips at the 1,000 pound trip limit. As such, 75,699 pounds of black sea bass would not be landed [(177,699 lb) minus (102 trips x 1,000 lb per trip)]. Assuming an average exvessel price of $1.96 per pound (average price for Quarter II 1999, ME-VA), then each vessel would lose $7,065 [(75,699 pounds x $1.96 per lb) / 21 vessels]. This loss in revenue is likely to be overestimated since vessels could make additional trips to compensate for landings reductions associated with the proposed trip limit.

Most of the affected vessels are smaller vessels. Two vessels (9.5%) were less than 5 GRTs and made one trip each. Seventeen vessels (81%) were between 5-50 GRTs and the number of trips made by those vessels ranged from 1 (6 vessels) to 21 (1 vessel), averaging 4.9 trips per vessel. Two vessels (9.5%) were over 150 GRTs and trips made by those vessels ranged from 4 to 13, averaging 8.5 trips per vessel.

By gear type, about 92% of all trips made by vessels of 50 or less GRTs employed pots and traps, with the rest of the trips employing hand line (other). In addition 100% of the trips made by vessels with 51-150 GTRs were made with pots and traps.

These vessels were compared to the vessels projected to be impacted by revenue losses of 5% or greater under the preferred alternative (Section 5.1.1) of the 2001 Specification document. It was found that none of the 21 vessels identified as affected by the recommended black sea bass trip limit in Quarter III were identified as having revenue reductions of 5% or greater due to the proposed summer flounder, scup, and black sea bass quotas for 2001.

Summary of Impacts

The landing/trip limits were chosen as an appropriate balance between the economic concerns of the industry (i.e., landing enough scup to make the trip economically viable) and the need to ensure the equitable distribution of the quota over the period.

Changes in landing/trip limits can impact profitability in various ways. These impacts would vary depending of fishing practices. As an example, larger vessels fishing offshore would have to make extra trips to land the same amount of fish under more constraining landing/trip limits and potentially incur substantial increases in costs due to an increase in operating costs. On the other hand, these limits may mitigate some or all of these negative impacts by providing the market a regular product supply, avoiding market gluts, and price fluctuations.

The proposed fish size limits and minimum mesh provisions in the scup fishery are not expected to affect small entities in a negative manner. In fact, the proposed mesh threshold for the winter period is expected to have a positive impact on scup fishermen since more scup will be able to be retained in the small mesh fishery than before. A major impact associate with the proposed scup landing limits in Winter II is a potential increase in the number of trips made by vessels during that periods. More specifically, according to 1999 Weighout (dealer) data, it was estimated that the proposed landing limit for Winter II would increase the numbers of trips needed to land the same amount of scup landed during that winter from 142 to 232. In addition, it was also estimated that in the absence of additional trips to compensate the reduction in landings associated with the landing limit (142 trips was a limiting factor) each vessel would lose $3,692. This loss in revenue is likely to be overestimated since vessels could make additional trips to compensate for landings reductions associated with the proposed landing limit.

A major impact associate with the proposed black sea bass trip limits in Quarters II and III is a potential increase in the number of trips made by vessels during those periods. More specifically, according to 1999 Weighout (dealer) data, it was estimated that the proposed trip limit for Quarters II and III would increase the numbers of trips needed to land the same amount of black sea bass landed during those quarters from 144 to 256 and from 102 to 177, respectively. However, given the constrains associated with the data employed in the analysis, these increases in number of trips are inflated and represent the worse case scenario. Since adjustments to changes in trip limits were made from 1999 to 2000, the potential increase on the number of trips made by black sea bass vessels during those periods are likely to be lower than estimated above. In addition, it was also estimated that in the absence of additional trips to compensate the reduction in landings associated with the trip limits (144 and 102 trips were limiting factors) each vessel would lose $7,802 and $7,065 during Quarters II and III, respectively. These losses in revenues are likely to be overestimated since vessels could make additional trips to compensate for landings reductions associated with the proposed landing limit.

In addition, it was also determined that 2 of the vessels impacted by the reduction in the black sea bass trip limit during the second quarter are also impacted by revenue losses greater than 5% as a consequence of the proposed summer flounder, scup, and black sea bass quotas for 2001 that were evaluated in the 2001 Specification document. These two vessels are smaller in size. One is less than 5 GRTs and the other is between 23 and 33 GRTs. As such, if they operate in waters relatively close to the shore, it is probable that they may not incur substantial increases in operating costs when compensating for additional trips needed to land the same amount of black sea bass.

None of the vessels impacted under the proposed scup landing limit were identified as been impacted under the proposed black sea bass trip limit. However, of the vessels impacted by the proposed trip limits in the black sea bass fishery, 13 vessels were identified as been impacted under both quota periods. As such, in the absence of any adjustment to compensate for the proposed trip limits in the black sea bass fishery (i.e., increasing the number of trips made by affected vessels) then it is expected that impacts would be higher for these vessels.

The potential impacts of both the proposed scup quota and the proposed measures to control scup discards (i.e., GRAs) could shift income away from vessels engaged in non-scup directed fisheries to vessels targeting scup if vessels that previously landed scup harvested from areas under the proposed GRA system are not to land scup caught in non GRAs areas. This is unlikely to be a major problem as vessels engaged in non-scup directed fisheries are still allowed to land scup harvested in non GRAs areas. However, due to lack of data this cannot be estimated.

The recommended minimum fish size and minimum mesh provision during the summer period is identical to that implemented in 2000. As such, no negative impacts are expected. On the other hand, the recommended minimum mesh threshold during the winter period is higher than the minimum mesh threshold implemented in 2000. Since, a lower trigger level has been in place for years, the proposed trigger level cannot be analyzed quantitatively. However, it is likely that this measure will have a positive impact on small mesh vessels since more scup will be retained in the small mesh fisheries than before.

The Council recommended that the possession limits specified for the scup and black sea bass fisheries also be the maximum amount that would be allowed to be landed within a 24-hour period (calendar day). Although there have been no reported instances of vessels landing the possession limit more than one time per day for these species, the Council was aware that this activity had occurred in the Loligo squid fishery, and acted to prevent it from potentially occurring in these fisheries. The Council has also recommended this measure for the squid, mackerel, and butterfish fisheries where the activity has actually been reported. For the summer flounder, scup and black sea bass fisheries this is a preventive measure recommended by the Council to achieve consistency regarding possession limits among the Mid-Atlantic FMPs. Because there has been no reported multiple daily landings in these fisheries, it is assumed that this activity rarely occurs and, therefore, its prohibition is not likely to create negative social, environmental, or economic impacts.

Table 48. Summary of landing/trip limits in the scup and black sea bass fisheries, 1999-2001.

Species	Quota Period	1999	2000	2001
Scup	Winter I[a]	12,000 (85%) 1,000	10,000 (85%) 1,000	10,000 (75%) 1,000
	Summer	N/A	N/A	N/A
	Winter II	4,000	4,000/500[b]	2,000
Black Sea Bass	Quarter I	11,000	9,000	9,000
	Quarter II	7,000	3,000	1,500
	Quarter III	3,000	2,000	1,000
	Quarter IV	4,000	3,000/2,000[c]	2,000

[a]An example of how to read this row is: The recommended landing limit for the first 2001 winter period (Jan-Apr) is 10,000 pounds. When 75% of the landings are reached, the landing limit will drop to 1,000 pounds.
[b]The landing limit was reduced from 4,000 pounds to 500 pounds by an ASMFC emergency rule action.
[c]The trip limit was reduced from 3,000 pounds to 2,000 pounds by an ASMFC emergency rule action.
N/A= Not Applicable.

Table 49. The total number of vessels, trips, and associated pounds for a given threshold (pounds) of scup, Winter II (Nov-Dec) period, 1999.

Threshold	Vessels	%	Trips	%	Pounds	%
>=1	205	100%	902	100%	644,122	100%
>=100	112	55%	453	50%	633,073	98%
>=200	90	44%	360	40%	619,827	96%
>=300	83	40%	324	36%	611,356	95%
>=400	75	37%	288	32%	598,970	93%
>=500	66	32%	266	29%	589,145	91%
>=1000	55	27%	197	22%	540,605	84%
>=1500	52	25%	162	18%	497,449	77%
>=2000	49	24%	142	16%	463,116	72%
>=2500	41	20%	106	12%	381,957	59%
>=3000	35	17%	89	10%	336,229	52%
>=3500	30	15%	70	8%	274,668	43%
>=4000	14	7%	25	3%	103,098	16%
>=4500	1	0%	1	0%	6,780	1%
>=5000	1	0%	1	0%	6,780	1%

Source: Unpublished NMFS Weighout (dealer) data, ME-VA.

Table 50. Summary of mesh threshold in the scup fishery, 1999-2000.

Period		1999	2000	2001
Nov-Apr	Min. mesh size (in, diamond)	4.5	4.5	4.5
	Mesh threshold	200	200	500
May-Oct	Min. mesh size (in, diamond)	4.5	4.5	4.5
	Mesh threshold	100	100	100

Table 51. The total number of vessels, trips, and associated pounds for a given threshold (pounds) of black sea bass, Quarter II (April-June) period, 1999.

Threshold	Vessels	%	Trips	%	Pounds	%
>=1	488	100%	3,505	100%	740,054	100%
>=100	162	33%	779	22%	693,634	94%
>=200	114	23%	564	16%	663,714	90%
>=300	88	18%	486	14%	644,581	87%
>=400	79	16%	429	12%	624,715	84%
>=500	75	15%	389	11%	606,716	82%
>=1000	43	9%	232	7%	491,657	66%
>=1500	32	7%	144	4%	384,693	52%
>=2000	23	5%	76	2%	264,760	36%
>=2500	18	4%	56	2%	221,450	30%
>=3000	15	3%	41	1%	179,501	24%
>=3500	13	3%	28	1%	137,200	19%
>=4000	11	2%	21	1%	111,299	15%
>=4500	9	2%	17	0%	94,109	13%
>=5000	7	1%	11	0%	65,555	9%

Source: Unpublished NMFS Weighout (dealer) data, ME-VA.

Table 52. The total number of vessels, trips, and associated pounds for a given threshold (pounds) of black sea bass, Quarter III (July-September) period, 1999.

Threshold	Vessels	%	Trips	%	Pounds	%
>=1	329	100%	1,866	100%	400,735	100%
>=100	82	25%	621	33%	377,509	94%
>=200	63	19%	497	27%	359,161	90%
>=300	51	16%	390	21%	332,964	83%
>=400	45	14%	297	16%	300,451	75%
>=500	39	12%	233	12%	271,616	68%
>=1000	21	6%	102	5%	177,699	44%
>=1500	11	3%	51	3%	117,341	29%
>=2000	10	3%	30	2%	81,670	20%
>=2500	6	2%	17	1%	53,238	13%
>=3000	3	1%	6	0%	22,669	6%
>=3500	2	1%	2	0%	10,069	3%
>=4000	2	1%	2	0%	10,069	3%
>=4500	1	0%	1	0%	5,609	1%
>=5000	1	0%	1	0%	5,609	1%

Source: Unpublished NMFS Weighout (dealer) data, ME-VA.

5.1.5 SUMMARY OF IMPACTS

In sum, when the proposed quotas for summer flounder, scup, and black sea bass for year 2001 are compared to the quotas for year 2000, they are 3% lower, 76% higher, and the same, respectively. However, when the proposed quotas for 2001 are comparted to the adjusted 2000 quotas they are 1% lower, 136% higher, and 13% lower for summer flounder, scup, and black sea bass, respectively. Due to projected overages in 2000, the overall adjusted commercial quotas for 2001 will be 2% lower, 112% higher, and 3% higher than the quotas specified for summer flounder, scup, and black sea bass in 2000, respectively. Since overages were only deducted in Maine for summer flounder, in Winter 1 and Summer periods for scup, and in Quarters 2 and 3 for black sea bass, vessel that participated in those fisheries during any other time/area are not projected to be affected by revenue losses. In 2001, recreational landings would slightly decrease in the case of summer flounder and scup, and increase in the case of scup and black sea bass (versus 1999 recreational landings).

Recreational landings for all three fisheries have fluctuated over the past several years. However, there are numerous alternative target species for the recreational sector. The number of trips targeting a given species in any given year is quite variable. In the aggregate, total number of recreational trips (all modes combined) in the North Atlantic and Mid-Atlantic subregions combined have remained relatively stable with a slight downward trend since the early 1990s. In addition, the number of party/charter boat trips taken in the North Atlantic and Mid-Atlantic subregions combined have fluctuated throughout the 1990-1999 period, ranging from 2.6 million trips in 1993 to 1.8 million trips in 1999 (averaging 1.8 million trips form 1990-1999 and 1.6 million trips from 1995-1999).

Under this alternative a total of 8 of the 1087 commercial vessels were projected to incur revenue losses of 5 percent or greater. Among affected entities, vessels that landed black sea bass only were proportionally more affected by revenue losses in excess of 5 percent when compared to vessels that landed a combination of scup and black sea bass, or a combination of black sea bass and summer flounder. In addition, it is estimated that 6 vessels were projected to have no change in revenue in 2001 compared to 2000 and 529 vessels were projected to have an increase in revenue.

It is important to stress that these changes represent merely the potential, i.e., based on available data. Actual changes in revenue will likely vary. This variation would occur for several reasons, including impacts undetermined for unidentifiable vessels, revenues earned or lost due to trip limits and seasons set by a state to manage sub-allocations of quota, and unanticipated reductions in 2001 for quota overages in 2000 that were not accounted for here. These measures are specified in order to eliminate overfishing and to attain the rebuilding objectives specified in the FMP for summer flounder, scup and black sea bass.

Overall reductions in exvessel revenue associated with the proposed GRA closures are projected to range from $2.43 million for the preferred alternative (Alternative 1) to $13.66 million for Alterative 4. A Relative Performance Index was developed to compare the potential reduction in scup discards associated with the various GRA alternatives to the decrease in landings associated with them (see section 5.1.3 above). According to this Relative Performance Index, the preferred GRA alternative (Alternative 1) would provide the largest reduction in scup discards while providing the lowest reduction in revenues followed by Alternatives 2, 3, 4, and 5. It is important to note that the associated decrease in landings can be recouped as vessel redirect effort will likely redirect their effort onto other areas that are open or closed areas when they reopen, recouping any loss in revenues associated with the implementation of this alternative. However, impacts to profitability are possible if costs due to vessel operation increase.

5.2 QUOTA ALTERNATIVE 2

This alternative examines the impacts on industry that would result from total harvest limits for summer flounder, scup and black sea bass. To analyze the economic effects of this alternative, the total harvest limits specified in section 4.0 of the RIR/IRFA were employed.

Under this alternative, the summer flounder specifications would result in an aggregate 2.1 percent increase in allowable commercial landings relative to the 2000 quota and a 11.5 percent reduction in recreational harvest relative to 1999 landings (Tables 37 and 44). The scup specifications would result in an aggregate 10.4 percent increase in allowable commercial landings relative to the 2000 quota and a 34.5 percent decrease in recreational harvest relative to 1999 landings (Tables 37 and 45). The black sea bass specifications would result in an aggregate 3.1 percent increase in allowable commercial landings relative to the 2000 quota and a 85.3 percent increase in the recreational harvest relative to 1999 landings (Tables 37 and 46). The black sea bass TAL is equivalent to the Council's proposed specifications for 2001. Again, this alternative makes the same assumptions about landings as are made in the previous analysis.

5.2.1 COMMERCIAL IMPACTS

5.2.1.1 Threshold Analysis for Participating Vessels

The results of the threshold analysis are reported in Table 53. Across all vessel classes a total of 15 vessels were projected to be impacted by revenue losses of 5 percent or greater. The economic impacts for the 1087 vessels participating in these fisheries range from expected revenue losses on the order of 10 to 19 percent for a total of 6 vessels (relative to 2000) to no change in revenues for 6 vessels and increase revenue for 971 vessels. Most of the vessels with projected revenue losses of 5 percent or greater landed black sea bass only followed by a combination of scup and black sea bass. The majority of the revenue losses are attributed to quota reductions and overages associated with the black sea bass fishery in Quarter 2 and the scup fishery in Winter 1.

Table 53. Threshold analysis of revenue impacts for participating vessels, "FLK" is summer flounder, "BSB" is black sea bass, and "SCP" is scup.

Quota Alternative 2 Status Quo				Increased Revenue (number)	No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (%)						
Class	Landings Combination	Total Vessels	Number of Vessels Impacted by ≥ 5 Reduction			<5	5-9	10-19	20-29	30-39	40-49	$50
1	SCP Only	10	1	7	0	2	1	0	0	0	0	0
2	BSB Only	176	6	138	6	26	1	5	0	0	0	0

3	FLK ONLY	264	0	263	0	1	0	0	0	0	0	0
4	SCP/BSB	64	5	51	0	8	4	1	0	0	0	0
5	SCP/FLK	17	0	17	0	0	0	0	0	0	0	0
6	BSB/FLK	218	1	206	0	11	1	0	0	0	0	0
7	SCP/BSB /FLK	338	2	289	0	47	2	0	0	0	0	0
	Totals	1087	15	971	6	95	9	6	0	0	0	0

Impacts of the quotas provisions were examined relative to a vessel's home state as reported on the vessel's permit application (Table 54). "Home state" indicates the state where a vessel is based and primarily ported, and is presumed to reflect to where the costs and benefits of management actions return. However, home state is self-reported at the time an individual applies for a Federal permit and may not necessarily indicate where the vessel subsequently conducts most of its activity. The number of impacted vessels (revenue reduction >5%) by home state ranged from none in Delaware, Maryland, and North Carolina to a high of 3 in New Jersey. The larger number of impacted vessels in New Jersey may be due to a relatively higher dependence on black sea bass.

Table 54. Review of revenue impacts under quota Alternative 2, by home state.
[a]States with fewer than 4 vessels were aggregated.

State	Participating Vessels	Number of Vessels Impacted ≥5 percent	Increased Revenue (number)	No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (percent)						
					<5	5-9	10-19	20-29	30-39	40-49	$50
DE	8	0	8	0	0	0	0	0	0	0	0
MA	206	1	195	0	10	0	1	0	0	0	0
MD	12	0	12	0	0	0	0	0	0	0	0
ME	6	0	6	0	0	0	0	0	0	0	0
NC	89	0	81	1	7	0	0	0	0	0	0
NJ	121	3	95	2	21	2	1	0	0	0	0
NY	163	1	144	1	17	1	0	0	0	0	0
PA	18	1	12	0	5	0	1	0	0	0	0
RI	101	1	95	0	5	1	0	0	0	0	0
VA	102	1	96	1	4	0	1	0	0	0	0
OTHER[a]	7	0	7	0	0	0	0	0	0	0	0
NOT KNOWN[b]	254	NK	NK	NK	NK	NK	NK	NK	NK	NK	NK
Total	1087	8	751	5	69	4	4	0	0	0	0

[a]States with fewer than 4 vessels were aggregated.
[b]Vessels have shown landings of either of those three species in 1999, but do not hold any of the requisite Federal permits in 2000. These vessels may be

fishing exclusively in state waters fisheries for those species, and landings are indicated because of reporting requirements for their other Federal permits or they do not hold a Federal permit to participate in these fisheries any longer.

By virtue of holding a valid Federal permit for summer flounder, scup, or black sea bass a vessel is subject to any regulations that are promulgated under the FMP. From this perspective, these vessels are subject to any quota specification whether or not they actually choose to engage in any one of the three (summer flounder, scup, or black sea bass) fisheries. The decision to engage in any given fishery during a given time period is subject to numerous considerations from temporary suspension of fishing due to illness or vessel construction or repair to merely a reasoned decision to pursue other fisheries. Given the limited access nature of the fisheries, a vessel may wish to continue to hold a permit to preserve the opportunity to engage in the fishery when circumstance allows.

5.2.2 RECREATIONAL IMPACTS

Under this alternative, the summer flounder 2001 recreational harvest limit would be 7.41 million lb. This limit is a 11.5 percent decrease from 1999 recreational landings, and no change from the 2000 recreational harvest limit (Table 44). The scup recreational harvest limit for 2001 would be set equal to 1.24 million lb. This is a 34.5 percent decrease over the 1999 recreational landings, and no change from the 2000 recreational harvest limit (Table 45). Finally, this alternative would set the black sea bass recreational harvest limit for 2001 at 3.15 million lb. This level represents a 85.3 percent increase from the 1999 recreational landings, and no change from the 2000 recreational harvest limit (Table 46).

In the summer flounder fishery, there is no mechanism to deduct overages directly from the recreational harvest limit, so any overages must be addressed by way of adjustments to the management measures. It is likely that management measures under this alternative would be required to restrict the recreational fishery for 2001 (compared to 1999 landings) and may cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size or closed season). However, there is no indication that any of these measures would lead to a decline in the demand for party/charter boat trips. Currently, the market demand for these sectors is relatively stable. It is unlikely these measures will result in any substantive decreases in the demand for party/charter boat trips.

At the present time, there is neither behavioral nor demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. It is most likely that party/charter anglers will target other species when faced with potential reductions in the amount of summer flounder and scup that they are allowed to catch. As such, it is not probable that the decrease in the summer flounder harvest limits, relative to the 1998 landings will have a substantial impact on the number of party/charter fishing trips.

5.2.3 SUMMARY OF IMPACTS

In sum, the proposed quotas under Alternative 2 (Status Quo) for all three species are identical to that of the 2000 quotas. However, due to overages in 1999 which affected the final adjusted 2000 quotas and due to the projected overages in 2000, the final commercial quotas in 2001 will be higher than in 2000. In 2001, recreational landings would decrease in the case of summer flounder and scup (versus 1999 recreational landings) and increase in the case4 of black sea bass.

Recreational landings for all three fisheries have fluctuated over the past several years. The number of trips targeting a given species in any given year is quite variable. In the aggregate, total number of recreational trips (all modes combined) in the North Atlantic and Mid-Atlantic subregions combined have remained relatively stable with a slight downward trend since the early 1990s. In addition, the number of party/charter boat trips taken in the North Atlantic and Mid-Atlantic subregions combined have fluctuated throughout the 1990-1999 period, ranging from 2.6 million trips in 1993 to 1.8 million trips in 1999 (averaging 1.8 million trips form 1990-1999 and 1.6 million trips from 1995-1999).

Under this alternative, a total of 15 of the 1087 commercial vessels were projected to incur revenue losses of 5 percent or greater. In addition, it is estimated that 6 vessels would have no change in revenue in 20001 compared to 2000 and 751 would have an increase in revenue. Among affected vessels that landed black sea bass only or a combination of scup and black sea bass were proportionally more affected in excess of 5 percent revenue losses when compared to vessels that landed scup only, a combination of black sea bass and summer flounder, or a combination of scup, black sea bass and summer flounder.

The total harvest limit for scup analyzed under this alternative is more conservative than that presented in Alternative 1. More specifically, the commercial scup harvest limit under this alternative is approximately 2 million lb lower than the limit specified under Alternative 1. The summer flounder harvest limit analyzed under this alternative is slightly (0.36 mill lb) above the limit specified under Alternative 1. Finally, the black sea bass harvest limit in this alternative is identical to that specified in Alternative 1. While these measures may present an improved probability of attaining the rebuilding objectives specified in the FMP, the negative economic impacts upon small entities would be higher than under Alternative 1.

The overall impacts associated with some vessels with certain landing combinations (black sea bass only) do not differ much from those in Alternative 1. However, negative economic impacts for vessels that harvested a scup and black sea bass combined and scup, black sea bass and summer flounder combined were more severe under this alternative. This is due to the 2 million pound decrease in scup quota. Therefore, since the impacts are greater, the benefits to the stocks do not appear to outweigh the impacts on small entities.

It is important to stress that these changes represent merely the potential, i.e., based on available data. Actual changes in revenue will likely vary. This variation would occur for several reasons, including impacts undetermined for unidentifiable vessels, revenues earned or lost due to trip limits and seasons set by a state to manage sub-allocations of quota, and unanticipated reductions in 2001 for quota overages in 2000 that were not accounted for here.

5.3 QUOTA ALTERNATIVE 3

This alternative examines the impacts on industry that would result from total harvest limits for summer flounder, scup and black sea bass. To analyze the economic effects of this alternative, the total harvest limits specified in section 4.0 of the RIR/IRFA were employed.

Alternative 3 represents the “least restrictive” alternative - those harvest levels considered that would allow the maximum to be harvested. The summer flounder specifications under this alternative would result in an aggregate 12.8 percent increase in allowable commercial landings relative to the 2000 quota and a 2.2 percent reduction in recreational harvest relative to 1999 landings (Tables 37 and 44). The scup specifications would result in an aggregate 148.3 percent increase in allowable commercial landings relative to the 2000 commercial quota and a 4.7 percent increase in recreational harvest relative to 1999 landings (Tables 37 and 45). The black sea bass specifications would result in an aggregate 35.0 percent increase in allowable commercial landings relative to the 2000 commercial quota and a 137.1 percent increase in the recreational harvest relative to 1999 landings (Tables 37 and 46). Again, this alternative makes the same assumptions about landings as are made in the previous analyses.

5.3.1 COMMERCIAL IMPACTS

5.3.1.1 Threshold Analysis for Participating Vessels

An analysis of these harvest limits indicates that no vessels would suffer revenue losses, in fact, all vessels will experience an increase in revenue (relative to 2000) regarding of the species landed (Table 55).

Table 55. Threshold analysis of revenue impacts for participating vessels, “FLK” is summer flounder, “BSB” is black sea bass, and “SCP” is scup.

Quota Alternative 3				Increased Revenue (number)	No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (%)						
Class	Landings Combination	Total Vessels	Number of Vessels Impacted by ≥ 5 Reduction			<5	5-9	10-19	20-29	30-39	40-49	$50
1	SCP Only	10	0	10	0	0	0	0	0	0	0	0
2	BSB Only	176	0	176	0	0	0	0	0	0	0	0
3	FLK Only	264	0	263	0	1	0	0	0	0	0	0
4	SCP/BSB	64	0	64	0	0	0	0	0	0	0	0
5	SCP/FLK	17	0	17	0	0	0	0	0	0	0	0
6	BSB/FLK	218	0	218	0	0	0	0	0	0	0	0
7	SCP/BSB/FLK	338	0	338	0	0	0	0	0	0	0	0
	Totals	1087	0	1086	0	1	0	0	0	0	0	0

Impacts of the quotas provisions were examined relative to a vessel's home state as reported on the vessel's permit application (Table 56). "Home state" indicates the state where a vessel is based and primarily ported, and is presumed to reflect to where the costs and benefits of management actions return. However, home state is self-reported at the time an individual applies for a Federal permit and may not necessarily indicate where the vessel subsequently conducts most of its activity. The range of vessels projected to experience an increase in revenue is presented in Table 56.

Table 56. Review of revenue impacts under quota Alternative 3, by home state.

State	Participating Vessels	Number of Vessels Impacted ≥5 percent	Increased Revenue (number)	No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (percent)						
					<5	5-9	10-19	20-29	30-39	40-49	$50
DE	8	0	8	0	0	0	0	0	0	0	0
MA	206	0	205	0	1	0	0	0	0	0	0
MD	12	0	12	0	0	0	0	0	0	0	0
ME	6	0	6	0	0	0	0	0	0	0	0
NC	89	0	89	0	0	0	0	0	0	0	0
NJ	121	0	121	0	0	0	0	0	0	0	0
NY	163	0	163	0	0	0	0	0	0	0	0

PA	18	0	18	0	0	0	0	0	0	0	0
RI	101	0	101	0	0	0	0	0	0	0	0
VA	102	0	102	0	0	0	0	0	0	0	0
OTHER[a]	7	0	7	0	0	0	0	0	0	0	0
NOT KNOWN[b]	254	NK	NK	NK	NK	NK	NK	NK	NK	NK	NK
Total	1087	0	832	0	1	0	0	0	0	0	0

[a]States with fewer than 4 vessels were aggregated.
[b]Vessels have shown landings of either of those three species in 1999, but do not hold any of the requisite Federal permits in 2000. These vessels may be fishing exclusively in state waters fisheries for those species, and landings are indicated because of reporting requirements for their other Federal permits or they do not hold a Federal permit to participate in these fisheries any longer.

By virtue of holding a valid Federal permit for summer flounder, scup, or black sea bass a vessel is subject to any regulations that are promulgated under the FMP. From this perspective, these vessels are subject to any quota specification whether or not they actually choose to engage in any one of the three (summer flounder, scup, or black sea bass) fisheries. The decision to engage in any given fishery during a given time period is subject to numerous considerations from temporary suspension of fishing due to illness or vessel construction or repair to merely a reasoned decision to pursue other fisheries. Given the limited access nature of the fisheries, a vessel may wish to continue to hold a permit to preserve the opportunity to engage in the fishery when circumstance allow.

5.3.2 RECREATIONAL IMPACTS

Under this "least restrictive" alternative, the summer flounder 2001 recreational harvest limit would be 8.18 million lb. This level is a 2.2 percent decrease from 1999 recreational landings, and a 0.77 million lb increase over the 2000 recreational harvest limit. Under this alternative, the scup recreational harvest limit for 2001 would be 1.97 million lb. This is a 4.2 percent increase over the 1999 landings, and a 0.73 million lb increase over the 2000 harvest limit. For black sea bass, the recreational harvest limit for 2001 would be 4.03 million lb, a 137.1 percent increase over the 1999 recreational landings, and 0.88 million lb over the 2000 recreational harvest limit.

It is likely that management measures proposed to restrict the recreational summer flounder fishery for 2001 (compared to 1999 landings) may cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size or closed season). Given that the scup and black sea bass levels are projected to increase, it is not anticipated that restrictive measures would be required under this alternative. There is no indication that any of these measures would lead to a decline in the demand for party/charter boat trips. Given the relatively stable market demand that these sectors are experiencing, it is unlikely these measures will result in any substantive decreases in the demand for party/charter boat trips.

At the present time, there is neither behavioral nor demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. It is most likely that party/charter anglers will target other species when faced with potential reductions in the amount of summer flounder that they are allowed to catch. It is not probable that the decrease in the summer flounder harvest limits, relative to the 1999 landings, will have a substantial impact on the number of party/charter fishing trips, as the increased scup and black sea bass harvest limits will allow for greater recreational opportunities in those fisheries.

5.3.3 SUMMARY OF IMPACTS

Alternative 3 allow fishermen to land more summer flounder in 2001 versus 2000, 1999, 1998, 1997, and 1996. It would also allow fishermen to land more scup in 2001 versus 2000 and 1999, and more black sea bass versus 2000, 1999, and 1998. Recreational landings would increase for scup and black sea bass (relative to 1999 landings) and slightly decrease for summer flounder.

Recreational landings for all three fisheries have fluctuated over the past several years. The number of trips targeting a given species in any given year is quite variable. In the aggregate, total number of recreational trips (all modes combined) in the North Atlantic and Mid-Atlantic subregions combined have remained relatively stable with a slight downward trend since the early 1990s. In addition, the number of party/charter boat trips taken in the North Atlantic and Mid-Atlantic subregions combined have fluctuated throughout the 1990-1999 period, ranging from 2.6 million trips in 1993 to 1.8 million trips in 1999 (averaging 1.8 million trips form 1990-1999 and 1.6 million trips from 1995-1999).

The threshold analysis indicates that all 1087 commercial vessels were projected to incur revenue gain. This due to the fact that the quotas under this alternative are substantially higher than those established in 2000. The substantial increase in these quotas overcompensate for the reductions in landings due to overages in 2000.

These measures would allow for significant increases in the harvest of summer flounder, scup, and black sea bass. Neither limit for these species has a high probability of achieving the rebuilding goals of the FMP. Therefore, while this alternative may mitigate the impacts on small entities, it does not comport with the FMP. Therefore, this alternative was not proposed by the Council.

It is important to stress that these changes represent merely the potential, i.e., based on available data. Actual changes in revenue will likely vary. This variation would occur for several reasons, including impacts undetermined for unidentifiable vessels, revenues earned or lost due to trip limits and seasons set by a state to manage sub-allocations of quota, and unanticipated reductions in 2000 for quota overages in 1999 that were not accounted for here. These measures are specified in order to eliminate overfishing and to attain the rebuilding objectives specified in the FMP for summer flounder, scup and black sea bass.

5.4 QUOTA ALTERNATIVE 4

This alternative examines the impacts on industry that would result from total harvest limits for summer flounder, scup and black sea bass. To analyze the economic effects of this alternative, the total harvest limits specified in section 4.0 of the RIR/IRFA were employed.

Alternative 4 represents the "Most restrictive" alternative - it analyzes the cumulative impacts of the most restrictive possible harvest levels - those that would result in the greatest reductions in landings (relative to 2000) for summer flounder and black sea bass (the most restrictive scup quota level is evaluated under the preferred Alternative 1). The summer flounder specifications under this alternative would result in an aggregate 8.7 percent decease in allowable commercial landings relative to the 2000 quota and a 20.8 percent reduction in recreational harvest relative to 1999 landings (Tables 37 and 44). The scup specifications would result in an aggregate 61.3 percent increase in allowable commercial landings relative to the 2000 commercial quota and a 20.4 percent decrease in recreational harvest relative to 1999 landings (Tables 37 and 45). The black sea bass specifications would result in an aggregate 35.4 percent decrease in allowable commercial landings relative to the 2000 commercial quota and a 22.4 percent increase in the recreational harvest relative to 1999 landings (Tables 37 and 46). Again, this alternative makes the same assumptions about landings as are made in the previous analyses.

5.4.1 COMMERCIAL IMPACTS

5.4.1.1 Threshold Analysis for Participating vessels

An analysis of these harvest limits indicates that these most restrictive levels will result in greater than a five percent revenue loss for 214 of the commercial vessels subject to this rule (Table 57). Since commercial harvest limits for summer flounder and black sea bass will result in decrease landings (increase in landings for scup) in 2001 (relative to 2000 quotas), some landings combinations mitigate the potential impacts on participants as it occurred in all other alternatives. The economic impacts ranged from expected revenue losses in the order of greater than 50 percent for 4 vessels to no revenue loss (relative to 2000) for vessels than landed scup only. The majority of the revenue losses are attributed to quota reductions and overages associated with the summer flounder and black sea bass fisheries. In addition, 184 of the 1087 commercial vessels would have an increase in revenue in 2001 relative to 2000. All impacted vessels with revenue losses of 5 percent or higher had landed black sea bass only or a combination of black sea bass with the other two species.

Table 57. Threshold analysis of revenue impacts for participating vessels, "FLK" is summer flounder, "BSB" is black sea bass, and "SCP" is scup.

Quota Alternative 4				Increased Revenue (number)	No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (%)						
Class	Landings Combination	Total Vessels	Number of Vessels Impacted by ≥ 5 Reduction			<5	5-9	10-19	20-29	30-39	40-49	$50
1	SCP Only	10	0	10	0	0	0	0	0	0	0	0
2	BSB Only	176	86	0	0	90	17	22	30	10	3	4
3	FLK Only	264	25	0	0	239	25	0	0	0	0	0
4	SCP/BSB	64	22	23	0	19	2	7	6	3	4	0
5	SCP/FLK	17	4	7	0	6	4	0	0	0	0	0
6	BSB/FLK	218	38	0	0	180	26	8	3	1	0	0
7	SCP/BSB/FLK	338	39	144	0	155	31	7	0	1	0	0
	Totals	1087	214	184	0	689	105	44	39	15	7	4

Impacts of the quotas provisions were examined relative to a vessel's home state as reported on the vessel's permit application (Table 58). "Home state" indicates the state where a vessel is based and primarily ported, and is presumed to reflect to where the costs and benefits of management actions return. However, home state is self-reported at the time an individual applies for a Federal permit and may not necessarily indicate where the vessel subsequently conducts most of its activity. Under this alternative all states have vessels facing reduction in revenue greater than 5 percent, ranging from 1 vessel in Maine to 28 vessels in Massachusetts.

Table 58. Review of revenue impacts under quota Alternative 4, by home state.

State	Participating Vessels	Number of Vessels Impacted ≥5 percent	Increased Revenue (number)	No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (percent)						
					<5	5-9	10-19	20-29	30-39	40-49	$50
DE	8	6	0	0	2	0	2	3	1	0	0
MA	206	28	45	0	133	20	3	2	1	1	1
MD	12	8	0	0	4	3	2	3	0	0	0
ME	6	1	1	0	4	0	0	1	0	0	0
NC	89	11	0	0	78	4	5	1	1	0	0
NJ	121	23	14	0	84	10	9	3	0	0	1
NY	163	26	48	0	89	16	5	4	1	0	0

PA	18	4	2	0	12	1	0	2	0	1	0
RI	101	7	47	0	47	4	2	1	0	0	0
VA	102	25	0	0	77	2	4	11	7	0	1
OTHER[a]	7	1	0	0	6	1	0	0	0	0	0
NOT KNOWN[b]	254	NK	NK	NK	NK	NK	NK	NK	NK	NK	NK
Total	1087	140	157	0	536	61	32	31	11	2	3

[a]States with fewer than 4 vessels were aggregated.
[b]Vessels have shown landings of either of those three species in 1999, but do not hold any of the requisite Federal permits in 2000. These vessels may be fishing exclusively in state waters fisheries for those species, and landings are indicated because of reporting requirements for their other Federal permits or they do not hold a Federal permit to participate in these fisheries any longer.

By virtue of holding a valid Federal permit for summer flounder, scup, or black sea bass a vessel is subject to any regulations that are promulgated under the FMP. From this perspective, these vessels are subject to any quota specification whether or not they actually choose to engage in any one of the three (summer flounder, scup, or black sea bass) fisheries. The decision to engage in any given fishery during a given time period is subject to numerous considerations from temporary suspension of fishing due to illness or vessel construction or repair to merely a reasoned decision to pursue other fisheries. Given the limited access nature of the fisheries, a vessel may wish to continue to hold a permit to preserve the opportunity to engage in the fishery when circumstance allow.

5.4.2 RECREATIONAL IMPACTS

Under this alternative, the summer flounder 2001 recreational harvest limit would be 6.63 million lb. This harvest level is a 20.9 percent decrease from 1999 recreational landings, and 0.78 million lb less than the 2000 harvest limit. Under this alternative, the scup recreational harvest limit for 2001 would be 1.5 million lb. This is a 20.5 percent decrease over the 1999 recreational landings, and 0.26 million lb below the 2000 harvest limit. Black sea bass under this alternative, would have a 2001 harvest limit of 2.08 million lb. This level is a 22.4 percent increase from the 1999 landings, and a 1.07 million lb decrease from the 2000 recreational harvest limit.

Since in these fisheries there is no mechanism to deduct overages directly from the recreational harvest limit, any overages must be addressed by way of adjustments to the management measures. In fact, for all the fisheries, harvest limits are achieved through a combination of such. It is likely that management measures will be required to restrict the recreational fishery for 2001 and that may cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size or closed season). However, there is no indication that any of these measures would lead to a decline in the demand for party/charter boat trips. Given the relatively stable market demand that these sectors are experiencing, it is unlikely these measures will result in any substantive decreases in the demand for party/charter boat trips.

At the present time, there is neither behavioral nor demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. It is most likely that party/charter anglers will target other species when faced with potential reductions in the amount of summer flounder, scup and black sea bass that they are allowed to catch. As such, it is possible that the decrease in the summer flounder relative to the 1998 landings may not have a substantial impact on the number of party/charter fishing trips.

5.4.3 SUMMARY OF IMPACTS

In sum, Alternative 4 would result in a decrease in the commercial quotas for summer flounder and black sea bass for 2001 relative to the 2000 base year. The summer flounder and scup, recreational harvest limits would decrease compared to 1999 landings, and slightly increase for black sea bass.

Recreational landings for all three fisheries have fluctuated over the past several years. The number of trips targeting a given species in any given year is quite variable. In the aggregate, total number of recreational trips (all modes combined) in the North Atlantic and Mid-Atlantic subregions combined have remained relatively stable with a slight downward trend since the early 1990s. In addition, the number of party/charter boat trips taken in the North Atlantic and Mid-Atlantic subregions combined have fluctuated throughout the 1990-1999 period, ranging from 2.6 million trips in 1993 to 1.8 million trips in 1999 (averaging 1.8 million trips form 1990-1999 and 1.6 million trips from 1995-1999).

The estimated commercial impacts indicate that a total of 214 of the 1087 participating commercial vessels were projected to incur revenue losses of 5 percent or greater. Among the alternatives evaluated herein this alternative would have greatest negative impact across all classes of participating vessels.

While these measures have an improved probability of attaining the rebuilding objectives specified in the FMP, the negative economic impacts upon small entities would be substantial. Since the objective of the FMP can be met using a alternative that has a less profound impact on small entities, this alternative was not proposed by the Council. The Council recommended reducing the number of small entities impacted by this rule by offering Alternative 1 as an alternative that also meets the conservation goals of the FMP.

It is important to stress that these changes represent merely the potential, i.e., based on available data. Actual changes in revenue will likely vary. This variation would occur for several reasons, including impacts undetermined for unidentifiable vessels, revenues earned or lost due to trip limits and seasons set by a state to manage sub-allocations of quota, and unanticipated reductions in 2001 for quota overages in 2000 that were not accounted for here. These measures are specified in order to eliminate overfishing and to attain the rebuilding objectives specified in the FMP for summer flounder, scup and black sea bass.

6.0 OTHER IMPACTS

6.1 COUNTY IMPACTS

For the reasons specified in section 3.1 of this RIR/IRFA, the economic impacts on vessels of a specified h-port were analyzed on a county wide basis. As stated in section 3.1, this profile of impacted counties was based on impacts under quota Alternative 4 - the most restrictive possible alternative. Counties included in the profile had to meet the following criteria:

- the number of impacted vessels (vessels with revenue loss exceeding 5 percent) per county was either greater than 4, or
- all impacted vessels in a given state were from the same home county.

The results of these analyses are summarized below. Since the counties have been identified based on impacts under quota Alternative 4, the analyses represent the most profound impacts possible for those counties. Consequently, other quota alternatives would result in fewer impacts.

Based on the above criteria, a total of 16 counties-make changes were identified: Sussex County, DE; Barnstable, Bristol, Plymouth, and Suffolk Counties, MA; Worcester County, MD; Dare County, NC; Atlantic, Cape May, and Ocean Counties, NJ; Kings, Nassau, and Suffolk Counties, NY; and Accomack, Norfolk, and Virginia Beach Counties, VA. Counties not included in this analysis (e.g. in CT, RI, and PA) did not have enough impacted vessels to meet the criteria specified, i.e., there were less than 4 impacted vessels per county, or all impacted vessels in a state were not home ported within the same county. For example, Alternative 4 indicates that 2 vessels in the State of Rhode Island would be impacted with revenue losses exceeding 5 percent. Even though those two vessels are located in one county (Bristol), this individual county does not meet the criteria stated above.

Table 59 details the contribution of commercial fishing sales to total county output and the relative contribution of the three quota species to total commercial fishing sales in each county. Data for the total value of goods and services sold in each county was obtained from data bases supplied by the Minnesota IMPLAN Group for the calendar year 1995. All commercial fishing data were obtained from NMFS dealer data for the 1999 calendar year for identifiable vessels. Note that commercial fishing data from the state of Delaware does not identify individual vessels. Consequently, the commercial fishing sales reported in Table 59 for Sussex County, DE do not adequately capture the economic importance of the commercial fishing industry to the county. Similarly, the magnitude of the impacts in other counties may be understated if landings made by state licensed vessels selling to state licensed dealers (as such unidentified vessel) are substantial.

Of the 16 counties commercial fishing sales exceed or approach 1 percent of the total value of goods and services sold only in Bristol (0.7 per cent), MA; Dare (1.14 percent), NC; and Cape May (0.91 percent), NJ. These data indicate that each of the identified counties are not substantially dependent upon sales of commercial fishing products to sustain the county economies.

As a percentage of commercial fishing sales, scup comprises less than 5 percent of revenues in all counties except in Kings and Nassau (6.15 percent and 6.19 percent, respectively), NY. The black sea bass share of commercial fishing sales is less than 5 percent in all counties except Sussex (8.11 percent), DE; Worcester (9.76 percent), MD; Kings (13.64 percent), NY; and Virginia Beach (14.60 percent), VA. The summer flounder share of commercial fishing sales is less than 5 percent in all counties except Worcester (5.41 percent), MD; Dare (10.31 percent), NC; Kings and Suffolk (27.40 percent and 6.92 percent, respectively), NY; and Accomack (6.91 percent), VA.

Table 60 summarizes permit data for each of the identified home counties (column 1). The second column in Table 60 reports the total number of vessels that only held a valid 2000 Federal permit for scup, black sea bass and/or summer flounder. The third column reports the number of vessels (that only had a valid 2000 Federal permit for scup, black sea bass, and/or summer flounder) that actually reported having landed one pound or more of any one of the three species. In approximately 63 percent of cases at least half of the permit holders actually landed at least some quantity of scup, black sea bass or summer flounder. Column four reports the total number of vessels in each county that held at least one valid Federal permit in 2000, and also hold a valid Federal scup, black sea bass and/or summer flounder permit but landed at least one or more pounds of at least one of the three species. Column five reports the total number of vessels that held at least one Federal permit in addition to a scup, black sea bass or summer flounder permit and landed at least one pound of species other than scup, black sea bass or summer flounder. Columns six and seven report average vessel length for all vessels whose h-port is within the identified home county.

Table 61 summarizes population and demographic data for each of the identified home counties. Of the 16 counties, total population in Worcester, MD; Craven, NC; Cape May, NJ; and Accomack, VA was less than 100,000 in 1997. Of the remaining counties total population exceeds one million in Kings, Nassau, and Suffolk, NY, while total population all other counties falls between 100,000 and 600,000. The proportion of the population that falls below the poverty line were highest in Kings County, NY (29.3 percent), Norfolk County, VA (24.2 percent), and Accomack (21.1 percent), VA, and was at least 10 percent or greater in the counties of Sussex, DE; Bristol, MA; Suffolk, MA; Worcester, MD; Craven, NC; and Atlantic, NJ. Across each of the home counties, median annual income follows the same general pattern as poverty estimates provided in column three.

Table 62 provides estimates of total county employment, payroll and number of entities for all industries and for fishing related industries (processing, wholesale, and retail). All data were obtained from Bureau of the Census for the calendar year 1996. Due to non-disclosure requirements estimates of employment and payroll at the four-digit SIC level must be aggregated to the next highest industrial classification. The non-disclosure problem is particularly evident for processors and to a lesser extent for wholesale seafood trade.

Table 59. Summary of total county sales, commercial fishing sales, and sales of scup, black sea bass and summer flounder by county.

County, State	1995 Total Value of All Goods and Services Sold ($ million)	1999 Total Value of All Commercial Fishing sales ($)	Commercial Fishing as a Percent of Total County Output (%)	1999 Total Value of Commercial Fishing Scup Sales ($)	Scup as a Percent of Total Commercial Fishing Sales (%)	1999 Total Value of Commercial Fishing Black Sea Bass Sales ($)	Black Sea Bass as a Percent of Commercial Fishing Sales (%)	1999 Total Value of Commercial Fishing Sales of Summer Flounder ($)	Summer Flounder as a Percent of Commercial Fishing Sales (%)
Sussex, DE	8,177	1,621,773	0.02	0	0.00	131,497	8.11	@	@
Barnstable, MA	7,638	34,195,912	0.45	145,319	0.42	393,517	1.15	400,688	1.17
Bristol, MA	19,817	138,624,760	0.70	386,675	0.28	157,686	0.11	655,343	0.47
Plymouth, MA	15,286	17,052,157	0.11	1,295	0.01	349	0.00	20,069	0.12
Suffolk, MA	64,916	12,939,476	0.02	0	0.00	@	@	3,123	0.02
Worcester, MD	1,974	6,192,175	0.31	334	0.01	604,484	9.76	334,979	5.41
Dare, NC	1,097	12,549,123	1.14	@	@	365,173	2.91	1,294,157	10.31
Atlantic, NJ	13,418	22,598,960	0.17	0	0.00	31,099	0.14	@	@
Cape May, NJ	3,234	29,331,521	0.91	733,425	2.50	693,199	2.36	1,087,347	3.71
Ocean, NJ	12,543	30,351,472	0.24	149,543	0.49	47,667	0.16	1,087,179	3.58
Kings, NY	50,764	72,185	0.00	4,437	6.15	9,848	13.64	19,780	27.40
Nassau, NY	70,388	1,716,148	0.00	106,278	6.19	37,658	2.19	63,272	3.69
Suffolk, NY	59,592	25,305,467	0.04	574,526	2.27	402,386	1.59	1,751,924	6.92
Accomack, VA	1,672	9,412,266	0.56	167	0.00	133,349	1.42	650,238	6.91
Norfolk City, VA	15,857	341,031	0.00	0	0.00	@	@	@	@
Virginia Beach City, VA	5,397	4,347,932	0.08	@	@	634,916	14.60	15,814	0.36

@ Suppressed to avoid disclosure of confidential information

Table 60. County-level permit table from NMFS permit and commercial landings database.

County, State	Vessels with FLK, BSB and/or SCP Permit	No. Vessels with FLK, SCP, and/or BSB Permit that Landed FLK, SCP, and/or BSB	No. Vessels with FLK, SCP, or BSB Permit and One or More Other Northeast Region Permits	No. Vessels with FLK, SCP, and/or BSB Permits that Landed Species other than FLK, SCP, or BSB	Avg. Vessel Length for vessels with FLK, SCP, and/or BSB Permits	Avg. Vessel Length for all FLK, SCP, and/or BSB Permit Holders that Landed FLK, SCP, and/or BSB
Sussex, DE	19	10(1)	19	12	48	49
Barnstable, MA	75	36(19)	75	57	42	45
Bristol, MA	192	92(8)	191	166	71	68
Plymouth, MA	50	16(9)	50	34	44	44
Suffolk, MA	4	0(0)	4	4	80	53
Worcester, MD	16	13(0)	16	15	53	50
Dare, NC	34	23(4)	32	28	46	34
Atlantic, NJ	8	6(0)	8	6	35	67
Cape May, NJ	73	54(4)	73	64	67	55
Ocean, NJ	62	55(14)	62	56	55	48
Kings, NY	10	6(1)	10	6	45	48
Nassau, NY	37	16(3)	37	20	40	49
Suffolk, NY	165	121(7)	165	137	45	48
Accomack, VA	17	10(2)	17	11	45	49
Norfolk City, VA	7	5(0)	4	5	37	42
Virginia Beach City, VA	34	16(0)	33	20	47	51

Note that numbers in parentheses in column 2 (#) of permitted vessels landing fluke/scup/or BSB is the number of Federally permitted vessels that landed at least one of the three species but did not have a Federal fluke/scup/bsb permit.

Table 61. County-level demographic information.

County, State	Total Population (1997 est.)	Per Capita Personal Income (1997 est.)	Total Full and Part time Employment (1997 est.)	Number of Non-Farm Proprietors (1997 est.)	Percent of Total Population Below Poverty Line (1995 est.)	No. of Fishing Vessel Captains (1990 Occupation Census Data)	No. of Male Fishing Vessel Crew (1990 Occupation Census Data)	No. of Female Fishing Vessel Crew (1990 Occupation Census Data)
Sussex, DE	133,661	21,961	75,002	12,445	11.9	7	100	5
Barnstable, MA	204,978	30,199	118,981	32,778	8.1	84	571	45
Bristol, MA	514,944	24,188	263,593	40,758	10.5	121	922	0
Plymouth, MA	461,569	27,402	217,341	45,401	7.8	48	437	5
Suffolk, MA	642,900	35,653	664,884	52,672	17.7	9	75	0
Worcester, MD	42,135	24,427	29,666	5,525	11.7	33	79	8
Craven, NC	87,752	20,747	55,707	7,158	14.6	13	58	12
Atlantic, NJ	236,331	30,187	166,336	17,062	10.9	8	57	10
Cape May, NJ	97,961	26,419	51,696	11,100	9.8	82	274	1
Ocean, NJ	482,421	25,725	173,217	38,323	7.3	36	267	1
Kings, NY	2,266,221	23,264	570,670	111,215	29.3	27	35	0
Nassau, NY	1,299,485	39,691	735,880	122,375	5.1	14	57	5
Suffolk, NY	1,361,138	30,330	672,001	111,420	7.4	101	654	8
Accomack, VA	32,062	18,240	17,020	2,784	21.1	25	360	12
Norfolk City, VA	230,018	20,221	234,424	10,710	24.2	0	32	0
Virginia Beach City, VA	431,179	24,425	215,127	32,110	8.8	26	62	0

Source population, Per Capita Income, Employment, and Non-Farm Proprietors fisher.lib.virginia.edu/reis/county.html
Source Percent Poverty: www.census.gov./hhes/www/saipe/estimate/cty/cty37095.htm
Source Occupation: tier2.census.gov/CGI-WIN/EEO/EEODATA.EXE

Table 62. Total employees, payroll, and number of entities for all sectors and fishery related sector by home county (source: County Business Patterns for 1996, U.S. Bureau of the Census, www.census.gov/cgi-bin/datamap/cnty?44=009).

	Total			Processing (SIC 2092)			Wholesale (SIC 5146)			Retail (SIC 5420)		
	Employees	Payroll $1,000's	Entities	Employees	Payroll $1,000's	Entities	Employees	Payroll $1,000's	Entities	Employees	Payroll $1,000's	Entities
Sussex, DE	43461	641497	4153	0	0	0	31(b)	9210(b)	27(b)	1942	27265	147
Barnstable, MA	61599	1491087	2640	162(e)	4413(e)	49(e)	132	3513	24	86	2091	30
Bristol, MA	185559	4608253	12201	302	11305	8	749	20402	60	221	2890	33
Plymouth, MA	135902	3599952	106381	0	0	0	71	2833	14	70	985	17
Suffolk, MA	511455	18859538	19136	343	11756	11	646	29238	54	226	4312	35
Worcester, MD	16602	337375	2080	1336(a)	24310(a)	14(a)	868(f)	32024(f)	42(f)	672(d)	12503(d)	80(d)
Dare, NC	9781	179056	1500	388(c)	8074(c)	45(c)	198(b)	3421(b)	11(b)	48	707	7
Atlantic, NJ	116205	3256979	6233	240(a)	5480(a)	16(a)	9	267	4	29	524	11
Cape May, NJ	21776	553863	3962	0	0	0	14	3248	4	42	971	15
Ocean, NJ	97886	2362359	10233	12(e)	173(e)	3(e)	87	1737	4	110	1543	21
Kings, NY	379963	10611630	35176	1652(e)	40551(e)	44(e)	436	6287	49	1098	16673	273
Nassau, NY	517628	16336734	45687	265(e)	10798(e)	12(e)	148	4098	33	478	8287	120
Suffolk, NY	467985	14104326	40208	151(e)	3307	13(e)	352	9528	62	356	5827	121
Accomack, VA	8500	145643	830	3267(c)	53981(c)	34	37	661	12	13	119	3
Norfolk City, VA	109233	2784198	5453	180(e)	4879(e)	6(e)	32	444	4	34	647	9
Virginia Beach City, VA	125974	2525187	9673	0	0	0	2043(b)	35376(b)	54(b)	74	930	14

(a) Data reported at next highest aggregated level, SIC 2000 Food and Kindred Products
(b) Data reported at next highest aggregated level, SIC 5140 Groceries and Related Products
(c) Data reported at 2-digit SIC 20- Manufacturing
(d) Data reported at next highest aggregated level, SIC 5400 Food Stores
(e) Data reported at next highest aggregated level, SIC 2090 Misc. Food and Kindred Products
(f) Data reported at next highest aggregated level, SIC 5100 Wholesale Trade: Nondurable Goods

6.2 INDIRECT IMPACTS

For the commercial sector, the regulations will have direct effects on both commercial fishing and processing. These sectors are identified by their 4-digit Standard Industrial Classification (SIC) code as 0910 and 2092 respectively. The economic sectors that will be indirectly affected were identified in the following manner: An Input/Output model of the United States economy was estimated using a PC-Based software program called IMPLAN. IMPLAN has been in use since its development by the U.S. Forest Service in 1979. IMPLAN is based on Bureau of Economic Analysis (BEA) data for 521 industries. The U.S. model provides information on linkages among industries as well as an estimate of the required amount of purchases from all sectors in order to produce one dollar’s worth of output in a given sector. The indirectly affected economic sectors for commercial fishing and processing were listed in Table 63, along with the SIC codes that comprise those sectors. Note that the list of sectors is not exhaustive, but include sectors in descending order of impact and only reports those sectors whose cumulative impact was 90 percent or greater.

In each column of Table 63 headed by the title “Impact Percent” are estimated proportions of expenditures by directly affected sectors on purchased inputs (i.e. expenses per dollar of commercial fishing output net of value added) from each of the indirectly affected sectors. For example, of the inputs used by commercial vessels, 22.88 percent were from SIC sector 2992 (lubricating oils and greases). Value added includes payments that go to labor (captain and crew) and profits. This means that for every dollar spent to produce a dollar’s worth of commercial fishing $0.75 goes to value added and $0.25 goes to purchased inputs other than labor. Thus, the effect on indirectly affected industries is the product of $0.25 and the “Impact Percent”. Sector 2992 has the highest impact percent (22.88) and revenues in that sector would change at a rate of $0.057 per dollar of output change in the commercial fishing sector. Based on the projected impacts to the directed fisheries, it is unlikely that the indirect impacts would be substantial.

7.0 Final Regulatory Flexibility Analysis Supplement

A description of the reasons why action by the agency is being taken and the objectives of the final rule are explained in the preambles to the proposed rule and final rule and are not repeated here. This action does not contain any collection-of-information, reporting, or recordkeeping requirements. It does not duplicate, overlap, or conflict with any other Federal rules. There are no compliance costs associated with the final rule.

Thirty four comments were received on the measures contained in the proposed rule: two were submitted in response to the initial regulatory flexibility analysis (IRFA) of the expected impacts of these measures on small entities. NMFS has responded to these comments in the Comments and Responses section of the final rule (see response to comment 10). Changes were made to the measures outlined in the proposed rule regarding the scup TAL; the size, location, and season of the GRAs; and exemptions to the requirements of the GRAs. Although these changes were not directly related to the comments received on the IRFA, the intent of the changes was, in part, to minimize the economic effect on small entities. These changes and the reasons for them are discussed in the responses to Comments 1, 7, 8 and 13, as well as in the preamble to the final rule.

The measures established by this action potentially impact a total of 1,158 vessels that participated in at least one of the summer flounder, scup and black sea bass fisheries, or that had fished with mobile gear with less than 4.5-inch (11.43 cm) mesh inside at least one of the proposed GRAs.

For summer flounder, NMFS was obligated by a Court Order to implement a TAL that was determined to have a 50 percent probability of achieving a specified biomass target by December 31, 2001. No other alternative that was considered would meet this objective while minimizing significant economic impacts on small entities.

In the FRFA, NMFS analyzed the measures being implemented in this action. The analysis compared the effects of the measures to both the 2000 adjusted quotas and to actual 2000 landings when available. When not available, 1999 landings were used. In terms of overall impacts on revenues, the scup measures selected for implementation (Option V) have the second highest positive impact on revenues. Using the landings baseline proration method, Options I, III and V are expected to yield total gross revenues higher than those yielded by the status quo measures by approximately $0.91 million, $0.40 million and $0.70 million respectively, whereas Options II and IV yielded total gross revenues lower than the status quo by approximately $0.16 million and $0.13 million, respectively. Option I is presumed to have produced the highest overall revenues because the Loligo fishery is exempted from the GRA restrictions. This Option was not selected for implementation in this action because, as explained in the preamble, available information does not justify an exemption of the Loligo fishery.

The FRFA also analyzed revenue impacts on individual vessels, as summarized below:

Percent of Vessels Experiencing Revenue Loss > 5%

	Landings Baseline	Quota Baseline
Option I	2.1%	3.4%
Option II	3.2%	4.6%
Option III	2.8%	4.1%
Option IV	2.9%	4.7%
Option V	2.9%	4.4%

The measures selected for implementation (Option V) have slightly greater impacts than either Option I or Option III. As discussed above, Option I was not selected for implementation because the available information does not support an exemption for Loligo squid. The impact of Option III is presumed to be lower because there are no GRAs established. This alternative was not selected for implementation because, as explained in the preamble, NMFS believes that GRAs remain necessary for scup conservation. The specific GRAs implemented by this action were selected to moderate the economic impacts on small entities by extending GRAs further south and opening the Hudson Canyon area.

For black sea bass, the harvest level adopted in the final rule minimizes significant economic impacts while achieving the stated objectives of the FMP. No other harvest level that was considered would meet this objective while minimizing significant economic impacts on small entities.

Revision of the trip limits in the scup and black sea bass fisheries were recommended by the Council to allow these fisheries to remain open for a longer period of time, preferably for the entire quota period. This is expected to reduce the period of time that a fishery would be closed, and, thereby, provide for a more reliable stream of income for small entities.

Table 63. List of indirectly affected industry sectors.

		Impact		Processors (2092)	
Sector	SIC Code(s)	Percent		Sector	SIC Code(s)
LUBRICATING OILS AND GREASES	2992	22.88		COMMERCIAL FISHING	9
CORDAGE AND TWINE	2298	11.84		BUILDING MATERIALS AND GARDENING SUPPLIES	52
SHIP BUILDING AND REPAIRING	3731	11.72		PREPARED FRESH OR FROZEN FISH OR SEAFOOD	20
MISCELLANEOUS REPAIR SHOPS	7690	6.53		MISCELLANEOUS LIVESTOCK	0191, 0219, 0259, 0271, 027 0273, 0279, 02
MANUFACTURED ICE	2097	5.55		WATER TRANSPORTATION	44
PETROLEUM REFINING	2910	4.76		PAPERBOARD CONTAINERS AND BOXES	26
BOAT BUILDING AND REPAIRING	3732	4.23		COMMUNICATIONS, EXCEPT RADIO AND TV	4810, 4820, 4849, 48
INSURANCE CARRIERS	6300	3.53		GAS PRODUCTION AND DISTRIBUTION	4920, 49
AUTOMOBILE RENTAL AND LEASING	7510	2.24			
WATER TRANSPORTATION	4400	2.05			
MAINTENANCE AND REPAIR OTHER FACILITIES	1500, 1600, 1700	1.96			
CANVAS PRODUCTS	2394	1.61			
MOTOR FREIGHT TRANSPORT AND WAREHOUSING	4200, 4789	1.41			
BANKING	6000	1.33			
HOTELS AND LODGING PLACES	7000	1.16			
MANAGEMENT AND CONSULTING SERVICES	8740	1.11			
COMMERCIAL FISHING	910	1.04			
AUTOMOTIVE DEALERS & SERVICE STATIONS	5500	1.03			
HARDWARE, NEC	3429	0.95			
AUTOMOBILE REPAIR AND SERVICES	7530	0.92			
INTERNAL COMBUSTION ENGINES, N.E.C.	3519	0.86			
MANIFOLD BUSINESS FORMS	2760	0.77			
BUSINESS ASSOCIATIONS	8610	0.62			
		90.10			