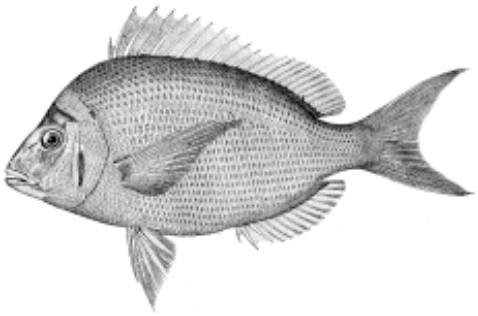

Modification of Scup Gear Restricted Areas (GRAs) and Exemptions to the GRAs, and Modifications to the Landing Limits in the Atlantic Mackerel, Squid, and Butterfish Fisheries

Environmental Assessment
Regulatory Impact Review
Initial Regulatory Flexibility Analysis

Prepared by
National Marine Fisheries Service
in Consultation With the
Mid-Atlantic Fishery Management Council

October 2000

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ENVIRONMENTAL ASSESSMENT

1.0 Purpose and Need

The actions considered in this document were recommended by the Mid-Atlantic Fishery Management Council (Council) at their August 14 - 17, 2000, meeting including a modification of the Scup GRAs, an exemption of the Atlantic mackerel fishery from Gear Restricted Area (GRA) restrictions, and a modification of the landing limits in the Atlantic mackerel, squid, and butterfish fisheries. In addition, this action analyzes a proposal to temporarily exempt the *Loligo* squid fishery from the GRA restrictions for the period November 1 - December 31, 2000. The Council also recommends a change to the process used to consider exemptions to the GRAs. This process revision is not analyzed as it has no immediate impact. Exemptions proposed in the future under this process would be analyzed at that time.

This Environmental Assessment (EA) incorporates by reference much of the information pertaining to GRAs contained in an April 26, 2000, Environmental Assessment that was originally prepared for the 2000 management measures for the summer flounder, scup and black sea bass fisheries. Summaries of the information presented in the April 26, 2000, EA are provided where clarification is needed. The alternative GRAs and exemptions from the GRAs considered in this document tier-off of, and are variants of, the suite of alternatives originally considered in that EA. This EA also presents the analysis for the modification of landing limits for Atlantic mackerel, squid and butterfish.

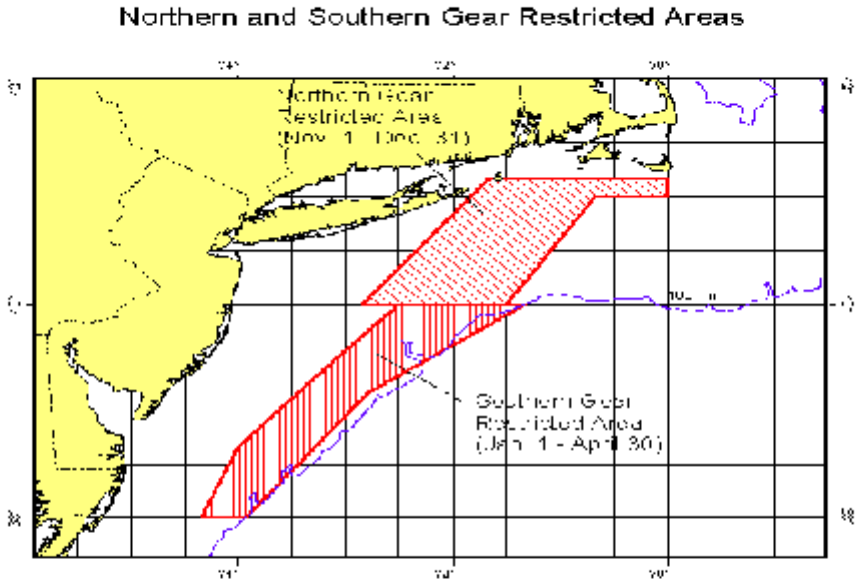
The overall purpose of the annual fishery management measures for the summer flounder, scup, black sea bass, Atlantic mackerel, squid and butterfish fisheries is to ensure that the annual fishing targets specified in the FMPs for these species are attained. The modification of the GRAs, the exemption of the Atlantic mackerel small-mesh fishery, and the temporary exemption of the *Loligo* squid small-mesh fishery are intended to reduce negative economic impacts on small-mesh fisheries, while still ensuring that scup bycatch in small-mesh fisheries is controlled. The modification of the procedure for exempting small-mesh fisheries from the requirements of the GRAs is intended to address problems with the current method of determining exemptions. The modification of the landing limits in the Atlantic mackerel, squid and butterfish fisheries is intended to discourage directed fishing after the closure of the directed fisheries for these species.

1.1 Introduction

Scup are managed by the Mid-Atlantic Fishery Management Council under the Summer Flounder, Scup, and Black Sea Bass FMP. Scup are overfished and overfishing is occurring. The most recent (2000) scup stock assessment concluded that fishing mortality should be reduced substantially and immediately, and that a reduction in fishing mortality from discards would have the most impact on rebuilding the stock.

GRAs were developed by the Council in the specifications for the summer flounder, scup and black sea bass fisheries for the 2000 fishing year to reduce mortality from discards in Mid-Atlantic small-mesh fisheries. The Council's initial recommendation consisted of a series of small, restricted areas that went into place sequentially for 2-week periods. Because of concerns regarding the effectiveness of the Council's GRAs, the GRAs were revised by the National Marine Fisheries Service (NMFS). The final specifications (65 FR 33486, May 24, 2000) implemented larger GRAs (Alternative 6a, Figure 1), which restrict the use of small-mesh gear for several months. The GRAs are scheduled to become effective November 1, 2000.

Figure 1. Alternative 6a (*status quo*) adopted for Gear Restricted Areas. Each alternative details time and areas as to when and where codend mesh less than 4.5 inches would be prohibited.



Since publication of the final rule implementing the GRAs, many fishing industry members expressed opposition, claiming that the restrictions would create severe economic hardship. The Council, at its August 14 - 17, 2000, meeting, requested that NMFS modify the GRAs because the Scup Monitoring Committee and Council staff analysis of available data indicated that the GRAs could be reduced in size without seriously compromising conservation benefits to scup. A chart of the proposed alternative GRAs recommended by the Council (Alternative 7a) is provided in Figure 2. The coordinates of the proposed alternative GRAs are:

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 5	41E 00'	71E 00'

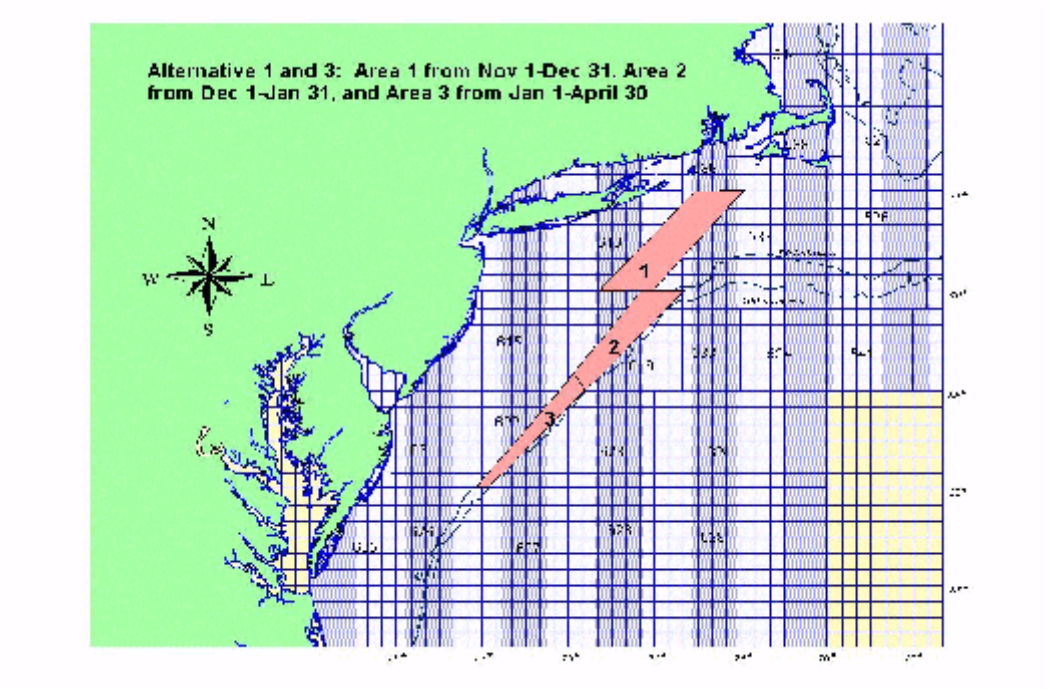
Northern Gear Restricted Area II (December 1 - January 31)

Point	N. lat.	W. long.
NGA 6	40E 00'	71E 40'
NGA 7	40E 00'	72E 10'
NGA 8	39E 00'	73E 09'
NGA 9	39E 00'	72E 50'
NGA 10	40E 00'	71E 40'

Southern Gear Restricted Area (January 1 - 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 2. Alternative 7a (proposed) for Gear Restricted Areas. Each area details time and areas as to when and where codend mesh less than 4.5 inches would be prohibited. (note- disregard reference to “Alternative 1 and 3" in image).



The Council also voted to exempt the Atlantic mackerel and *Loligo* squid small-mesh fisheries from the

GRAs, and to modify regulations pertaining to landing limits specified for Atlantic mackerel, squid, and butterfish by clarifying that only one such landing is to be allowed per calendar day.

This document analyzes the impacts of the proposed modification (Alternative 7a) to the GRAs that were originally implemented and analyzed in the 2000 specifications. This document also analyzes the impacts of exempting the Atlantic mackerel small-mesh fishery from all of the GRA requirements, exempting the *Loligo* squid small-mesh fishery for the period November 1 - December 31, 2000. Finally, this document analyzes the impacts of a change in landing limit requirements for the Atlantic mackerel, squid and butterfish fisheries by specifying that the incidental possession limits applicable to these species are daily possession limits. The GRA modification analyzed within this document is within the scope of alternatives originally analyzed in conjunction with the 2000 management measures to the fisheries.

This document incorporates by reference the Environmental Assessment on the 2000 Summer Flounder, Scup, and Black Sea Bass Specifications of April 26, 2000. Of specific applicability are Section 4.0 Affected Environment, Section 5.0 Description of Fisheries, Section 6.0 Environmental Consequences of Preferred and Other Alternatives (including a subsection, 6.2, regarding impacts on protected resources), and Section 7.0 Essential Fish Habitat Assessment.

2.0 Alternatives Being Considered

2.1 Revisions to the GRAs

2.1.1 Alternative 7a (Preferred Alternative)

The preferred alternative (7a) would regulate the use of trawls with codend less than 4.5 inches in three areas: an area that intersects statistical areas 537, 539, and 613 from November 1 to December 31, an area that intersects statistical area 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 2). These areas include the ten minute squares identified by Council staff as having high scup discards, using January 1989 - April 1999 sea sample (observer) data.

2.1.2 Other Alternatives

The other GRA alternatives being considered are described in section 6.3.4 of the April 26, 2000 EA. The current requirement, the *status quo* GRAs, is Alternative 6a, described at section 6.3.4.7 of that document, and a chart is provided in Figure 1. The alternative specifies a Northern GRA in November - December and a Southern GRA in January - April.

2.2 Exemptions of Atlantic Mackerel and *Loligo* Squid From GRAs

2.2.1 Exempt Atlantic Mackerel From the GRA Requirements

The proposed alternative would exempt Atlantic mackerel from the mesh size requirements in all the GRAs. Importantly, this exemption was supported by the Scup Monitoring committee, as well as recommended by the Council. The best scientific information available indicates that less that 1 percent of the catch in the mackerel fishery is scup. Maintaining the *status quo* would serve to deny vessels in the small-mesh Atlantic mackerel fishery from fishing for mackerel in the GRAs while providing little additional protection of scup through reduction in discards. Based on sea sample data from January 1989 - May 2000, *status quo* GRA measures would reduce mackerel landings by 30 percent while the proposed alternative GRA would reduce mackerel landings by 11 percent (Table 1). This reduction is due to a loss of mackerel landed on trips targeting the non-exempted small-mesh species (i.e. whiting, black sea bass). Exempting the Atlantic mackerel small-mesh fisheries would allow these reductions in landings resulting from the GRAs to be fully recouped.

2.2.2 Exempt *Loligo* Squid Temporarily From the GRA Requirements

The proposed alternative would exempt the *Loligo* squid fishery from the GRAs for the period November1 - December 31, 2000. Because the 2000 annual quota will have been harvested, the directed *Loligo* fishery will be closed during this time frame (after October 25, 2000). Vessels will then be limited to possessing and landing 2,500 lb (1,134 kg) of *Loligo* per calendar day. The 2,500 lb per day trip limit is sufficiently low that it is expected to discourage directed *Loligo* fishing, except perhaps by smaller day boats. These small vessels would most likely not fish in the GRAs due to safety concerns associated with fishing offshore and potential lack of profitability relating to the distance of the GRA from shore. Enabling vessels to retain *Loligo* within the GRA would likely affect only those vessels targeting other species such as Atlantic mackerel, which is proposed to be exempted due to low scup bycatch rates. Therefore, exempting the *Loligo* fishery from GRA requirements would enable vessels to retain an incidental catch of *Loligo* while having a little to no effect on increasing scup discards. The no action or *status quo* alternative would prohibit vessels from retaining *Loligo* caught incidentally when fishing for exempted species within the GRAs, and would also have a minimal impact on scup discards.

2.3 Modification of Landing Limits in Atlantic Mackerel, Squid, and Butterfish Fisheries

The Atlantic mackerel, squid and butterfish fisheries are managed by commercial quotas, with a limited access permit required in order to participate in the directed squid (*Loligo, Illex*) and butterfish fisheries. For squid and butterfish, the directed fishery is closed when 95 percent of the quota is achieved. The remaining quota is intended to allow incidental catch to be landed for the remainder of the fishing year. The proposed alternative would modify the landing limits in the Atlantic mackerel, squid and butterfish fisheries to prohibit multiple landings in a single calendar day. This modification is intended to allow landings of fish caught incidentally while targeting other species, but to discourage directed fishing after the directed fisheries for these species are closed. Because the incidental catch

allowance is presently specified on a per trip basis, the no action or *status quo* alternative would continue to allow the practice of vessels making multiple trips per day to land incidental catch limits whenever and wherever time and distance to the fish allow the practice, contrary to the Council's intent.

3.0 Affected Environment

The environment affected by portions of this action pertaining to the scup fishery is as described in detail in sections 4.0, 5.0 and 6.0 of the April 26, 2000, EA and is summarized as follows: The fishery management plan for scup regulates this fishery from Maine to Cape Hatteras, North Carolina. This fishery is prosecuted by vessels throughout the range, although the geographic focus of the fishery varies somewhat from year to year. Scup is landed primarily in four states: Massachusetts, Rhode Island, New York and New Jersey. The principle gear used to target this fishery is the bottom otter trawl. Fish pots and traps are also used.

The environment affected by the measure to modify landing limits for the Atlantic mackerel, squid and butterfish fisheries is described in detail in the March 2000 EA for these fisheries. Atlantic mackerel, squid and butterfish are distributed from Maine to Cape Hatteras, North Carolina. This fishery is prosecuted by vessels throughout the range, but is primarily landed in Rhode Island, New York, New Jersey, Maryland and Virginia. The principle gear used to target this fishery is bottom otter trawl.

3.1 Protected Resources

Amendments 2, 8, 9, and 10 to the Summer Flounder, Scup and Black Sea Bass FMP described the endangered or threatened species and marine mammals that may be potentially impacted by these fisheries. These species included: Loggerhead turtles, leatherback turtles, shortnose sturgeon, bottlenose dolphin, pilot whale, fin whale, humpback whale, right whale, harbor porpoise, harbor seals and four species of beaked whales. This action does not change those descriptions. Although this proposed action would revise the areas and time of the GRAs, it does not alter the conclusion stated in the 2000 specifications that the action will not adversely impact endangered or threatened species and marine mammals.

Like the summer flounder, scup and black sea bass fisheries, the Atlantic mackerel, squid and butterfish fisheries may potentially impact several endangered or threatened species and marine mammals including: Loggerhead turtles, leatherback turtles, shortnose sturgeon, bottlenose dolphin, pilot whale, fin whale, humpback whale, right whale, harbor porpoise, harbor seals and four species of beaked whales. Amendment 5 to the Atlantic Mackerel, Squid and Butterfish FMP concluded that the fishery and management activities regulated by this FMP would have no significant adverse effect on any threatened or endangered species. The proposed action to modify landing limits for Atlantic mackerel, squid and butterfish does not alter this conclusion.

4.0 Environmental Consequences

4.1 Impact of GRAs on the Environment

The environmental consequences of the alternatives other than the proposed action described in this document are described at section 6.0 of the April 26, 2000, EA.

4.1.1 Impact of GRA Alternative 7a (Preferred Alternative) on the Environment

The proposed GRA is a modification, submitted by the Council, to Alternative 7 that was initially analyzed in the April 26, 2000, EA prepared pursuant to the 2000 specifications to the FMP. The proposed alternative (7a) regulates a smaller total area than the existing status-quo GRAs (6a), and divides the GRAs into three overlapping areas and time periods versus the two distinct areas and time periods in Alternative 6a. These revised areas and time periods coincide with scup migration and encompass the 30 to 70 fathom depth contours which were identified by fishermen as the location of scup in the winter. The seasonal change creates a third GRA. The *status quo* consists of a Northern GRA (November 1 - December 31) and a Southern GRA (January 1 - April 30). The new alternative consists of a Northern GRA (November - December 31, a Middle GRA (December 1 - January 31) and a Southern GRA (January 1 - April 30). The creation of a middle area reduces the time of closure from four months to two months. The proposal to establish three GRAs rather than two cannot be analyzed quantitatively because it cannot be predicted how industry will modify behavior to shift activity from inside to outside the GRAs. However, by defining three areas, there are more possible areas open to shift into at any given time, so impact may be moderated.

The reductions in scup discards and reductions in landings of small-mesh fisheries have been estimated for each of the GRA alternatives. The original analysis of the GRA alternatives presented in the April 26, 2000, EA was based upon sea sampling data from January 1989 through April 1999. Analysis of the new proposed alternative and the current *status quo* measure incorporates additional sea sample data (through May 2000). Based upon this information, the proposed GRA (7a), with no exemptions, would reduce scup discards by 61%. In addition, landings of small-mesh species are expected to be reduced as follows: Herring - 3%, mackerel - 11%, black sea bass - 42%, whiting - 5%, and *Loligo* - 22% (Table 1). In comparison, Alternative 6a (*status quo*), with no exemptions, would reduce scup discards by 71%, and would reduce landings of other species as follows: herring - 8%, mackerel - 30%, black sea bass - 50%, whiting - 17%, and *Loligo* - 38%. In summary, the sea sampling data indicated that the proposed GRAs, with no exemptions, result in a moderate increase in scup discards (10%) as compared to the *status quo* GRAs, but do not produce as large a reduction in landings of other small-mesh species as the *status quo* GRAs do.

There is currently some debate over the exact amount of scup being discarded. However, the SARC consensus is that scup discards are high, equivalent to and possibly exceeding the amount of scup being landed commercially. Furthermore, current scup fishing mortality (F) is unknown, but is estimated by the SARC to be 1.0 or greater. This lack of available data regarding scup discards and fishing mortality makes it difficult to accurately quantify the impacts of the alternative GRAs on reducing scup

discards and landings of small-mesh species. As a result, the percentages presented in Table 1 are not absolute, but are meant to demonstrate that the benefit of the proposed GRAs (7a), (i.e. a significant decrease in the reduction in landings of some small-mesh species as compared to the *status quo* measure), outweigh the cost, (i.e. a slight increase in scup discards). The slight increase in scup discards that may result from the implementation of the proposed alternative GRAs is not expected to impact the rebuilding schedule for this species.

Table 1. The percent of landings and scup discards that would be reduced by the proposed GRA alternatives, with no exemptions. The reductions are based on sea sample data from January 1989 - May 2000, for bottom trawls with mesh less than 4.5 inches.

Species	**Landings/ Discards for Each Species**	**Reduction in Landings/Discards**	
		Alternative (W/ No Exemptions)	
		6a (*status quo*)	**7a (preferred)**
Herring Landings	500,845	8%	3%
Mackerel Landings	3,224,271	30%	11%
Black Sea Bass Landings	73,449	50%	42%
Whiting Landings	4,706,999	17%	5%
Loligo Landings	3,292,641	38%	22%
Scup Discards	**5,622,640**	**71%**	**61%**

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

4.1.2 Impact of Other Alternatives on the Environment

The potential impacts of the current *status quo* alternative (6a) are described at section 6.3.4.7 of the

April 26, 2000 EA and summarized in Table 1. As stated above, additional sea sample data used in the current analysis show that the *status quo* alternative may reduce scup discards by 71 percent, but would also lead to substantial reductions in the landings of some small-mesh species (Atlantic mackerel, black sea bass and *Loligo*).

4.2 Impact of Proposed Exemptions of Atlantic Mackerel and *Loligo* Squid From GRAs on the Environment

4.2.1 Impact of Proposed Atlantic Mackerel Exemption

This action would exempt Atlantic mackerel from the mesh size requirements in all of the GRAs. Importantly, exempting the mackerel fishery from the GRAs was supported by the Scup Monitoring Committee, as well as recommended by the Council. The best available scientific information, albeit limited, indicates that the GRAs may have only a minimal impact in reducing scup discards in the Atlantic mackerel fishery. A summary of an analyses of sea sampling data for directed mackerel trips (those trips for which the total catch of all species is more that 50% mackerel) from 1989 - 2000 conducted by the MAFMC and presented in Table 2 indicates that total scup catches in the mackerel fishery for this time period are less than 1% of the total catch. The highest percentage of scup bycatch for any observed directed mackerel trip was 6.3%, based upon the sea sampling database from 1989 - 2000. As a comparison, for *Loligo* directed trips (those trips for which the total catch of all species is more that 50% *Loligo* squid), the highest percent scup bycatch observed for any trip was 28.0%; and for whiting directed trips the highest percent scup bycatch for any trip was 26.9%; and for black sea bass directed trips (trips greater than 1,000 lb) the highest percent scup bycatch for any trip was 64.3%.

Table 2. Summary of MAFMC Analyses of Scup Bycatch in Small-mesh Fisheries
All Sea Sampling Data from 1989 - May 2000

Fishery*	**lbs. Total Catch**	**lbs. Total Scup**	**Average % Scup Bycatch**
Atlantic Mackerel	3,834,785	15,023	0.39
Whiting**	5,967,086	21,708	0.36
Loligo	2,435,829	49,060	2.01
Black Sea Bass***	1,252,282	105,203	8.40

* Defined as > or = 50% of catch

** Includes whiting trips for both stock areas (Gulf of Maine & Georges Bank/Mid-Atlantic)

*** Based on all trips > 1000 lbs of Black Sea Bass

A separate analysis undertaken by the Northeast Fisheries Science Center (Appendix 1) calculates the total landings of specified small-mesh fisheries for various time periods, and related scup discard rates

for appropriately defined fisheries. By multiplying the total target species landings times the calculated scup discard rate, a total estimate of scup discard is generated. However, several important caveats must be emphasized, (1) the quantity of sea sampling data in any particular fishery and year may be very low, and thus precise estimates of scup bycatch will be uncertain, (2) scup catches tend to be highly skewed in small-mesh offshore fisheries, with a few large trips contributing most of the catch and discard total, (3) data from 1997 - 2000 may be more representative than those from the earlier part of the sea sampling database, owing to changes in resource abundance (declines in scup) and changes in regulations, and (4) definition of a "directed" trip using sea sample information can be subjective, owing to the changing targeting practices and variability in catches and bycatches from haul to haul.

4.2.2 Impact of Proposed *Loligo* Squid Exemption

This proposed action would also exempt the *Loligo* squid fishery from the GRAs for the period November 1 - December 31, 2000. The directed *Loligo* squid fishery will be closed after October 25, 2000, so no large *Loligo* squid trips will be occurring during the period of the exemption. Only incidental landings of 2,500 lb (1,134 kg) per calendar day will be allowed. As mentioned previously, this possession limit would result in only a limited *Loligo* fishery in the GRAs.

Exempting the *Loligo* fishery from GRA restrictions would allow vessels to retain up to 2,500 lb of incidentally caught *Loligo* squid. Since any *Loligo* retained in the GRAs would have been caught by vessels directing effort on species that are already exempt from the GRA requirements due to low scup bycatch rates, the *Loligo* exemption is not likely to increase scup bycatch.

4.3 Impact of Proposed Modification of Landing Limits in Atlantic Mackerel, Squid and Butterfish Fisheries on the Environment

The proposed alternative would modify the landing limits in the Atlantic mackerel, squid and butterfish fisheries to prohibit multiple landings in a single calendar day. This modification is intended to allow landings of fish caught incidentally while targeting other species, but to discourage directed fishing after the directed fisheries for these species are closed. While there have been no reports of vessels in the Atlantic mackerel or butterfish fisheries making multiple landings per day under landing limits, this has become a concern in the *Loligo* fishery.

The directed *Loligo* fishery is a limited access fishery for which vessel owners had to demonstrate historical participation in the fishery in order to receive a permit. There are no possession limits for limited access vessels. However, once the quota for a given period is attained, the directed fishery is closed, and limited access vessels are allowed to land only 2,500 lb (1,134 kg) per trip for the rest of the quota period. Vessel owners unable to obtain the limited access *Loligo* fishery permit may obtain an open access incidental category permit that enables them to retain up to 2,500 lb. The landing limits specified for the incidental category and for the limited access category when the fishery has been closed were intended to be sufficient to allow landings of squid incidentally caught while targeting other

species. However, current regulations do not prohibit these vessels from landing the incidental landing limit several times in one calendar day.

When *Loligo* are available in quantity in nearshore waters, as they were in the summer of 2000, both incidental category vessels and limited access vessels are able to target *Loligo* and land as many as five trips per day. It was not intended that the incidental trip limit support a directed fishery, as it has become. Therefore, the proposed change of the trip limit to one landing per calendar day is intended to maintain the original intent of the incidental catch limit. In addition, the Council recommended redefining the incidental allowance as a possession limit, rather than a landing limit, to enhance at-sea enforcement. These changes will help to ensure that the quota for a given trimester period, as well as the overall annual quota, are not exceeded.

Most reported multiple daily landings of *Loligo* squid occurred off Long Island, NY during the summer of 2000, primarily in the vicinity of Shinnecock Inlet. Because this activity was only recently reported, vessel trip report (VTR) data is not yet available to quantitatively assess impacts based on the number of vessels landing multiple trips. Best available information indicates that approximately sixty different vessels made more than one landing per day of *Loligo* squid at least once during July and August, 2000. Information is lacking to accurately evaluate the impact of precluding this activity, but if one assumes that these sixty vessels forego a total of 10 trips of 2,500 lb. each, then 1.5 million lbs of *Loligo* squid would be foregone. (This 10 trip assumption is purely an estimate.) If these landings create quota overages, they threaten the integrity of the management program.

4.4 Impacts of Proposed Measures on the Human Environment

As stated previously, the scup fishery is prosecuted by vessels operating from Maine to Cape Hatteras North Carolina. The principle gear used to target this fishery is the bottom otter trawl, although fish pots and traps are also used to target this fishery. A detailed description of the port communities is provided in Section 4.0 of the EA for the 2000 Specifications and is included here by reference. According to the 2000 EA, the port communities most impacted by scup regulations (based on top ports of landings by species) consist of Cape May, New Jersey; Point Judith, Rhode Island; New Bedford, Massachusetts; Point Pleasant, New Jersey; Montauk, New York; and Hampton Bay, New York. Furthermore, the 2000 EA stated that the fisheries potentially affected by closures resulting from the implementation of GRAs include Atlantic mackerel, herring, black sea bass, *Loligo*, and whiting, which are prosecuted by vessels throughout the coast.

The social impacts of the proposed measures are directly related to the impacts on small entities and economic impacts discussed in detail in sections 3.0 and 4.0 of the RIR/IRFA included with this document. In summary, the preferred GRA alternative (7a) and the proposed exemptions for Atlantic mackerel and *Loligo* squid will have less of an impact on the human environment than the *status quo*. Although Alternative 7a is projected to result in a 61 percent decrease in scup discards versus a 71 percent reduction for the status-quo, the preferred alternative will have a positive impact on landings

(and subsequent revenue) of small-mesh species (i.e. Atlantic mackerel, herring and *Loligo* squid). The proposed Atlantic mackerel exemption in Alternative 7a is projected to increase overall ex-vessel revenues by $944,000 over the *status quo*, and the *Loligo* exemption may increase revenues for vessels fishing in the GRAs by up to $2,500 per trip over the *status quo* (2,500 lb. at $1.00 per lb.). The proposed modification to landing limits for Atlantic mackerel, squid and butterfish may have some impact on the human environment since it eliminates the ability to make multiple landings in a single day, as was reported during the months of July and August 2000. However, these opportunities were gained at the risk of exceeding the quota and cannot be allowed to continue. Finally, the proposed change to procedures to make exemptions to the GRAs is purely an administrative change and will have no affect on the human environment.

5.0 Essential Fish Habitat Assessment Supplement

Summer flounder, scup and black sea bass have Essential Fish Habitat (EFH) designated in many of the same areas 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. At this time, EFH has been designated, but no specific fishing activity has been deemed to adversely impact EFH.

The Council's EFH assessment and the EFH Consultation for the 2000 specifications concluded that the establishment of the GRAs would have no more than minimal adverse effect on EFH. Although this new action would reduce the size of the GRAs, it is not expected to result in a change in fishing activity within the EFH areas. The GRAs displace fishing effort from the closed area habitats to open areas. Reducing the boundaries of the existing GRAs will once again redistribute fishing effort over a larger area.

6.0 Agencies Consulted

The Mid-Atlantic Fishery Management Council and the NMFS Northeast Fisheries Science Center were consulted in preparing this EA.

7.0 Finding of No Significant Environmental Impact

Having reviewed the environmental assessment for the modification of the scup GRAs, and exemptions to the GRAs, and modifications to the landing limits in the Atlantic mackerel, squid and butterfish

fisheries, and the available information relating to the actions, I have determined that there will be no significant environmental impact resulting from the action and that the 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

REGULATORY IMPACT REVIEW, AND INITIAL REGULATORY FLEXIBILITY ANALYSIS

1.0 Introduction

NMFS requires the preparation of a Regulatory Impact Review (RIR) for all regulatory actions that either implement a new 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. It also includes an Initial Regulatory Flexibility Analysis (IRFA). This analysis references the Initial and Final Regulatory Flexibility Analyses that were originally prepared for the 2000 specifications for the summer flounder, scup and black sea bass and Atlantic mackerel, squid and butterfish fisheries. A completed description of the need for and, objectives of, this rule can be found in the Introduction of the EA prepared for the 2000 specifications to the FMP, and in the Introduction of this EA/RIR/IRFA. The legal basis of this rule can be found in section 1.0 of the April 26, 2000, EA prepared for the 2000 specifications.

2.0 Evaluation of Significance Under Executive Order 12866

The proposed action does not constitute a significant regulatory action under E.O. 12866. It will not have an annual effect on the economy of more than $100 million. Based on 1999 total gross revenue for the 4 species (Table 3) , the preferred alternative (Alternative 7a) with no exemptions would result in a 16- percent reduction in gross revenue, while the status quo (Alternative 6a) with no exemptions would result in a 31-percent reduction in gross revenue. The *status quo* GRA (Alternative 6a) with no exemptions is estimated to result in an overall reduction in revenues of approximately $13.7 million, while the proposed GRA (Alternative 7a) with no exemptions is estimated to result in an overall reduction in revenues of approximately $7.2 million. However, as indicated in the RIR/IRFA submitted for the 2000 management measures, the actual decrease in landings associated with the GRAs is expected to be less because vessels may redirect their fishing effort to other open areas and some of the lost revenue will be recouped. Exempting the Atlantic mackerel fishery from the proposed GRAs is expected to result in potential revenue increases of $944,000, as compared to the *status quo* with no mackerel exemption. Exempting the *Loligo* fishery from the GRAs for the period November 1 - December 31, 2000 is not expected to produce significant economic impacts because the directed fishery for that species will be closed for the remainder of the year after October 25, 2000, so no large *Loligo* trips will be occurring. However, small-mesh vessels allowed in the GRAs would be allowed to retain 2,500 lb. of incidental *Loligo* catch, at a value of approximately $2,500 per trip. 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. The action will not create a serious inconsistency or otherwise interfere with an action taken or planned by another agency, will not materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of their participants, and 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 Initial Regulatory Flexibility Analysis (IRFA)

3.1 Introduction

The Regulatory Flexibility Act (RFA) requires that Federal regulators examine the impacts of proposed rules on small businesses, small organizations, and small governmental jurisdictions. A complete description of the need for, and objectives of, this proposed action taken under legal authority of the Magnuson-Stevens Act and regulations at 50 CFR Part 648 can be found in the Introduction of the April 26, 2000, EA prepared for the 2000 specifications to the FMP, and in section 1.0 of this EA. This action does not contain any collection of information requirements, implement new reporting or recordkeeping measures, or create other compliance requirements. This action will not duplicate, overlap or conflict with any other Federal rules.

3.2 Number of Small Entities Affected and Impacts of Proposed Rule and Alternatives

The GRAs could affect any vessel that has previously fished with small-mesh in the restricted areas. The Council's analysis in the 2000 specifications relied upon 1998 VTR data, which is not specified at the 10 minute square level and does not include complete longitude and latitude data. Therefore, in section 5.1.3 of that IRFA, it was estimated by the Council that a maximum of approximately 172 vessels (1998 VTR data) would be affected by any of the proposed GRA's. This was calculated under the most restrictive GRA's definition. The actual number of affected vessels may be less than 172 vessels, because the proposed GRAs are smaller. Of the potentially affected vessels, it was estimated that 20 vessels are between 5 and 50 GRT, 113 vessels are between 51 and 150 GRT, and 39 are larger than 151 GRT.

NMFS prepared an additional impact analysis of Alternative 6a last year for the 2000 specifications (Section 5.1.3.1). The supplemental analysis included an exemption for vessels targeting herring and provided a more refined treatment of the area. A data set developed for examining groundfish time/area closures using 1997 VTR data was used to approximate the spatial dimensions of Alternative 6a (*status quo* closures). NMFS analysis of the impact of Alternative 6a indicated that 141 vessels could potentially be affected, with a reduction in revenues of $ 10.5 million.

The Council's economic analysis of the two alternative GRAs with no exemptions (status-quo (6a) and proposed (7a)) is presented in Table 3. A complete description of the analysis is provided in Section 6.0 of the April 26, 2000, EA/RIR for the 2000 Specifications. The percent reduction of landings and

scup discards that would occur under the Alternative 7a and 6a GRAs (with no exemptions) were obtained using sea sample data from January 1989 - May 2000. The percent reduction in landings was then applied to 1999 revenue for each species to determine the percent reduction in revenue that would occur under each GRA alternative. The *status quo* GRA (6a) with no exemptions would result in an overall reduction in revenue of $13.7 million and the proposed alternative (7a) with no exemptions would result in an overall reduction in revenues of $ 7.2 million.

Table 3. Potential reduction in value of 1998 VTR otter trawl landings based on estimated reductions in landings for regulated mesh area alternatives (sea sample data) and 1998 prices(NMFS General Canvass Data).

Species	1999 Revenue for Each Species (thousand dollars)	Reduction in Revenue (thousand dollars)	
		GRA Alternative (W/ No Exemptions)	
		6a (*status quo*)	7a (Preferred)
Herring	210	17	6
Mackerel	3,147	944	346
Black Sea Bass	1,360	680	571
Whiting	14,664	2,493	733
Loligo	25,121	9,546	5,526
Total	**44,502**	**13,680**	**7,182**

Assuming that the reduction in revenue associated with the GRAs is fully recouped for a species when that species is exempted from the GRAs, then the *status quo* with exemptions (Alternative 6a with herring exempt) results in an actual reduction in revenues of $13.7 million ($13,680,000 - $17,000 = $13,663,000) , and the Preferred Alternative with exemptions (7a with herring and mackerel exempt) yields a reduction in revenues of $6.8 million ($7,182,000 - $6,000 - $346,000 = $6,830,000) . Because the Loligo exemption is only temporary, foregone revenues would not be fully recouped for the species, and were not factored in.

Of 3,580 vessels that could potentially fish with small-mesh in the GRAs, 172 vessels were determined to be affected by the GRAs. These 172 vessels were identified using VTR data to have fished with small mesh in an area encompassing one of the GRA alternatives, as described in the April 26, 2000 EA/RIR/IRFA. The 3,580 vessels possessed at least one of the following permits: Atlantic mackerel permit; limited access *Loligo* permit; incidental squid, mackerel butterfish permit; limited access black sea bass permit; or any multispecies permit (except party/charter). Assuming that the impacts of the

GRAs are distributed evenly among all 172 vessels, under the *status quo* (6a) these vessels could experience a per vessel reduction in annual gross revenues of $79,436 ($13,663,000 ÷ 172 = $79,436). Under the Preferred Alternative GRA (7a) with mackerel and herring exempt, these vessels could experience a per vessel reduction in annual gross revenues of $39,709 ($6830 ÷ 172 = $39,709). However, these values are likely to be overstated because vessels are able to fish in other open areas to recoup losses associated with the GRAs, albeit at a different catch per unit effort.

Exempting mackerel from the GRA's could potentially affect any vessel possessing a mackerel permit. According to NMFS permit file data (8 September 1999), 1980 commercial vessels held an Atlantic mackerel permit. Table 1 and Table 3 indicate that 30% of mackerel landings (1989 - 2000) valued at $944,000 (1998 prices) were derived from the *status quo* GRA (alternative 6a). Presumably, these landings would be recouped by exempting mackerel from the GRAs. Were the preferred GRA alternative (7a) put in place, but mackerel not exempted, mackerel landings would be reduced by 11 %, valued at $346,000.

The *Loligo* squid exemption has limited impact because the directed fishery for that species will be closed for the remainder of the year after October 25, 2000, so no large *Loligo* trips will be occurring. However, this exemption will enable vessels fishing for exempted species (i.e. herring and the proposed Atlantic mackerel) to land a 2,500 lb bycatch of *Loligo* squid. The ability to land *Loligo* bycatch could provide these vessels with an additional $1,250 to $2,500 per trip (based on ex-vessel prices of $0.50 to $1.00 per pound for the 2,500 lb possession limit). The *status quo* alternative, i.e., not exempting *Loligo*, would prevent retention of the species and therefore the revenues associated with landings of *Loligo* caught in the GRAs by these vessels.

VTR data are not yet available to verify the exact number of vessels making multiple landings of *Loligo* squid (or mackerel or butterfish) in a single day. However, the best available information indicates that a modification of the landing limits is expected to impact approximately 60 vessels that have reportedly made multiple landings, out of a total of 2,737 distinct vessels holding one or more permits in the Atlantic mackerel, squid and butterfish fisheries.

4.0 Analysis of Impacts of Alternatives

This section contains a summary of impacts of the preferred measures, and summarizes available information on the benefits and costs associated with these measures as required by E.O. 12866.

4.1 Analysis of Impacts of Proposed Alternative GRAs and Exemptions

The *status quo* alternative (6a) was developed by NMFS and analyzed in the management measures for the 2000 fishing year (see Section 5.1.3 of the RIR/IRFA). The preferred alternative (7a) would regulate the use of trawls with codend less that 4.5 inches in three areas: an area that intersects statistical areas 537, 539, and 613 from November 1 to December 31, an area that intersects

statistical area 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. The area is a modification, submitted by the Council, to Alternative 7 that was analyzed in the 2000 specifications to the FMP. The preferred alternative (7a) changes the *status quo* GRAs from two distinct areas and time periods (November 1 to December 31, and January 1 to April 31) to three overlapping areas and time periods (November 1 to December 31, December 1 to January 31, and January 1 to April 31). Furthermore, Alternative 7a changes a 4 month closure of part of statistical area 616 to a two month closure, and reduces the size of both the northern and southern areas. The Council designed the three areas and time periods included in Alternative 7a to be more responsive to industry concerns regarding scup bycatch.

Various levels of reductions in scup discards and reductions in landings of small-mesh fisheries are associated with each of the GRA alternatives. Based upon sea sampling (observer) data from January 1989 through May 2000, Table 1 indicates that the proposed GRAs (7a) with no exemptions would reduce scup discards by 61%. In addition, landings of small-mesh species are expected to be reduced as follows: Herring - 3%, mackerel - 11%, black sea bass - 42%, whiting - 5%, and *Loligo* - 22%. In comparison, Alternative 6a (*status quo*) with no exemptions would reduce scup discards by 71%, and would reduce landings of other species as follows: herring - 8%, mackerel - 30%, black sea bass - 50%, whiting - 17%, and *Loligo* - 38%. In summary, the sea sampling data indicated that the proposed GRAs result in a moderate increase in scup discards (10%) as compared to the *status quo* GRAs, but do not produce as large of a reduction in landings of other small-mesh species as the *status quo* GRAs.

Because the proposed GRA would result in less of a reduction in landings of other species than the *status quo* GRA, it would result in less reduction in revenues. As noted in Section 4.1.1 of the April 26, 2000, EA, these revenue estimates are not absolute but can be used to compare alternatives in a relative manner. The proposed GRA (with herring and mackerel exempt) would reduce total annual revenues by $6,830,000, whereas the *status quo* GRA (with herring exempt) would reduce total annual revenues by $13,663,000. It is difficult to estimate the effect of the *Loligo* exemption on revenue reduction associated with the preferred GRA because no large *Loligo* trips will be occurring as a result of the directed fishery being closed. Furthermore, it is uncertain as to how many vessels fishing in the GRA will catch and land a 2,500 lb bycatch of *Loligo*. However, it is believed that a temporary *Loligo* exemption will have little impact on decreasing the reduction in total revenues associated with the preferred GRA.

Estimates regarding revenue reductions do not consider the possible redirection of fishing effort to other open areas due to the GRAs. Therefore, the actual revenue reductions in the fishery are likely to be lower than the estimates, since most vessels would likely fish in areas outside the GRAs. However, the extent of this redirection of effort cannot be quantified.
As noted previously, the establishment of three seasonal GRAs rather than two may make it easier for industry to adapt to the GRAs.

The preferred GRAs result in an increase in scup discards of 10 percent, as compared with the *status quo* GRAs, but without as large a reduction in landings and revenue derived from other species caught in small-mesh fisheries. The preferred GRAs would result in an approximately 45 percent increase in revenues obtained from landings of other small-mesh species, as compared with the *status quo* GRAs.

Exempting Atlantic mackerel from the GRAs could potentially affect any vessel possessing a mackerel permit. According to NMFS permit file data, about 1980 commercial vessels hold an Atlantic mackerel permit. Table 1 and Table 3 indicate that 30 percent of mackerel landings (1989 - 2000) valued at $944,000 (1998 prices) were derived from the *status quo* GRA (alternative 6a). Presumably, these landings would be recouped by exempting mackerel from the GRAs. Were the preferred GRA alternative (7a) put in place, but mackerel not exempted, mackerel landings would be reduced by 11 %, valued at $346,000.

As stated previously, the directed *Loligo* squid fishery will be closed after October 25, 2000, so no large *Loligo* squid trips will be occurring. As a result, the *Loligo* exemption is not expected to produce economic impacts on permitted vessels. However, not exempting *Loligo* would prevent retention and landing of *Loligo* caught in the GRAs, which may have a negative economic impact on fisheries exempted from GRA restrictions (i.e. herring and the proposed Atlantic mackerel).
Overall, the benefits of implementing the preferred GRA combined with the Atlantic mackerel and *Loligo* exemptions outweigh the costs of this measure, particularly when compared to the benefits and costs of the *status quo*.

4.2 Analysis of Impacts of Modification to Landing Limits for Atlantic Mackerel, Squid and Butterfish

Modification of the requirements for landing limits in the Atlantic mackerel, squid and butterfish fisheries is expected to impact approximately 60 vessels that have reportedly made multiple landings in a single day, out of a total of 2,737 distinct vessels holding one or more permits in the Atlantic mackerel, squid & butterfish fisheries.

Most reported multiple daily landings of *Loligo* this year occurred off Long Island, NY, during late summer, particularly in the vicinity of Shinnecock Inlet. Because this activity was so recent, VTR data are not available to determine the extent of the practice of making multiple landings in a single day, or exactly how many trips would be lost as a result of a regulatory change prohibiting the activity. Furthermore, the ability of *Loligo* vessels to make multiple landings in one calendar day depends on the availability of the resource and the closeness of the resource to shore. These two factors are unpredictable and vary from year to year. As a result, an overall assessment of economic impacts is not possible.

While it is likely that the specification of one landing per calendar day would affect smaller vessels operating closer to shore to a greater degree than larger offshore vessels, some larger vessels from

Rhode Island and New Jersey would also be impacted, as they reportedly engaged in the activity as well. Assuming an average ex-vessel price of $ 0.50/lb, a reduction in revenues per vessel ranging from $1,250.00/day (one foregone landing of 2,500 lb (1,134 kg)) to $5,000.00/day (four foregone landings of 2,500 lb (1,134 kg)) could occur for certain vessels, primarily during late summer when *Loligo* are available in nearshore areas. The prohibition of multiple daily landings under the trip limit is necessary to preserve the integrity of the commercial quota that is used to control fishing mortality. There is information that *Loligo* squid prices often increase in the autumn and winter seasons, as compared to the summer season when most multiple daily landings occur. If higher autumn and winter prices do occur and landings are redirected from the summer season to autumn and winter because of this proposed measure, then there could be an overall revenue increase. However, some of the approximately 60 vessels that made multiple daily *Loligo* landings during the summer may not be the same vessels that benefit from fishing in the autumn, due to limited range of smaller vessels, inclement weather, or employment in other fisheries. So, foregone *Loligo* catches as a result of this measure may not always be recouped in subsequent quota periods by the same vessels.

It is not possible to perform a quantitative assessment of the impact of prohibiting *Loligo* vessels from making more than one trip in a calendar day. In order to estimate the relative economic importance of landing *Loligo* during the months of July and August in relation to a vessel's total landings for the year, the 1999 landings histories of three vessels that could be identified as making multiple trips in 2000 were examined. Vessel A, 50 feet in length, landed a total of 433,379 lb of fish in 1999. *Loligo* comprised 37 percent of this vessel's total landings and 47 percent of total revenues. Vessel B, 83 feet in length, landed a total of 1,679,986 lb of fish in 1999. For this vessel, *Loligo* comprised 56 percent of total landings and 50 percent of total revenue. Finally, Vessel C, 84 feet in length, landed a total of 1,141,745 lb of fish in 1999. *Loligo* comprised 73 percent of the vessel's total landings and 72 percent of total revenue. These data suggest that *Loligo* is a substantial proportion of a total annual revenues for these vessels even in years when multiple trips were not made. However, the amount a vessel depends upon *Loligo* fishing from year to year depends upon the availability of the resource.

Loligo landings for July and August 1999 for vessels A, B and C suggest that *Loligo* is a targeted fishery during this time period (Table 5). In fact, this species comprised an average of 94 percent of total landings and 93 percent of total revenues for these vessels during the months of July and August. In relation to annual 1999 landings and income for these vessels, *Loligo* landings occurring during July and August comprised an average of 15 percent of total landings and 16 percent of total revenue. Using the information from these three vessels to provide a snapshot of vessels targeting *Loligo* during the months of July and August, the proposed measure could reduce annual revenues for these vessels by as much as 16 percent. However, since these vessels may land one trip of 2,500 lb per day under the proposed measure, total reduction in annual revenue is likely to be less than the estimated maximum of 16 percent.

Table 4. Total 1999 landings and revenue of selected vessels known to make multiple trips in one calendar day for *Loligo* during July and August of 2000.

	Total 1999					
	Total Catch	Total Value	Total *Loligo*	Total *Loligo* Value	Percent *Loligo* Catch	Percent *Loligo* Value
Vessel A	433,379	$ 280,201	158,812	$ 131,894	37%	47%
Vessel B	1,679,986	$1,445,810	939,471	$ 725,383	56%	50%
Vessel C	1,141,745	$1,144,194	830,728	$ 822,229	73%	72%
Average	1,085,037	$ 956,735	643,004	$ 559,835	55%	56%

Table 5. July and August 1999 landings and revenue for selected vessels known to make multiple trips in one calendar day for *Loligo* during the months of July and August.

	July and August 1999					
	Total Catch	Total Value	Total *Loligo*	Total *Loligo* Value	Percent *Loligo* Catch	Percent *Loligo* Value
Vessel A	84,343	$ 67,897	77,833	$ 60,625	92%	89%
Vessel B	222,353	$170,683	201,486	$152,784	91%	90%
Vessel C	174,644	$192,235	173,630	$191,063	99%	99%
Average	160,447	$143,605	150,983	$134,824	94%	93%

4.3 Analysis of Impacts of Removing Regional Administrator's Authority to Make Exemptions to the GRA's

The proposal to modify the procedure through which the Regional Administrator may make exemptions to the GRAs would return that responsibility to the Council, and is intended to alleviate problems with the current method of determining exemptions. The current regulations specify that a fishery may be exempted from the GRAs if the Regional Administrator, in consultation with the Council, determines that scup caught as bycatch in small-mesh fisheries is less than 10 percent, by weight, of the total catch and that such exemption will not jeopardize fishing mortality objectives for scup. However, it has proven difficult to apply the existing criteria in a meaningful way, because of limited data. Rather than having the Regional Administrator make such a determination, this proposed rule would require that the Council make such a recommendation to the Regional Administrator through a framework adjustment. This would provide for greater public participation and supporting rationale for any exemption. This is an administrative change that does not result in any economic impacts.

4.4 Summary of Impacts

Cautioning again that these estimates are not absolute, it is estimated that overall reductions in annual ex-vessel revenues associated with the GRAs is $7.2 million for the proposed alternative (no exemptions), and $13.7 million for the status-quo alternative (no exemptions). The proposed alternative is projected to result in a 61% decrease in scup discards whereas the *status quo* is

projected to result in a 71% reduction in scup discards. 172 vessels out of 3,580 vessels were estimated to be impacted by the GRAs.

The proposed alternative to exempt the mackerel fishery from GRA Alternative 7a is projected to increase overall ex-vessel revenues by $ 944,000, as compared to the *status quo* GRA Alternative 6a, with no mackerel exemption.

Since the *Loligo* fishery will be closed during the November - December 2000 time period, no large *Loligo* trips will be occurring. Furthermore, it is uncertain as to how many vessels fishing for exempted species in the GRA will catch and land the allowed incidental limit (2,500 lb.) for this species. Therefore, it is believed that a *Loligo* exemption will have little or no economic impact on permitted vessels.

Modifying the landing limits in the Atlantic mackerel, squid and butterfish fisheries could temporarily reduce revenues for the approximately sixty vessels that made multiple landings in a single day, but these losses might be recouped in subsequent quota periods. However, some of the vessels that made multiple daily *Loligo* landings during the summer may not be the same vessels that benefit from increased quotas in subsequent periods.

Finally, changing the procedures to make exemptions to the GRAs is an administrative change that is not likely to have any economic impacts.

Appendix 1. Landings by Target Species Fishery

Discard Rates from Sea Sampling: Jan 1997-Apr 2000

Landings and Discards in Metric Tons

Rate = Scup Discard / Target Species Landings

Estimated Discard = Rate * Average Landings in Period

Scup		Landings By Month				Scup		Landings By Period				For Scup, Trips with => 1 lbs of Landings		
		1997	1998	1999	Average		1997	1998	1999	Average				
MONTH												Rate	No. trips	Est. Discard
	1	107	226	162	165	Jan-Apr	920	838	546	768	1.633	68	1254	
	2	262	349	289	300									
	3	155	217	93	155									
	4	396	46	2	148									
	5	128	65	99	97	May-Oct	320	175	151	216	3.209	47	692	
	6	29	27	20	25									
	7	23	6	4	11									
	8	44	16	13	24									
	9	54	30	12	32									
	10	43	32	3	26									
	11	183	168	301	217	Nov-Dec	256	363	310	310	6.693	22	2073	
	12	73	195	8	92									
Total	1497		1376	1007	1293		1497	1376	1007	1293		137	4019	

Loligo		Landings By Month				Loligo		Landings By Period				For Loligo, Trips with => 50% Loligo in Landings		
		1997	1998	1999	Average		1997	1998	1999	Average				
MONTH												Rate	No. trips	Est. Discard
	1	719	1711	1584	1338	Jan-Apr	4689	12275	6527	7830	0.003	71	27	
	2	1550	4455	1364	2456									
	3	1075	4576	1706	2452									
	4	1345	1534	1873	1584									
	5	750	275	533	519	May-Oct	7118	3141	8258	6172	0.003	65	18	
	6	309	203	504	339									
	7	698	454	1312	821									
	8	790	282	1698	923									
	9	1263	390	1817	1157									
	10	3308	1537	2394	2413									

11	1947	1738	2185	1957	Nov-Dec	3930	3653	3814	3799	0.005	9	18
12	1983	1916	1629	1842								
Total	15737	19069	18599	17802		15737	19069	18599	17802		145	63

Mackerel Landings By Month — Mackerel Landings By Period — For Mackerel, Trips with => 50% Mackerel in Landings

MONTH	1997	1998	1999	Average		1997	1998	1999	Average	Rate	No. trips	Est. Discard
1	3022	1337	2522	2293	Jan-Apr	12965	11319	10986	11757	0.001	48	7
2	3025	1147	2729	2300								
3	3118	3397	2076	2864								
4	3801	5438	3659	4299								
5	826	365	96	429	May-Oct	829	398	146	458	0.066	1	30
6	1	4	27	11								
7	1	27	7	11								
8	0	0	6	2								
9	0	2	7	3								
10	0	0	4	1								
11	4	12	4	6	Nov-Dec	138	462	72	224	0.000	2	0
12	134	450	68	217								
Total	13931	12179	11204	12438		13931	12179	11204	12438		51	37

Whiting Landings By Month — Whiting Landings By Period — For Whiting, Trips with => 50% Whiting in Landings

MONTH	1997	1998	1999	Average		1997	1998	1999	Average	Rate	No. trips	Est. Discard
1	1228	1057	1064	1116	Jan-Apr	5026	4842	5003	4957	0.0034	19	17
2	1037	1144	1033	1071								
3	1216	1391	1436	1347								
4	1545	1251	1470	1422								
5	1573	1253	1477	1435	May-Oct	6715	7061	6022	6599	0.0004	2	3
6	1407	1488	1200	1365								
7	1044	1114	876	1011								
8	820	975	1150	982								
9	1098	1350	715	1055								
10	773	881	603	752								

11	820	834	436	697	Nov-Dec	1823	1673	1044	1514	0.0500	1	76
12	1003	839	608	817								
Total	13564	13577	12069	13070		13564	13577	12069	13070		22	95

BSB Landings By Month

MONTH	1997	1998	1999	Average
1	60	29	58	49
2	126	133	83	114
3	75	133	121	110
4	48	87	61	65
5	30	13	22	22
6	6	3	5	5
7	3	1	3	2
8	3	1	3	2
9	5	2	3	3
10	8	4	4	5
11	15	16	27	20
12	29	22	7	19
Total	408	444	397	416

BSB Landings By Period

	1997	1998	1999	Average
Jan-Apr	310	382	324	339
May-Oct	55	24	39	39
Nov-Dec	44	38	34	39
	408	444	397	416

For BSB, Trips with => 1000 lbs BSB in Landings

Rate	No. trips	Est. Discard
1.294	3	438
0.000	0	0
0.000	0	0
	3	438

Total Discards

Scup	4019
Loligo	63
Mackerel	37
Whiting	95
BSB	438
Total	4653