FRAMEWORK ADJUSTMENT 9

TO THE

SUMMER FLOUNDER, SCUP, AND BLACK SEA BASS

FISHERY MANAGEMENT PLAN

(Includes Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis)

June 2016

Prepared by the
Mid-Atlantic Fishery Management Council
in cooperation with
the National Marine Fisheries Service

Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201
Dover, DE 19901
(302) 674-2331 tel.
(302) 674-5399 fax

National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930
(978) 281-9315 tel.
(978) 281-9135 fax

1. EXECUTIVE SUMMARY

This framework document was prepared by the Mid-Atlantic Fishery Management Council (Council) in consultation with the National Marine Fisheries Service (NMFS). This document was developed in accordance with all applicable laws and statutes as described in section 8.

The purpose of this framework is to consider modifications to the Scup Gear Restricted Areas (GRAs).This action is needed to ensure the continued effectiveness of the GRAs in light of changes in scup stock status and an updated analysis of scup discards in and near the GRAs.

Scup (*Stenotomus chrysops*) are managed under the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan (FMP). The Council developed Scup GRAs in order to reduce discard mortality of juvenile scup caught in small-mesh trawl fisheries. The GRAs prohibit vessels from fishing for or possessing longfin squid, black sea bass, and silver hake (also known as whiting) when using mesh smaller than 5.0 inches in diameter (henceforth referred to as "small-mesh") in the Northern Scup GRA during November and December and in the Southern Scup GRA from January 1 through March 15. According to Terceiro and Miller (2014), "observer, dealer, vessel, and trawl survey data, and the stock size and mortality estimates that result once this information is integrated within the stock assessment, indicate that the GRAs have likely reduced the discard mortality of small scup, and are responsible for the improved post-recruitment survival of these small scup".

In recent years, several commercial fishing industry advisors requested modifications to the Scup GRAs in order to reduce negative impacts on small-mesh fisheries in light of the significant increases in scup spawning stock biomass since the GRAs were last modified in late 2004.

Summary of Alternatives

Alternative set 1 contains three alternatives for the Northern GRA. Alternative 1A is the *status quo* alternative for the Northern GRA. It is the preferred Northern GRA alternative. The Northern GRA has been a component of the baseline environmental and socioeconomic conditions since 2000; therefore, alternative 1A would not change the baseline conditions and is expected to have neutral biological, habitat, protected species, and socioeconomic impacts (Table 1).

Alternative 1B would expand the Northern GRA into statistical area 613. Alternative 1B would increase the amount of scup, longfin squid, black sea bass, and silver hake found within the Northern GRA and would therefore decrease the amount of these species available to capture with small-mesh trawl gear (the only gear type restricted by the GRA regulations) during November and December. In doing so, alternative 1B could lead to a reduction in fishing effort and fishing mortality for these species and other non-target species in statistical area 613 for two months each year. Alternative 1B is thus expected to have slight positive biological impacts, compared to the *status quo* Northern GRA alternative (alternative 1A). Alternative 1B is

expected to have neutral to slight positive impacts to habitat and protected species by potentially reducing small-mesh fishing effort and thus slightly reducing the potential for interactions between fishing gear and habitat and fishing gear and protected species. Alternative 1B is expected to have neutral to slight negative socioeconomic impacts by reducing the amount of scup, longfin squid, black sea bass, and silver hake available to small-mesh fisheries in November and December (Table 1).

Alternative 1C would eliminate the Northern GRA. Trends in observed and estimated commercial fishery scup discards suggest that both Scup GRAs had a positive impact on the scup stock (Terceiro and Miller 2014). Alternative 1C would remove the existing restrictions on small-mesh fishing in the Northern GRA in November and December. In doing so, it could result in increased small-mesh fishing effort in those areas for two months each year. Alternative 1C would likely have negative biological impacts by allowing for increased scup discards and potentially increasing fishing mortality for other species, including target species such as longfin squid and other non-target species (in addition to scup). An increase in small-mesh fishing effort under alternative 1C could have neutral to slight negative impacts to habitat and protected species by increasing the potential for interactions between fishing gear and habitat and fishing gear and protected species. Alternative 1C is expected to have positive economic impacts by allowing for increased landings of longfin squid, black sea bass, and silver hake in small-mesh fisheries. In general, the impacts of alternative 1C are expected to be slight to moderate because any changes in fishing effort, compared to the *status quo*, would occur only with small-mesh trawl gear (the only gear restricted by the GRA regulations) during a two month period (Table 1).

Alternative set 2 contains nine alternatives for the Southern GRA. Alternative 2A is the *status quo* alternative for the Southern GRA. The Southern GRA, as currently configured, has been a component of the baseline environmental and socioeconomic conditions since late 2004; therefore, by maintaining a *status quo* Southern GRA, alternative 2A would have neutral biological, habitat, protected species, and socioeconomic impacts, compared to the baseline (Table 1).

Alternative 2B would modify the eastern boundary of the Southern GRA based on a proposal by a member of the Council's Summer Flounder, Scup, and Black Sea Bass and Mackerel, Squid, and Butterfish Advisory Panels (APs) in 2012. Alternative 2B is meant to restore access to certain canyon areas for longfin squid fishing. Alternative 2C is identical to alternative 2B, but with areas of overlap with the deep sea coral protection zones (recommended by the Council in the Deep Sea Coral Amendment) removed from the Southern GRA. If implemented, the coral zones will prohibit the use of bottom-tending gear, including the gear regulated by the Scup GRAs, year-round. If the coral zones are implemented, the impacts of alternatives 2B and 2C will be identical. The size of the Southern GRA would differ by 1% under alternatives 2B and 2C if the coral zones are not implemented; therefore, the impacts of Alternatives 2B and 2C will be similar if the coral zones are not implemented or if this framework is implemented prior to

implementation of the coral zones. By removing certain canyon areas from the Southern GRA, alternatives 2B and 2C are expected to result in a slight increase in fishing effort, particularly for longfin squid, during January 1 – March 15, compared to the *status quo* (alternative 2A). An increase in fishing effort could lead to increased fishing mortality for target species such as longfin squid and for non-target species such as scup; therefore, alternatives 2B and 2C are expected to have slight negative biological impacts, compared to the *status quo*. An increase in fishing effort could increase the potential for interactions between fishing gear and physical habitat and between fishing gear and protected species; therefore; alternatives 2B and 2C could result in neutral to slight negative impacts to habitat and protected species. Alternatives 2B and 2C are expected to result in slight to moderate positive socioeconomic impacts by allowing for increased landings of longfin squid in small-mesh fisheries during January 1 – March 15 (Table 1).

Alternative 2D would remove statistical area 632 from the Southern GRA. Based on interpolated Northeast Fisheries Science Center (NEFSC) bottom trawl survey catches (section 7.1), alternative 2D would slightly decrease the amount of longfin squid found in the Southern GRA and would result in negligible changes in the amount of scup, black sea bass, and silver hake found in the Southern GRA, compared to the *status quo* (alternative 2A). By slightly increasing the amount of longfin squid available to small-mesh fisheries during January 1 – March 15, alternative 2D could result in a slight increase in fishing effort. A slight increase in fishing effort could lead to a slight increase in squid catches and a slight increase in discard mortality for scup and other non-target species; therefore, alternative 2D is expected to have neutral to slight negative biological impacts. Impacts to habitat and protected species are expected to be neutral because fishing effort is not expected to change in such a way that the potential for interactions between fishing gear and habitat and fishing gear and protected species changes. Neutral to slight positive socioeconomic impacts are expected because landings of longfin squid could slightly increase, compared to the *status quo* (Table 1).

Alternative 2E would modify the eastern boundary of the Southern GRA based on a proposal developed by several AP members in January 2016. Like alternatives 2B and 2C, this alternative is intended to restore access to important areas for longfin squid fishing. This alternative would restore access to a larger area than alternatives 2B and 2C. For the same reasons as previously described for alternatives 2B and 2C, alternative 2E is expected to have moderate to slight negative biological impacts, neutral to slight negative impacts to habitat and protected species, and positive socioeconomic impacts. The impacts of alternative 2E are similar to the impacts of alternatives 2B and 2C; however, because alternative 2E would remove a larger area from the Southern GRA, the magnitude of the expected impacts are greater than those of alternatives 2B and 2C. For example, all three alternatives are expected to have positive socioeconomic impacts by allowing for increased landings of longfin squid, but the socioeconomic impacts of alternative 2E are expected to be more positive than alternatives 2B and 2C because alternative 2E would allow access to more longfin squid than alternatives 2B and 2C (Table 1).

Alternative 2F is identical to alternative 2E except that it would leave portions of the Southern GRA in statistical area 616 unchanged. Like alternatives 2B, 2C, and 2E, and for the reasons previously described, alternative 2F is expected to have slight to moderately negative biological impacts, neutral to slight negative impacts to habitat and protected species, and positive socioeconomic impacts (Table 1).

Alternative 2G is the preferred Southern GRA alternative. Alternative 2G is identical to alternatives 2E and 2F, except that in areas where the Southern GRA overlaps with statistical area 616, the boundary would be based on the 2012 AP proposal (alternative 2B). Alternative 2G is thus a combination of the January 2016 AP proposal and the 2012 AP proposal. Like alternatives 2B, 2E, and 2F, and for the reasons previously described, alternative 2G is expected to have slight to moderately negative biological impacts, neutral to slight negative impacts to habitat and protected species, and positive socioeconomic impacts (Table 1).

Alternative 2H would expand the Southern GRA into statistical area 616. Alternative 2H would substantially increase the amount of scup, longfin squid, black sea bass, and silver hake found within the Southern GRA. For this reason, alternative 2H is expected to result in a decrease in small-mesh fishing effort in statistical area 616 during January 1 – March 15. Statistical area 616 contains Hudson Canyon, which is an important fishing area for many species. For a brief period of time, the Scup GRAs included Hudson Canyon. Hudson Canyon was removed from the GRAs in 2001 due to concerns from the commercial fishing industry about severe negative economic impacts. Because alternative 2H would restrict small-mesh fishing effort in and around Hudson Canyon during January 1 – March 15, it is expected to result in a reduction in small-mesh fishing effort. Fishing mortality for scup, longfin squid, black sea bass, silver hake, and other species is expected to decrease under this alternative, compared to the *status quo* (alternative 2A); therefore, alternative 2H is expected to have positive biological impacts. Impacts to habitat and protected species are expected to be positive due to the expected decrease in fishing effort and associated decrease in the potential for interactions between fishing gear and habitat and fishing gear and protected species. Socioeconomic impacts are expected to be negative due to the potential decrease in landings of several species which are caught with small-mesh in Hudson Canyon during January 1 – March 15 (Table 1).

Alternative 2I would eliminate the Southern GRA. Trends in observed and estimated commercial fishery scup discards suggest that both GRAs had a positive impact on the scup stock (Terceiro and Miller 2014). Alternative 2I would remove the existing restrictions on small-mesh fishing in the Southern GRA during January 1 – March 15. In doing so, it could result in increased small-mesh fishing effort in those areas and times of year. Alternative 2I would likely have negative biological impacts by allowing for increased scup discards and potentially increasing fishing mortality for other species, including target species such as longfin squid and other non-target species (in addition to scup). An increase in small-mesh fishing effort under alternative 2I could have neutral to slight negative impacts to habitat and protected species by increasing the potential for interactions between fishing gear and habitat and fishing gear and protected species.

Alternative 2I is expected to have positive economic impacts by allowing for increased landings of longfin squid, black sea bass, and silver hake in small-mesh fisheries. In general, the impacts of alternative 2I are expected to be slight to moderate because any changes in fishing effort, compared to the *status quo*, would occur only with small-mesh trawl gear (the only gear restricted by the GRA regulations) during January 1 – March 15 (Table 1).

Cumulative Impacts

The Council analyzed the biological, habitat, protected species, and social and economic impacts of the alternatives presented in this document. When the proposed action is considered in conjunction with all the other pressures placed on fisheries by past, present, and reasonably foreseeable future actions, it is not expected to result in any significant impacts, positive or negative; therefore, there are no significant cumulative effects on the human environment associated with the action proposed in this document (section 7.5).

Conclusions

Section 7 includes a detailed description and discussion of the expected environmental impacts, as well as any cumulative impacts resulting from the alternatives considered in this document. The preferred alternatives are not associated with significant impacts to the biological, social or economic, or physical environment individually or in conjunction with other actions under the National Environmental Protection Act (NEPA); therefore, a "Finding of No Significant Impact" (FONSI) is warranted.

Table 1: Summary of the expected impacts of alternatives considered in this document. A minus sign (-) signifies a negative impact, a plus sign (+) signifies a positive impact, and zero (0) indicates a neutral impact. “Sl” indicates a slight effect.

Alternative Set	Alternative	Biological	Habitat	Protected Species	Socio-economic
1: Northern GRA Alternatives	1A: Status Quo Northern GRA **(preferred)**	0	0	0	0
	1B: Northern GRA Expanded into Statistical Area 613	Sl+	0/Sl+	0/Sl+	0/Sl-
	1C: Eliminate Northern GRA	-	0/Sl-	0/Sl-	+
2: Southern GRA Alternatives	2A: Status Quo Southern GRA	0	0	0	0
	2B: 2012 AP Proposal	0/Sl-	0/Sl-	0/Sl-	Sl+/+
	2C: Alternative 2B with Coral Areas Removed	0/Sl-	0/Sl-	0/Sl-	Sl+/+
	2D: Area 632 Removed from Southern GRA	0/Sl-	0/Sl-	0/Sl-	0/Sl+
	2E: January 2016 AP Proposal	Sl-/-	0/Sl-	0/Sl-	+
	2F: Modified January 2016 AP Proposal	Sl-/-	0/Sl-	0/Sl-	+
	2G: Combination of Alternatives 2B and 2E **(preferred)**	Sl-/-	0/Sl-	0/Sl-	+
	2H: Southern GRA Expanded into Area 616	+	+	+	-
	2I: Eliminate Southern GRA	-	0/Sl-	0/Sl-	+

2. LIST OF ACRONYMS AND ABBREVIATIONS

ACL	Annual Catch Limit
AM	Accountability Measure
ATGTRS	Atlantic Trawl Gear Take Reduction Strategy
ATGTRT	Atlantic Trawl Gear Take Reduction Team
CEA	Cumulative Effects Assessment
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Council	Mid-Atlantic Fishery Management Council
CPUE	Catch per Unit Effort
CS	Consumer Surplus
DPS	Distinct Population Segment
DPSWG	Data Poor Stocks Working Group
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FR	Federal Register
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impact
GRA	Gear Restricted Area
IRFA	Initial Regulatory Flexibility Analysis
LOF	List of Fisheries
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAO	National Oceanic and Atmospheric Administration Administrative Order
NEFSC	Northeast Fisheries Science Center
NEFOP	Northeast Fisheries Observer Program
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PRA	Paperwork Reduction Act
PS	Producer Surplus
RFA	Regulatory Flexibility Analysis
RIR	Regulatory Impact Review
SBA	Small Business Administration
VEC	Valued Ecosystem Component
VTR	Vessel Trip Report

3. CONTENTS, TABLES, AND FIGURES

3.1. Contents

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3.4.

4. INTRODUCTION AND BACKGROUND

This framework was developed in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA)[1], NEPA, and the Summer Flounder, Scup, and Black Sea Bass FMP. The FMP and subsequent amendments describe the management regime for these fisheries and can be found at: http://www.mafmc.org.

The Environmental Assessment (EA) contained in this document (sections 5 through 7) examines the impacts of each management alternative on the human environment. The aspects of the human environment that are likely to be directly or indirectly affected by the actions proposed in this document are described as valued ecosystem components (VECs; Beanlands and Duinker 1984). These VECs comprise the affected environment. The VECs for this framework are:

- The managed stocks most directly affected by the Scup GRA regulations (i.e. scup, longfin squid, black sea bass, and silver hake) and non-target species caught in fisheries for those stocks,
- Habitat for the managed stocks and non-target species,
- Species afforded protection under the Endangered Species Act (ESA; i.e. species as endangered or threatened) and/or the Marine Mammal Protection Act (MMPA), and
- Human communities (the social and economic aspects of the affected environment).

The impacts of the alternatives are evaluated with respect to these VECs.

4.1. PURPOSE AND NEED

The purpose of this framework is to consider modifications to the Scup GRAs. This action is needed to ensure the continued effectiveness of the GRAs given changes in scup stock status and an updated analysis of scup discards in and near the GRAs.

4.2. BACKGROUND ON SCUP GRAs

The Council develops regulations for scup fisheries in Federal waters. The Council submits these regulations to the NMFS Greater Atlantic Regional Administrator to consider for implementation. The Regional Administrator reviews the Council's recommendations and approves them for implementation if it is determined that they achieve FMP objectives and meet statutory requirements.

The current Scup GRA regulations include a Northern GRA, which is in effect from November 1 through December 31 and a Southern GRA, which is in effect from January 1 through March 15

[1] MSA portions retained plus revisions made by the MSA Reauthorization Act of 2006.

(Table 2 andTable 3, Figure 1). All trawl vessels that fish for or possess longfin squid, black sea bass, or silver hake (also known as whiting) in either GRA during the effective times of year must fish with nets that have a minimum mesh size of 5.0 inches diamond mesh (50 CFR §648.124). The GRAs were designed to reduce scup discards in small-mesh fisheries (i.e. fisheries which use codend mesh smaller than the minimum mesh size for the directed commercial scup fishery, which is currently 5.0 inches diamond mesh).

The Scup GRAs were first implemented in November 2000 through the annual specifications for the summer flounder, scup, and black sea bass fisheries (65 *Federal Register* 33386, May 24, 2000). The GRAs were developed in response to recommendations from the 27th Stock Assessment Review Committee (SARC) and the Council's Summer Flounder, Scup, and Black Sea Bass Monitoring Committee. The 27th SARC concluded that "the scup stock is over-exploited and at a low biomass level… Although discard estimates are uncertain, the majority of fishing mortality in recent years is clearly attributable to discards, particularly when incoming recruitment is strong. Reduction in fishing mortality due to discards from small-mesh fisheries will have the most positive impact on the stock" (NEFSC 1998). The Monitoring Committee recommended that the Council develop regulations to close certain areas with high abundances of juvenile scup to fishing with trawl net mesh sizes smaller than 4.5 inches in diameter (the minimum mesh size required in the directed commercial scup fishery at the time).

The Council followed the advice of the SARC and the Monitoring Committee and developed a proposal for Scup GRAs. NMFS did not approve the Council's proposal and instead implemented two GRAs which were much larger in size than the GRAs proposed by the Council. The Northern GRA implemented by NMFS was designed to include Federal waters off of Massachusetts, Rhode Island, and New York out to approximately 100 fathoms, from November 1 through December 31. The Southern GRA was designed to encompass Federal waters off New Jersey and Delaware, out to approximately 100 fathoms, from January 1 through April 30. These initial GRAs applied to vessels fishing for or possessing longfin squid, black sea bass, silver hake, and Atlantic mackerel (listed in the regulations as "non-exempt species"; 50 CFR §648.124). Discard estimates suggested that when these species were targeted in the GRAs, scup discards made up at least 10% of the catch by weight. Vessels possessing other species were exempt from the GRA regulations (65 *Federal Register* 33490, May 24, 2000).

Several members of the commercial fishing industry opposed the initial GRAs due to their large size, claiming they would cause severe economic hardships for small-mesh fisheries. Based on industry concerns and an analysis suggesting that the GRAs could be reduced in size without compromising the conservation benefits to scup, the Council and NMFS modified the GRAs in late 2000, significantly reducing their size. NMFS also permanently exempted the Atlantic mackerel fishery from the GRAs after considering data suggesting that the GRAs would have a minimal impact on reducing scup discards in the Atlantic mackerel fishery (65 *Federal Register* 81761, December 27, 2000).

The Council and NMFS modified the GRAs a third time in early 2001. This modification removed Hudson Canyon and surrounding areas from the GRAs in response to industry requests. Hudson Canyon is an important winter fishing area for several small-mesh fisheries. This modification also widened the Southern GRA and expanded it to the south to include areas with high concentrations of scup in the winter (66 *Federal Register* 12902, March 1, 2001).

The Council and NMFS modified the GRAs again in late 2004, shifting the Southern GRA by 3 longitudinal minutes to the west. An analysis suggested that this modification would expose an additional 3% of the scup stock to small-mesh gear during the effective period, while restoring access to an additional 8% of the longfin squid stock (70 *Federal Register* 303, January 4, 2005). The GRAs have not been modified since this time.

The scup stock has expanded substantially since the GRAs were last modified in late 2004. Scup were declared rebuilt in 2009 based on the results of a benchmark stock assessment (DPSWG 2009). The most recent scup benchmark stock assessment took place in 2015 and concluded that scup was not overfished and overfishing was not occurring in 2014. Scup spawning stock biomass (SSB) in 2014 was estimated to be about 405 million pounds, approximately 210% of SSB at maximum sustainable yield (SSB_{MSY}; NEFSC 2015A).

In recent years, some commercial fishing industry advisors recommended that the Council modify the boundaries of the scup GRAs in order to restore access to certain areas for longfin squid fishing, arguing that modifications to the GRA boundaries would not harm the scup stock given that scup SSB is so high. At the request of the Council, the Northeast Fisheries Science Center (NEFSC) examined data on scup discards in the GRA areas from 1989 through 2013. This analysis suggests that from 1989 through 2013 most commercial fishery scup discards occurred in small-mesh tows in statistical areas that now include GRAs and that scup discards have decreased since GRA implementation. The authors concluded that “the GRAs have likely reduced the discard mortality of small scup, and are responsible for the improved post-recruitment survival of these small scup”. The analysis also suggests that in recent years relatively high scup discards occurred in areas outside of the GRAs as well as within the GRAs during times of the year when the GRAs are not in effect (Terceiro and Miller 2014).

In February 2014 the Council considered the NEFSC analysis and discussed management alternatives for a framework action to modify the GRAs. The Council postponed further development of the framework in June 2014. At the time, the Council was developing alternatives for deep sea coral protection zones, which overlapped with the scup GRAs. The Council reconsidered the GRA framework in December 2015, February 2016, and April 2016. The alternatives under consideration, including the preferred alternative selected by the Council in April 2016, are described in section 5 of this document.

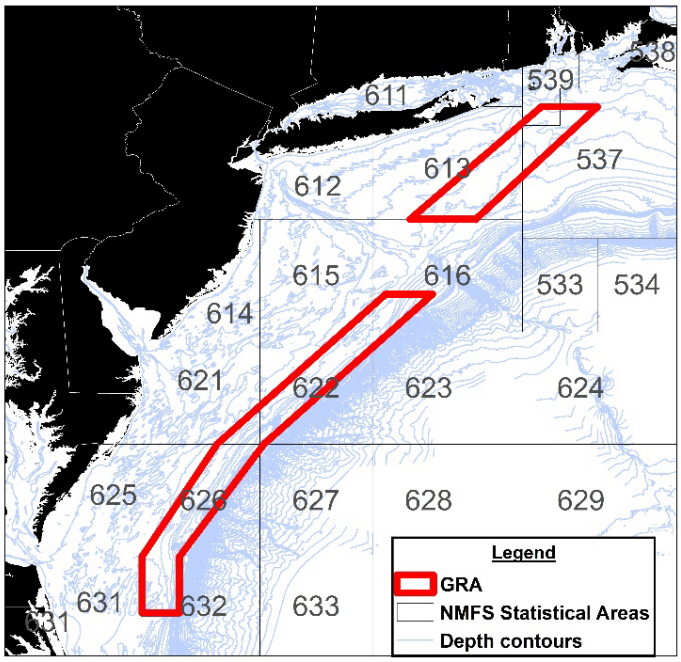


Figure 1: Current scup Gear Restricted Areas.

Table 2: Coordinates for the Northern Scup GRA. The boundary of the Northern GRA is defined by straight lines connecting the points below in the order stated (50 CFR §648.124).

Point	N. latitude	W. longitude
NGA1	41°00′	71°00′
NGA2	41°00′	71°30′
NGA3	40°00′	72°40′
NGA4	40°00′	72°05′
NGA1	41°00′	71°00′

Table 3: Coordinates for the Southern Scup GRA. The boundary of the Southern GRA is defined by straight lines connecting the points below in the order stated (50 CFR §648.124).

Point	N. latitude	W. longitude
SGA1	39°20′	72°53′
SGA2	39°20′	72°28′
SGA3	38°00′	73°58′
SGA4	37°00′	74°43′
SGA5	36°30′	74°43′
SGA6	36°30′	75°03′
SGA7	37°00′	75°03′
SGA8	38°00′	74°23′
SGA1	39°20′	72°53′

5. MANAGEMENT ALTERNATIVES

The action alternatives described in this document would modify the boundaries of or eliminate either of the current Scup GRAs. Each alternative is described in detail in the following sections.

5.1. Alternative Set 1: Northern GRA Alternatives

Alternative set 1 contains three alternatives for the Northern GRA.

5.1.1. Alternative 1A: *Status Quo* Northern GRA (Preferred Northern GRA Alternative)

Alternative 1A is the *status quo*/no action alternative for the Northern GRA. Under this alternative, the regulations for the Northern GRA would remain unchanged. The current regulations for the Northern GRA are described in section 4 of this document and at 50 CFR §648.124. Alternative 1A is the preferred Northern GRA alternative.

5.1.2. Alternative 1B: Expand the Northern GRA into Statistical Area 613

Alternative 1B would expand the boundaries of the Northern GRA to encompass more of NMFS statistical area 613 (Figure 2). Alternative 1B represents about a 63% increase in the size of the Northern GRA (Table 4).

This alternative is informed by the 2014 NEFSC analysis of scup discards in the GRA areas. This analysis shows that relatively high amounts of scup discards occurred in tows which used mesh 2.125 inches in diameter and smaller (the mesh size typically used to target squid) in statistical area 613 in November and December from 1989 through 2013. Since implementation of the GRAs, scup discards in small-mesh[2] tows in the Northern GRA statistical areas during the last quarter of the year have generally been much lower than prior to implementation of the GRAs (Figure 3).

Table 4: Approximate size of Northern GRA alternatives.

Alternative	Area (square nautical miles)	Difference from *status quo* Northern GRA
1A: *Status quo* Northern GRA	1,489	0%
1B: Expand Northern GRA into statistical area 613	2,434	+63%
1C: Eliminate the Northern GRA	0	-100%

[2] As in other sections of this document, "small-mesh" refers to mesh smaller than the minimum mesh size required in the directed scup fishery (either 4.5 or 5.0 inches in diameter, depending on the year).

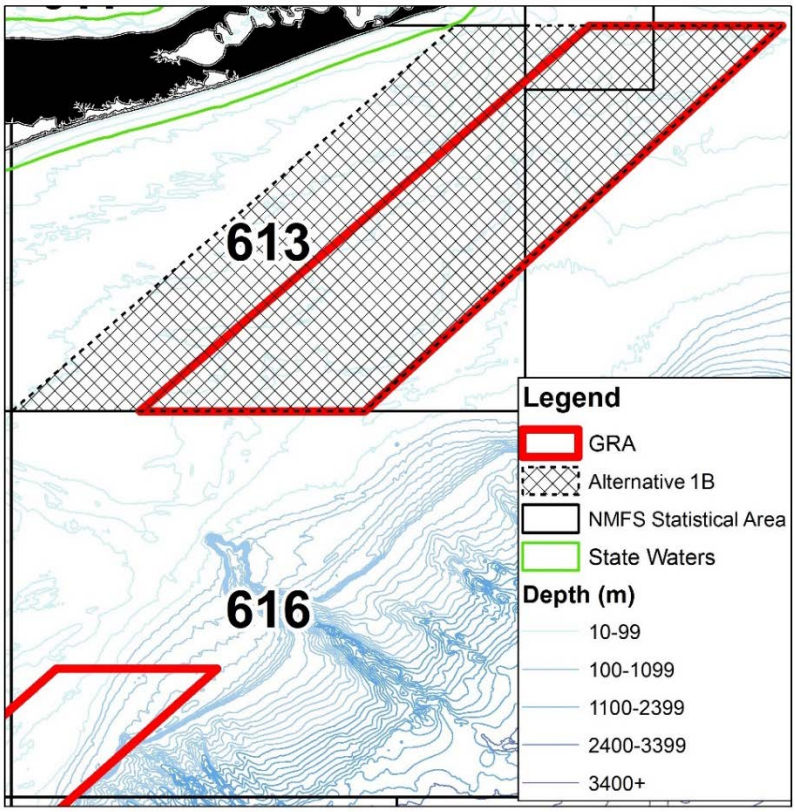


Figure 2: Alternative 1B shown with the current Scup GRA boundaries.

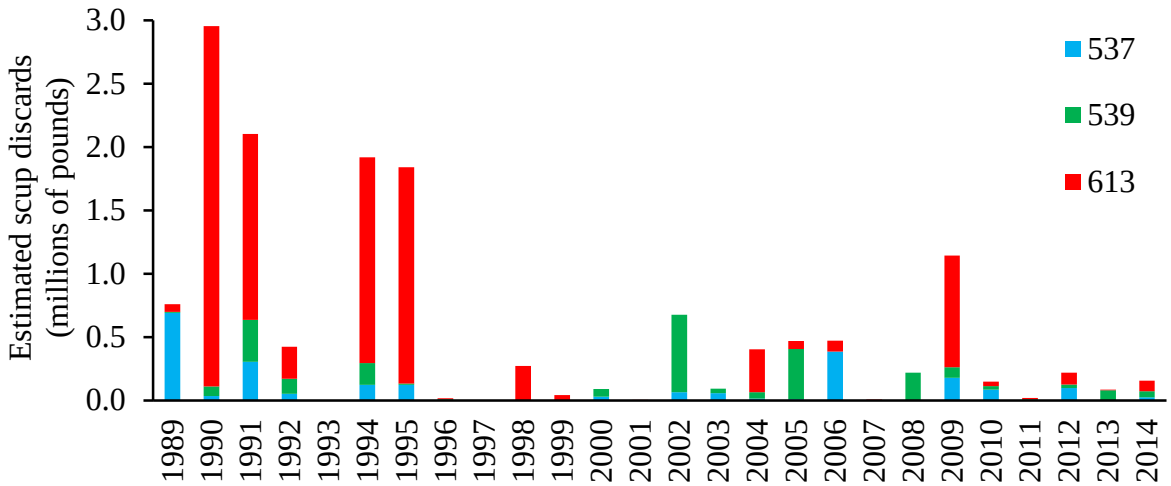


Figure 3: Estimated scup discards in small-mesh trips in the Northern GRA statistical areas (537, 539, and 613) during the fourth quarter of the year from 1989 through 2014. Small-mesh refers to mesh smaller than the minimum mesh size required in the directed scup fishery (either 4.5 or 5.0 inches in diameter, depending on the year).

5.1.3. Alternative 1C: Eliminate the Northern GRA

Under alternative 1C, the Northern Scup GRA would be eliminated from the regulations. Vessels fishing for or possessing longfin squid, black sea bass, or silver hake would no longer be prohibited from using mesh smaller than 5.0 inches in diameter in the Northern GRA from November 1 through December 31 unless prohibited from doing so by other regulations.

5.2. Alternative Set 2: Southern GRA Alternatives

Alternative set 2 includes nine alternatives for the Southern GRA.

5.2.1. Alternative 2A: *Status Quo* Southern GRA

Alternative 2A is the *status quo*/no action alternative for the Southern GRA. Under this alternative the regulations for the Southern GRA would remain unchanged. The current regulations for the Southern GRA are described in section 4 of this document and at 50 CFR §648.124.

5.2.2. Alternative 2B: 2012 AP Proposal

Alternative 2B includes modifications to the eastern boundary of the Southern GRA based on a 2012 proposal by Captain Hank Lackner, a commercial scup and longfin squid fisherman and a member of both the Council's Mackerel, Squid, and Butterfish and Summer Flounder, Scup, and Black Sea Bass APs. This modification is intended to restore access to certain canyon areas for longfin squid fishing. This modification represents about a 7% decrease in the size of the Southern GRA (Table 5, Figure 4).

Table 5: Approximate size of Southern GRA alternatives.

Alternative	Area (square nautical miles)	Difference from *status quo* Southern GRA
2A: *Status quo* Southern GRA	3,117	0%
2B: 2012 AP proposal	2,887	-7%
2C: Alternative 3A with modification for coral zones	2,868	-8%
2D: Statistical area 632 removed from Southern GRA	2,635	-15%
2E: January 2016 AP proposal	2,009	-36%
2F: Modified January 2016 AP proposal	2,140	-31%
2G: Combination of alternatives 3A and 3D	2,086	-33%
2H: Southern GRA expanded into statistical area 616	3,996	+28%
2I: Eliminate the Southern GRA	0	-100%

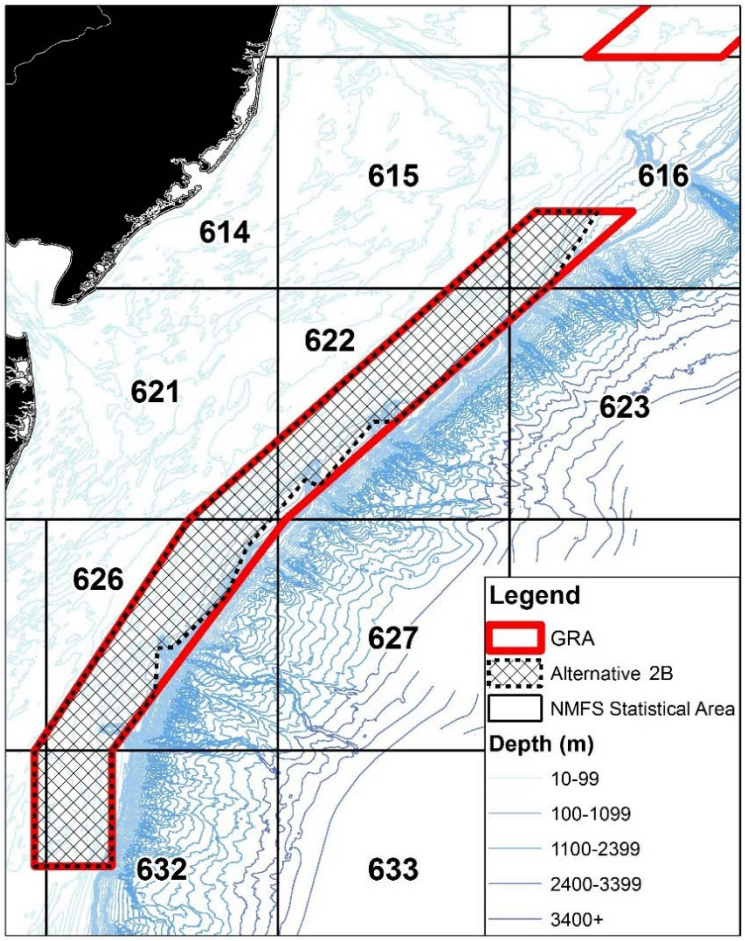


Figure 4: Alternative 2B shown with the current scup GRA boundaries.

5.2.3. Alternative 2C: Alternative 2B Adjusted for Coral Zones

Alternative 2C would modify the eastern boundary of the Southern GRA as proposed in alternative 2B and would also remove areas of overlap with the proposed deep sea coral discrete and broad zones. These coral zones were recommended by the Council in June 2015 as part of the Deep Sea Coral Amendment to the Mackerel, Squid, and Butterfish FMP. They have not yet been approved by GARFO and have not yet been implemented. If approved, all bottom tending gear, including the trawl gear subject to the Scup GRA regulations, will be prohibited in the coral zones year-round. Alternative 2C represents about an 8% decrease in the size of the Southern GRA (Table 5, Figure 5).

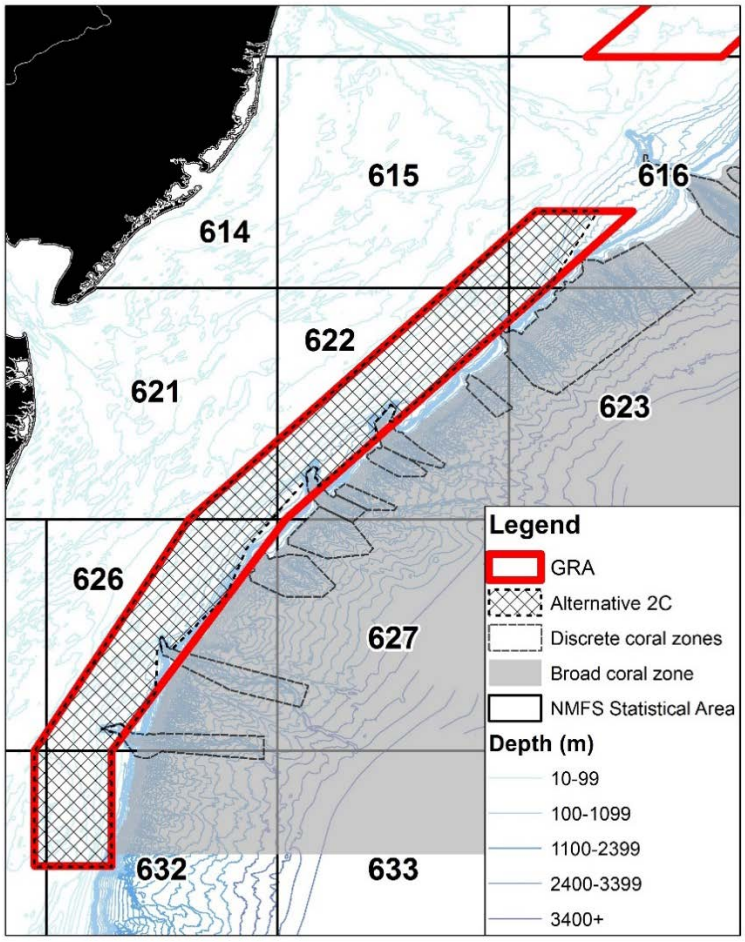


Figure 5: Alternative 2C shown with the current scup GRA boundaries and the discrete and broad coral zones.

5.2.4. Alternative 2D: Statistical Area 632 Removed from the Southern GRA

Alternative 2D would remove statistical areas 632 from the Southern GRA. This alternative is informed by the 2014 NEFSC analysis of scup discards. Between 1989 and 2013, 90 pounds of scup discards were observed in statistical area 632. Of all the statistical areas included in the GRAs, only statistical area 627 had fewer observed discards (40 pounds) during 1989-2013 (Terceiro and Miller 2014). Because so few scup discards have been observed in statistical area 632, both before and after implementation of the GRAs, it is likely not significantly contributing to the conservation benefits provided by the Southern GRA. The observed discards suggest that statistical area 632 could be removed from the Southern GRA without impacting the scup stock. Under this alternative, statistical area 631 would also be removed from the Southern GRA. A small part of statistical area 631 became part of the Southern GRA in late 2004 when the Southern GRA was moved three longitudinal minutes to the west. This alternative would result in a 15% decrease in the size of the Southern GRA (Table 5, Figure 6).

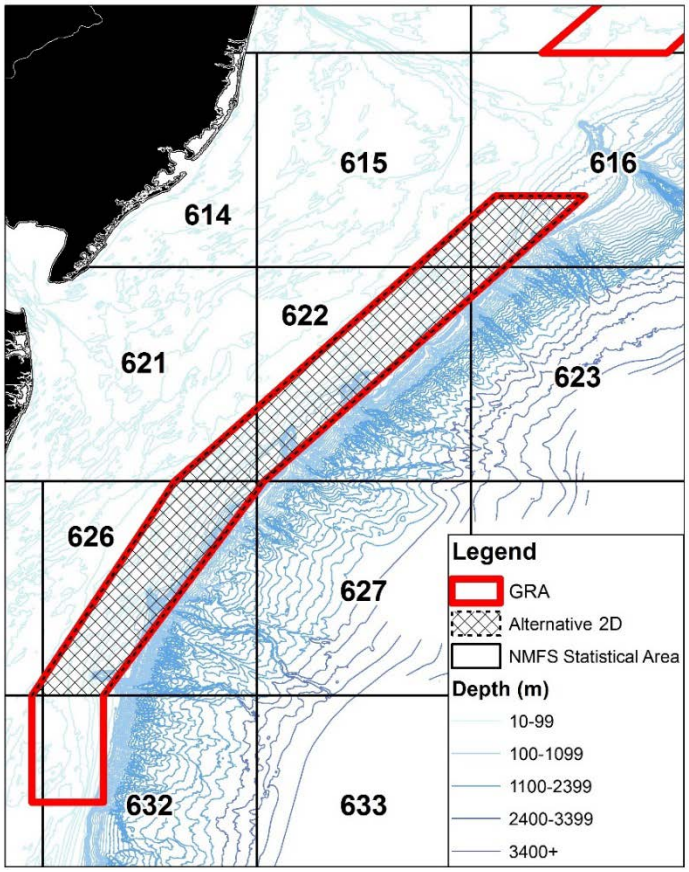


Figure 6: Alternative 2D shown with the current GRA boundaries.

5.2.5. Alternative 2E: January 2016 AP Proposal

Alternative 2E would modify the boundaries of the Southern GRA based on a proposal developed by several AP members in January 2016 (Figure 7). Like alternatives 2B and 2C, this proposal is intended to restore access to important fishing areas for longfin squid. The eastern boundary of the Southern GRA under this alternative follows approximately the 55 and 60 fathom contours (depending on the area). The advisors who developed this proposal excluded statistical area 632 from the modified Southern GRA because, as previously described, very low amounts of scup discards were observed in that area from 1989 through 2013 (Terceiro and Miller 2014). Alternative 2E represents a 36% decrease in the size of the Southern GRA (Table 5).

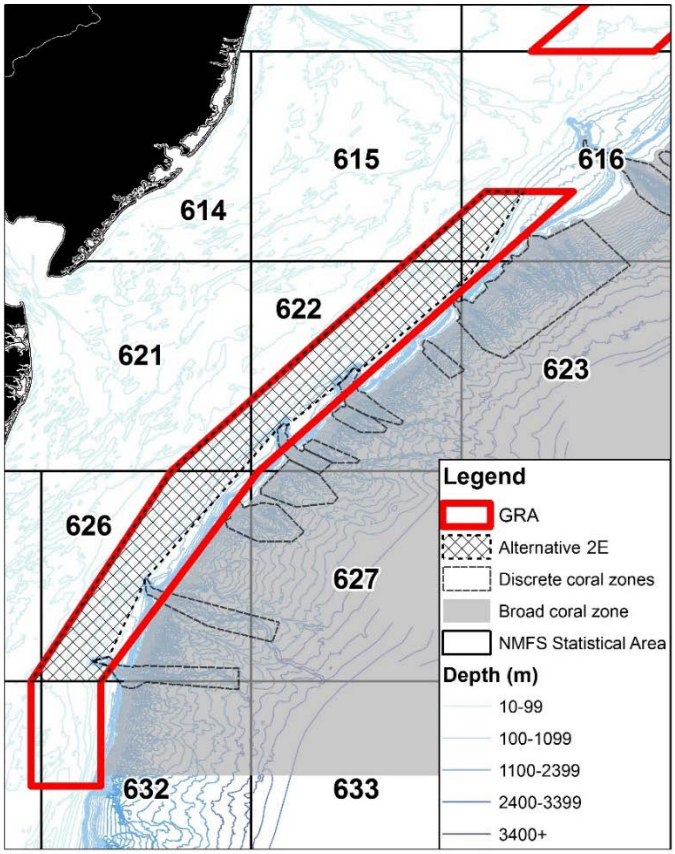


Figure 7: Alternative 2E shown with the current Southern GRA boundaries and the discrete and broad coral protection zones.

5.2.6. Alternative 2F: Modified January 2016 AP Proposal

Alternative 2F is identical to alternative 2E, but with areas of overlap with statistical area 616 left unchanged (Figure 8). This alternative is intended to restore access for small-mesh fisheries to depths of about 55 fathoms and deeper in the areas between Carteret Canyon and Norfolk Canyon. Area 616 continued to have relatively high amounts of scup discards after implementation of the GRAs (Figure 9; Terceiro and Miller 2014). Most scup discards in statistical area 616 are from small-mesh fisheries. During 2000-2014 (years when the GRAs were in effect), 80% of scup discards in statistical area 616 during the first quarter of the year (the time of year when the Southern GRA is in effect) were from small-mesh fisheries and 20% were from large mesh fisheries (Figure 10). Alternative 2F represents a 31% decrease in the size of the Southern GRA (Table 5).

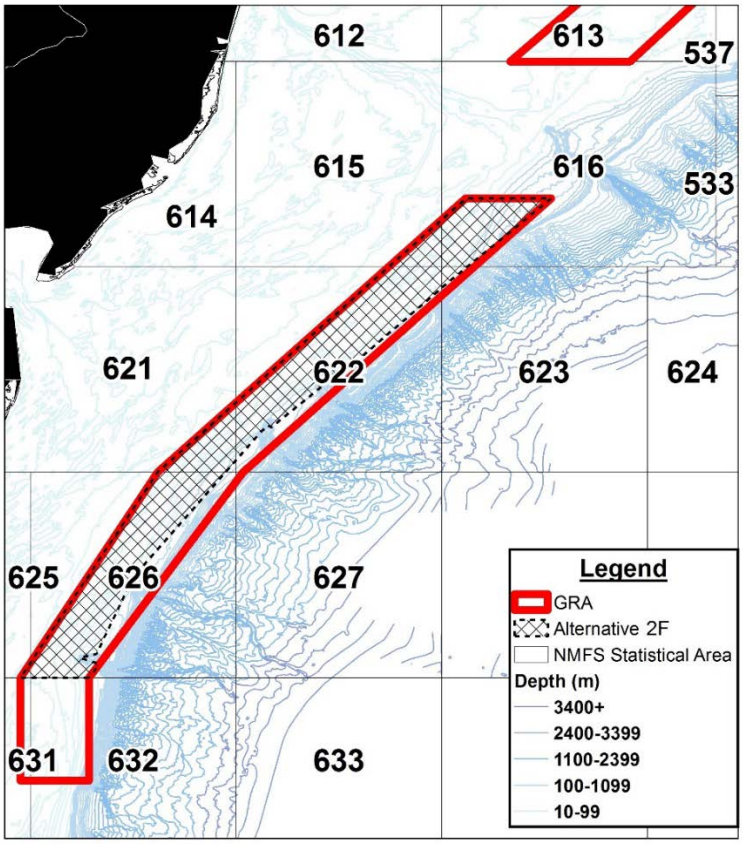


Figure 8: Alternative 2F shown with the current Southern GRA boundaries.

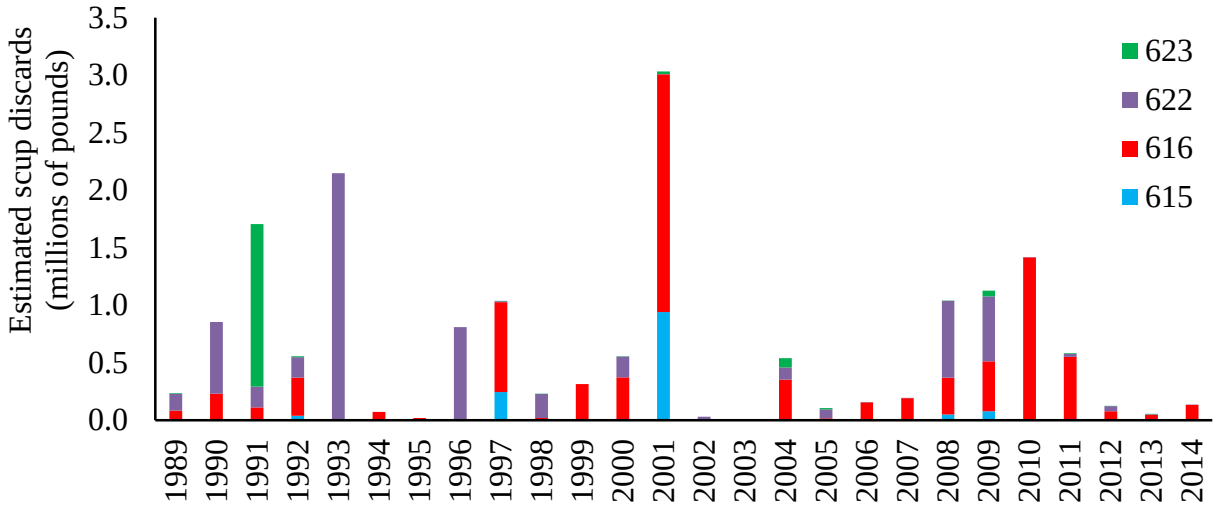


Figure 9: Estimated scup discards in small-mesh trips in the Southern GRA statistical areas during the first quarter of the year from 1989 through 2014. Statistical areas with fewer than 1 million pounds of estimated scup discards over this time period (i.e. statistical areas 621, 626, 631, 632) are not shown. Small-mesh refers to mesh smaller than the minimum mesh size required in the directed scup fishery (either 4.5 or 5.0 inches in diameter, depending on the year).

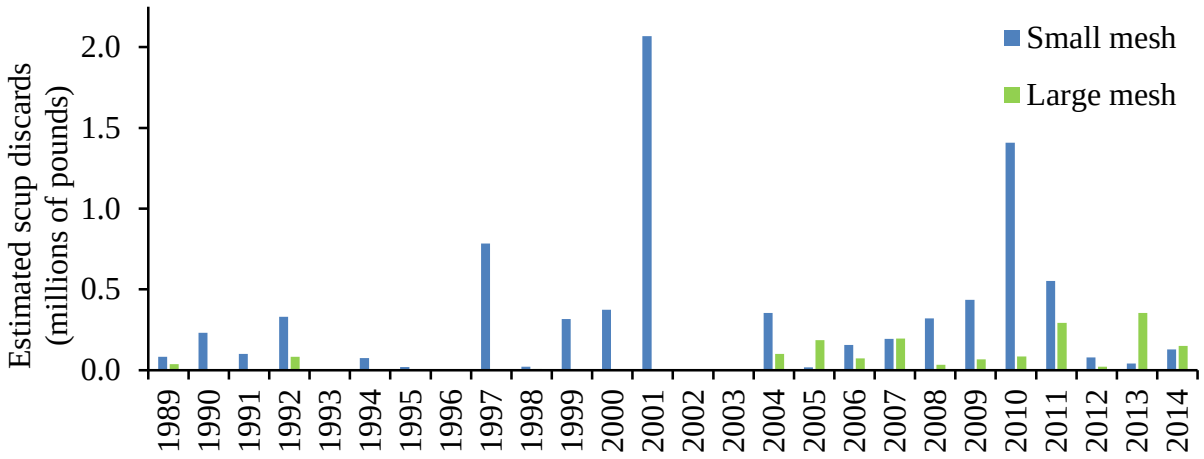


Figure 10: Estimated scup discards from small and large mesh tows in statistical area 616 during the first quarter of the year from 1989 through 2014. "Small-mesh" refers to mesh smaller than the minimum mesh size required in the directed scup fishery (either 4.5 or 5.0 inches in diameter, depending on the year).

5.2.7. Alternative 2G: Combination of alternatives 2B and 2F (Preferred Southern GRA Alternative)

Alternative 2G is the preferred Southern GRA alternative. This alternative was suggested by six AP members prior to the April 2016 Council meeting and is intended to represent a compromise between alternatives 2E and 2F. Alternative 2G follows the boundary proposed by AP members in January 2016 (alternative 2E), except that in statistical area 616 the boundary follows the 2012 AP proposal (alternative 2B; Figure 11). Like alternative 2E, this alternative is intended to restore access to important fishing areas for longfin squid in areas approximately 55 to 60 fathoms and deeper. Alternative 2G would remove a smaller section of statistical area 616 from the Southern GRA than alternative 2E. In all other respects, alternative 2G is identical to alternative 2E. Alternative 2G represents about a 33% decrease in the size of the Southern GRA (Table 5).

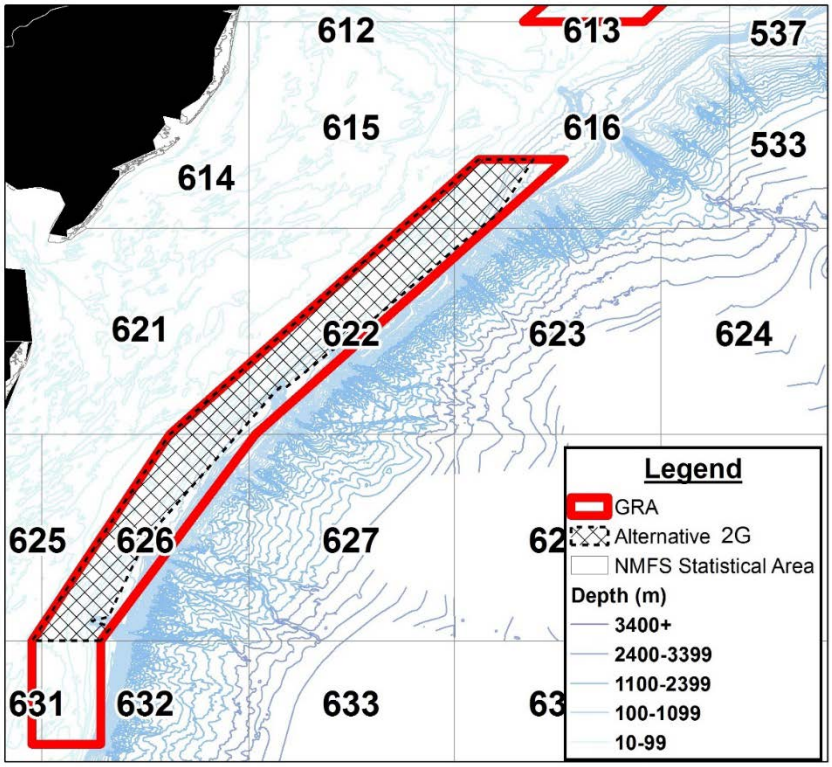


Figure 11: Alternative 2G shown with the current GRA boundaries.

Table 6: Coordinates for the Southern GRA under alternative 2G. The boundary of the Southern GRA is defined by straight lines connecting the points below in the order stated. An asterisk (*) indicates that the point is unchanged from the *status quo* Southern GRA. (C) indicates that the point is identical to a vertex of the proposed coral protection zones.

Point	N. latitude	W. longitude
SGA1	39.333333	-72.616667
SGA2	39.073019	-72.786958
SGA3	38.496545	-73.467370
SGA4 (C)	38.477560	-73.489477
SGA5 (C)	38.495300	-73.510888
SGA6 (C)	38.438654	-73.557363
SGA7 (C)	38.219230	-73.829500
SGA8 (C)	38.229019	-73.845524
SGA9 (C)	38.199688	-73.877487
SGA10 (C)	37.492224	-74.499182
SGA11 (C)	37.490513	-74.504757
SGA12 (C)	37.476656	-74.510019
SGA13 (C)	37.116111	-74.680000

Table 6, continued: Coordinates for the Southern GRA under alternative 2G. The boundary of the Southern GRA is defined by straight lines connecting the points below in the order stated. An asterisk (*) indicates that the point is unchanged from the *status quo* Southern GRA. (C) indicates that the point is identical to a vertex of the proposed coral protection zones.

Point	N. latitude	W. longitude
SGA14 (C)	37.097222	-74.759444
SGA15 (C)	37.073889	-74.683889
SGA16 (C)	37.057931	-74.672732
SGA17*	37.000000	-74.716667
SGA18*	37.000000	-75.050000
SGA19*	38.000000	-74.383333
SGA20*	39.333333	-72.883333
SGA1	39.333333	-72.616667

5.2.8. Alternative 2H: Southern GRA Expanded into Statistical Area 616

Under alternative 2H, the boundaries of the Southern GRA would be modified to include more of statistical area 616 (Figure 12). Alternative 2H represents a 28% increase in the size of the Southern GRA (Table 5).

This alternative is informed by the 2014 NEFSC analysis of scup discards. As described in section 5.2.6, area 616 continued to have relatively high amounts of scup discards after implementation of the GRAs (Figure 9; Terceiro and Miller 2014). Between 1989 and 2013, most scup discards in statistical area 616 during the first quarter of the year were from small-mesh fisheries. During 2000-2014 (years when the GRAs were in effect), 80% of scup discards in statistical area 616 during the first quarter of the year were from small-mesh fisheries and 20% were from large mesh fisheries (Figure 10).

When the GRAs were first implemented in May 2000, both GRAs were much larger than their current configuration and the Southern GRA included about half of statistical area 616. Several fishing industry members expressed concern that the GRAs would cause severe economic hardships due to their large size. The GRA boundaries were modified shortly after their initial implementation to address this concern. Under this first modification, effective December 2000, both GRAs were greatly reduced in size and a second Northern GRA was added, which mostly fell within statistical area 616. This modification did not sufficiently address the concerns of several fishing industry members. Statistical area 616 includes Hudson Canyon, which is a productive fishing area for many species. When the GRAs were modified a second time, effective March 2001, the second Northern GRA was eliminated and much of statistical area 616 was removed from the GRAs (66 *Federal Register* 12902, March 1, 2001).

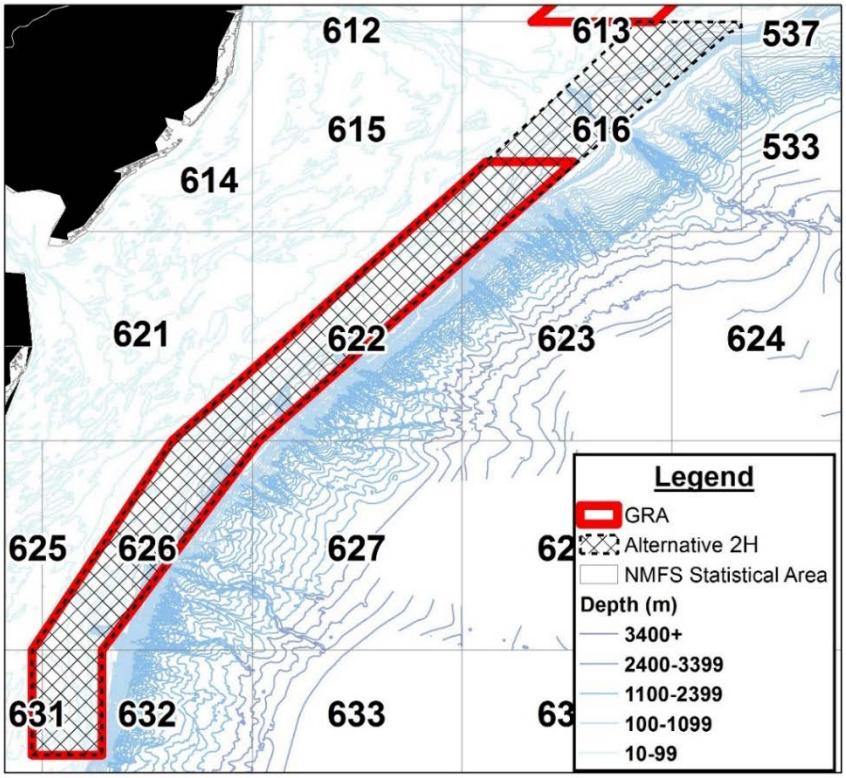


Figure 12: Alternative 2H shown with the current GRA boundaries.

5.2.9. Alternative 2I: Eliminate the Southern GRA

Under alternative 2I, the Southern Scup GRA would be eliminated from the regulations. Vessels fishing for or possessing longfin squid, black sea bass, or silver hake would no longer be prohibited from using mesh smaller than 5.0 inches in diameter in the Southern GRA from January 1 through March 15, unless prohibited from doing so by other regulations.

5.3. Considered but Rejected from Further Analysis

In December 2015 the Council decided not to include alternatives to modify the times of year when the GRAs are in effect as part of this framework. The Council considered a summary of scup discard estimates by month.[3] These data suggested that most scup discards during 2010-2014 occurred in tows using mesh smaller than 5.0 inches in diameter (the mesh size required in the directed scup fishery) but larger than 2.125 inches (the mesh size typically used to target squid) in statistical areas 537-539 and 611 during May and June, and in tows using mesh 2.125 inches or smaller in statistical area 616 during January through March. Based on this

[3] The scup discard estimates used in Terceiro and Miller (2014) and in the 2015 benchmark stock assessment (NEFSC 2015A) are estimated by calendar quarter, by statistical area, and by three mesh size categories. Discard estimates by month were calculated for the purposes of assessing the effectiveness of the dates of the scup GRAs. Using month as the time stratum degrades the precision of overall discard estimates and was therefore only used to make generalizations about the timing of discards.

information, the Council decided that changes to the GRA dates would likely not substantially improve the effectiveness of the GRAs.

6. DESCRIPTION OF THE AFFECTED ENVIRONMENT AND FISHERIES

6.1. Description of the Managed Resources

In addition to impacts on the scup resource itself, the scup GRAs primarily impact the longfin squid, black sea bass, and silver hake fisheries. This section contains a brief description of these fisheries. Additional information on the scup, black sea bass, and longfin squid fisheries can be found on the Mid-Atlantic Council's website (www.mafmc.org). The whiting fishery is managed by the New England Fishery Management Council. Additional information on this fishery can be found at: www.nefmc.org.

6.1.1. Scup

6.1.1.1. Status of the Scup Stock

Scup was under a formal rebuilding plan from 2005 through 2009. NMFS declared the scup stock rebuilt in 2009 based on the findings of the Data Poor Stocks Working Group (DPSWG), which completed a benchmark stock assessment for scup in 2008 (DPSWG 2009).

The most recent benchmark stock assessment for scup took place in 2015 as part of the 60th Stock Assessment Work Group and Stock Assessment Review Committee (SAW/SARC 60). This assessment found that the scup stock was not overfished and overfishing was not occurring in 2014 relative to the new biomass reference points. SSB was estimated to be 403 million pounds in 2014, about 210% of the SSB_{MSY} proxy (i.e. $SSB_{40\%}$) of 192 million pounds. F in 2014 was estimated to be 0.127, about 57% of the F_{MSY} proxy (i.e. $F_{40\%}$) of 0.220 (NEFSC 2015A).

6.1.1.2. Scup Fisheries

Scup fisheries are cooperatively managed by the Council and the Atlantic States Marine Fisheries Commission (ASMFC) under the Summer Flounder, Scup, and Black Sea Bass FMP. The management unit for scup is U.S. waters in the western Atlantic Ocean from Cape Hatteras, North Carolina northward to the U.S.-Canadian border.

Scup are commercially harvested year-round. Most commercial scup catch in the winter is from Federal waters and most commercial scup catch in the summer is from state waters. In 2014, commercial fishermen landed 15.96 million pounds of scup (73% of the commercial quota; Figure 13), which were worth about $9.53 million. In 2014, about 96% of the scup caught by Federal commercial fishing permit holders were caught with bottom otter trawls. An additional 1.3% were caught with pots and traps and about 1% were caught with sink gill nets. There is a strong relationship between the amount of scup landed in a given year and the average price per pound. As landings increase, price generally decreases.

The commercial scup fishery is a mixed species fishery where multiple species such as summer flounder, black sea bass, squid, Atlantic mackerel, silver hake, Atlantic croaker, skates, spiny dogfish, and other species are targeted (MAFMC 2001; personal communication with Dr. Mark Terceiro, NEFSC, October 2015). Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP (MAFMC 2002) includes a description of bycatch[4] and non-target species in the scup fishery. More recent information on bycatch and non-target species associated with Mid-Atlantic trawl fisheries can be found in the Standardized Bycatch Reporting Methodology Amendment (NMFS 2015).

According to estimates from the Marine Recreational Information Program (MRIP)[5], recreational fishermen from Maine through North Carolina landed an estimated 4.68 million pounds of scup in 2014 (66% of the recreational harvest limit). Between 2005 and 2014, about 97% of recreational scup harvest occurred in state waters and about 3% occurred in Federal waters.[6] In 2014, 710 party and charter vessels held Federal party/charter permits for scup.

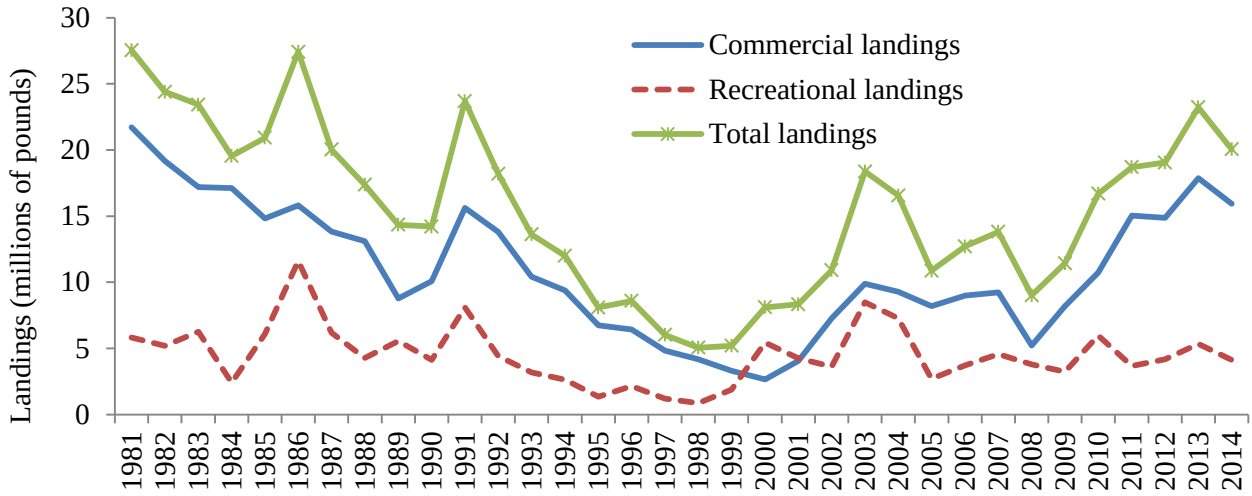


Figure 13: Commercial and recreational scup landings, from Maine through North Carolina, 1981-2014.

6.1.2. Longfin Squid

6.1.2.1. Status of the Longfin Squid Stock

The life history characteristics of short-lived squid species such as longfin squid present unique challenges for stock assessments. Most traditional approaches used for finfish species have not

[4] The MSA defines bycatch as harvested fish that are not sold or kept for personal use. Bycatch includes discards of whole fish at sea or elsewhere, including economic and regulatory discards, and also includes fishing mortality due to an encounter with fishing gear that does not result in capture of fish. Bycatch does not include fish released alive under a recreational catch-and-release fishery management program.

[5] More information available at: http://www.st.nmfs.noaa.gov/recreational-fisheries/MRIP/index

[6] MRIP estimates downloaded June 13, 2016.

been successfully applied to squid stocks (Boyle and Rodhouse 2005). The longfin squid stock exhibits dramatic annual fluctuations in abundance. The most recent longfin squid stock assessment (NEFSC 2010) indicated that the longfin stock was not overfished in 2009. Overfishing status could not be determined because no overfishing threshold was recommended due to a lack of a clear statistical relationship between catch and biomass estimates. The assessment produced a biomass estimate of approximately 120 million pounds based on the two-year average of catchability-adjusted NEFSC spring and fall survey biomass during 2008-2009. This biomass estimate is greater than the biomass threshold and the biomass target. The assessment and reviewers concluded that the stock appears to be lightly exploited (NEFSC 2010).

6.1.2.2. Longfin Squid Fisheries

The management unit for longfin squid is U.S. waters in the western Atlantic Ocean from Cape Hatteras, North Carolina northward to the U.S.-Canadian border.

The U.S. commercial longfin squid fishery occurs primarily in southern New England and Mid-Atlantic waters, but some fishing also occurs along the southern edge of Georges Bank. Effort is generally directed offshore during October-March and inshore in April-September. The fishery is dominated by small-mesh otter trawl vessels, but seasonal near-shore pound net and weir fisheries also exist. In 2014, commercial fishermen landed about 26.59 million pounds of longfin squid from Maine through North Carolina (Figure 14), worth about $25.96 million (about $0.98 per pound).

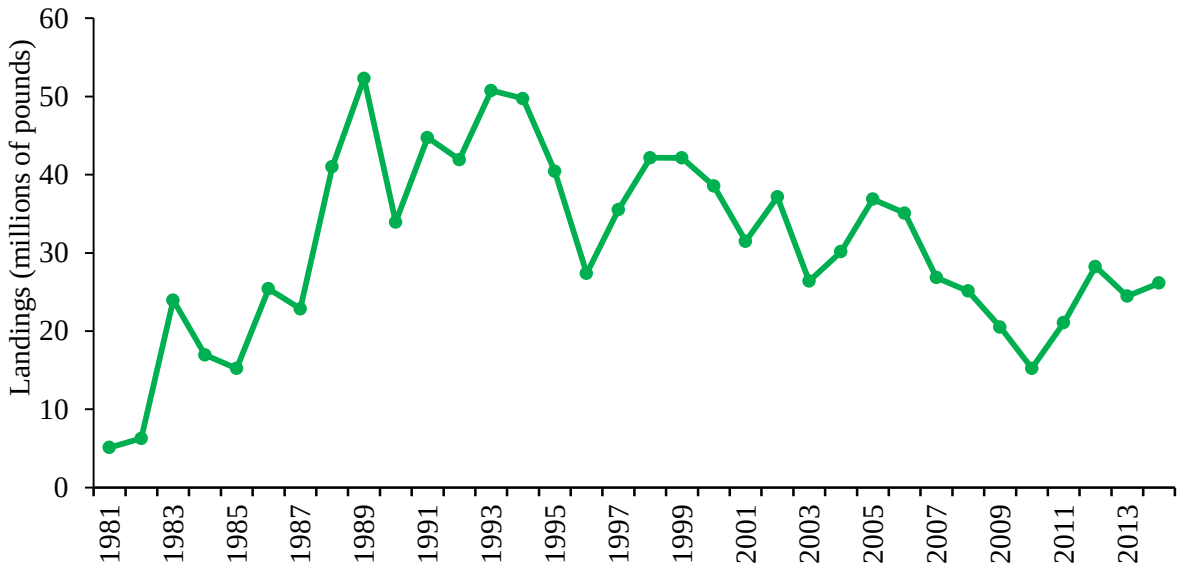


Figure 14: U.S. commercial longfin squid landings from Maine to North Carolina, 1981-2014.

Vessels targeting longfin squid occasionally catch other species such as *Illex* squid, butterfish, spiny dogfish, hakes, skates, scup, spiny dogfish, summer flounder, bluefish, monkfish, and other species. Some of these incidentally caught species are occasionally landed, while others are generally discarded.[7]

Amendment 10 to the Atlantic Mackerel, Squid, and Butterfish FMP (MAFMC 2010) provides a full description of bycatch and non-target species in these fisheries. More recent information on bycatch and non-target species associated with the Mid-Atlantic trawl fisheries can be found in the Standardized Bycatch Reporting Methodology Amendment (NMFS 2015).

There is some recreational fishing for longfin squid but it is not currently quantifiable. MRIP does not collect data on recreational catch of invertebrates.

6.1.3. Black Sea Bass

6.1.3.1. Description of the Black Sea Bass Stock

Black sea bass are distributed from the Gulf of Maine through the Gulf of Mexico. Black sea bass north of Cape Hatteras, North Carolina are managed as a separate stock from black sea bass south of Cape Hatteras. The two stocks are also assessed separately. The southern black sea bass stock is not described in this document as it is found outside of the Scup GRA and thus will not be impacted by this framework.

The protogynous life history (i.e. transitioning from female to male) and structure-orienting behavior of black sea bass pose challenges for analytical assessments of this species. Most stock assessments of Mid-Atlantic species rely heavily on data collected during the NEFSC's biannual bottom trawl survey. This survey does not sample areas with physical structure that are used extensively by black sea bass for habitat.

The northern stock of black sea bass (i.e. black sea bass north of Cape Hatteras) was under a rebuilding plan from 2000 until 2009. The stock was declared rebuilt based on the findings of the Data Poor Stocks Working Group, which performed a benchmark stock assessment for black sea bass in 2008 (DPSWG 2009). This remains the most recent benchmark stock assessment for black sea bass that has passed peer review and been accepted for use in management.

The most recent assessment update for black sea bass took place in 2012. This update indicated that the stock was not overfished and overfishing was not occurring in 2011 relative to the biological reference points from the last benchmark stock assessment. F was estimated to be 0.21

[7] For more information on incidental catch in the longfin squid fishery, see the EA associated with the proposed rule for 2016 Mackerel, Squid, and Butterfish Specifications, published in the *Federal Register* on January 22, 2016 and available at: http://www.greateratlantic.fisheries.noaa.gov/regs/2016/January/16msb2016specspr.html

in 2011, about 48% of the F_{MSY} reference point of 0.44. SSB was estimated to be 24.6 million pounds in 2011, slightly above SSB_{MSY} reference point of 24.0 million pounds (NEFSC 2012).

6.1.3.2. Black Sea Bass Fisheries

Black sea bass fisheries are cooperatively managed by the Council and the ASMFC under the Summer Flounder, Scup, and Black Sea Bass FMP. The management unit for the northern stock of black sea bass is U.S. waters from Cape Hatteras, North Carolina northward to the U.S.-Canadian border. Black sea bass fisheries south of Cape Hatteras are managed by the South Atlantic Fishery Management Council.

In 2014, commercial fishermen landed approximately 2.40 million pounds of black sea bass (110% of the commercial quota; Figure 15) from Maine through North Carolina, valued at $7.71 million (at an average price of $3.21 per pound). About 64% of the black sea bass landed by commercial Federal permit holders from Maine through North Carolina was caught with bottom otter trawl gear. About 21% were caught with fish pots and traps, 8% in offshore lobster traps, and about 5% with hand lines.

According to MRIP estimates, in 2014, 3.60 million pounds of black sea bass were landed by recreational anglers (Figure 15), corresponding to 159% of the 2014 recreational harvest limit. About 62% of black sea bass landed by recreational fishermen were caught in state waters and about 38% in federal waters.[8] In 2014, 763 party and charter boats held Federal recreational black sea bass permits.

Black sea bass fisheries are mixed species fisheries where summer flounder, scup, and other species are also targeted. Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP (MAFMC 2003) includes a description of bycatch and non-target species in the black sea bass fishery. More recent information on bycatch and non-target species associated with the Mid-Atlantic trawl fisheries can be found in the Standardized Bycatch Reporting Methodology Amendment (NMFS 2015).

[8] MRIP estimates downloaded June 13, 2016.

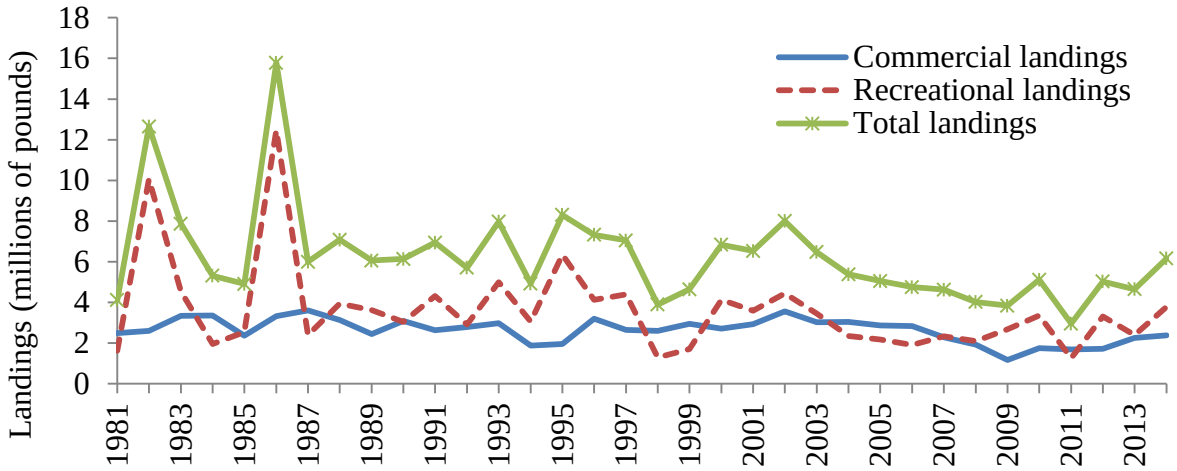


Figure 15: Commercial and recreational black sea bass landings from Maine through North Carolina, 1981-2014.

6.1.4. Silver Hake

6.1.4.1. Description of the Silver Hake Stock

The silver hake stock is divided into two stock areas due to differences in silver hake morphology, population trends, and fishery patterns (NEFSC 2011). The northern silver hake stock is found in the Gulf of Maine and on northern Georges Bank and is therefore will not be affected by the scup GRA framework. The southern stock is distributed from southern Georges Bank to Cape Hatteras. The Scup GRAs are within the distribution of the southern silver hake stock.

The most recent benchmark assessment for silver hake indicated that the southern stock was not overfished and overfishing was not occurring relative to the biological reference points in 2009. The three year survey biomass index was greater than the biomass threshold but below the biomass target. The three year exploitation index for 2007-2009 was below the overfishing threshold and target (NEFSC 2011).

A 2014 assessment update indicated that the three-year average fall biomass index for the southern stock was well above the overfished threshold and the exploitation index was well below the overfishing threshold, meaning that the southern stock of silver hake was not overfished and overfishing was not occurring in 2013 (NEFMC 2014).

6.1.4.2. Silver Hake Fisheries

Silver hake are managed by the New England Fishery Management Council through a series of exemptions from the Northeast Multispecies FMP regulations. The management unit for silver hake is U.S. waters from North Carolina northward to the U.S.-Canadian border. As described in the previous section, silver hake are divided into a northern and southern stock. The distribution

of the northern stock does not overlap with the Scup GRAs; therefore, the northern stock will not be affected by this framework. The southern silver hake stock is distributed from southern Georges Bank to Cape Hatteras, North Carolina.

Virtually all commercial catch of silver hake in the southern area (i.e. southern Georges Bank to Cape Hatteras) in recent years was caught with bottom otter trawls. Commercial landings averaged around 14 million pounds from 2009 through 2013 (Figure 16). Silver hake landings in the states of Massachusetts through North Carolina in 2014 were about 15.52 million pounds and were valued at about $10.96 million (for an average price of about $0.71 per pound). Vessels fishing for silver hake in an exemption program must possess either an open access (Category K) or limited access (Categories A-F) Northeast Multispecies permit. In 2014, 1,748 vessels held one of these permits; however, the number of vessels which fished for silver hake in 2014 is likely much lower.

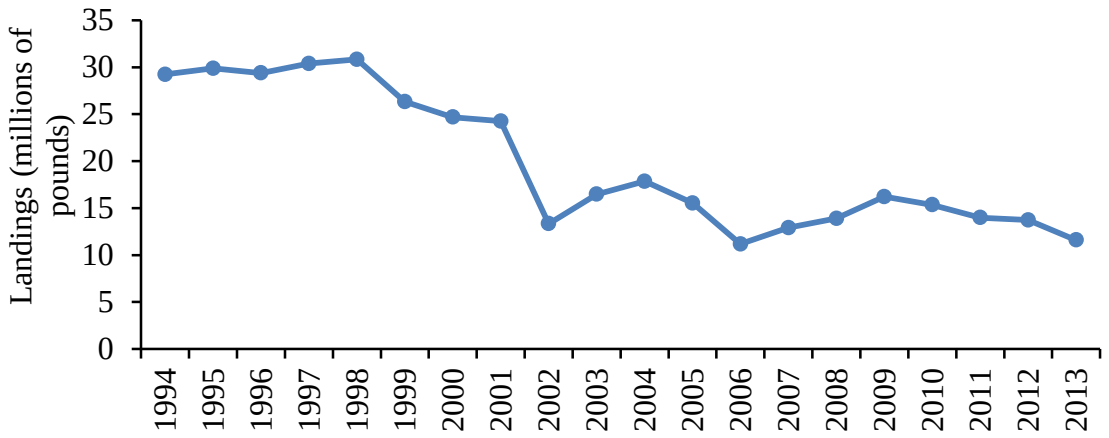


Figure 16: Commercial landings of the southern stock of silver hake, 1994-2013 (NEFMC 2014).

The commercial silver hake fishery is a mixed species fishery where multiple hake species are harvested, along with squid, scup, Atlantic mackerel, skates, and other species. Amendment 19 to the Northeast Multispecies FMP (NEFMC 2013) includes a full description of bycatch and non-target species in these fisheries.

Recreational catches of silver hake are considered negligible and are not accounted for in the stock assessment (NEFMC 2014). MRIP estimates of silver hake recreational harvest show high inter-annual variability and high percent standard errors (a measure of precision of the estimates). According to MRIP estimates, 20,811 pounds of silver hake were harvested by recreational anglers from Massachusetts through North Carolina[9] in 2014. None of the surveyed

[9] This area roughly corresponds to the southern stock, though both the northern and southern stocks are found off Massachusetts.

anglers from those states in 2014 reported that silver hake was their primary or secondary target species.[10]

6.2. Habitat (Including Essential Fish Habitat)

A description of the habitat associated with the scup fishery is presented in section 3.2 of Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP (MAFMC 2002). This description remains largely unchanged. The following sections provide a brief summary of that information.

6.2.1. Physical Environment

Scup, longfin squid, black sea bass, and silver hake inhabit the Northeast U.S. Shelf Ecosystem, which includes the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream. The continental slope includes the area east of the shelf out to a depth of 2000 meters. The NOAA Fisheries Northeast Region contains four distinct sub-regions: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope. The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with a patchwork of various sediment types. Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and strong currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, North Carolina. The continental slope begins at the continental shelf break and continues eastward with increasing depth until it becomes the continental rise. It is fairly homogenous, with exceptions at the shelf break, some of the canyons, the Hudson Shelf Valley, and in areas of glacially rafted hard bottom (Stevenson et al. 2004).

6.2.2. Essential Fish Habitat (EFH)

The environment that could be affected by the actions described in this document overlaps with EFH for the managed resources. Information on scup habitat requirements can be found in Steimle et al. (1999). The current designations of EFH by life history stage for scup are provided in Appendix A, and are also available at: http://www.nero.noaa.gov/hcd/list.htm. A summary description of EFH for scup is provided here.

Scup spawn once annually over weedy or sand-covered areas in the spring. Scup eggs and newly hatched larvae are found in open water in bays and sounds of Southern New England during the spring and summer. Juvenile and adult scup are demersal, using inshore waters in the spring and moving offshore in the winter. Scup EFH includes demersal waters, sands, mud, and mussel and

[10] MRIP estimates downloaded June 14, 2016.

seagrass beds, from the Gulf of Maine through Cape Hatteras, North Carolina (Steimle et al. 1999).

Other federally-managed species have life stages that occupy essential benthic habitats that may be susceptible to adverse impacts bottom otter trawls. Descriptions of these are given in Appendix A and are available at: http://www.nero.noaa.gov/hcd/list.htm.

6.2.3. Fishery Impact Considerations

Any actions implemented in the Summer Flounder, Scup, and Black Sea Bass FMP that affect species with overlapping EFH were considered in the EFH assessment for Amendment 13 (MAFMC 2002). Scup are primarily landed by bottom otter trawls. Small amounts are landed from pots and traps and hand lines (NEFSC 2015A). Amendment 13 included alternatives to minimize the adverse impacts of fishing gear on EFH (as required pursuant to section 303(a)(7) of the MSA). Both mobile bottom tending and stationary gear can adversely impact EFH. The analysis in Amendment 13 indicated that no management measures were needed to minimize impacts to EFH because in Federal waters the fishery is conducted primarily in high energy mobile sand and bottom habitat where gear impacts are minimal and/or temporary in nature. On that basis, the Council selected the no action alternative from among the suite of alternatives to minimize fishing gear impacts on EFH in Amendment 13. There has not been a significant change to the manner in which the scup fishery is prosecuted and none of the alternatives being considered in this document would adversely affect EFH (see section 7.2). Therefore, the effects of fishing on EFH have not been re-evaluated since Amendment 13 to the FMP and no alternatives to minimize adverse effects on EFH are presented in this document.

6.3. ESA-Listed Species and MMPA Protected Species

Several species of fish, marine mammals, and sea turtles that are afforded protection under the ESA (i.e. for those designated as threatened or endangered) and/or the MMPA are found within the Scup GRAs as configured under each of the alternatives analyzed in this document (Table 7). A subset of these species are known to have the potential to interact with the trawl gear that is regulated by the Scup GRA regulations.

Table 7: Species protected under the ESA and/or MMPA that may occur in the affected environment of this framework action.

Species	Status	Potentially affected by this action?
Cetaceans		
North Atlantic right whale (*Eubalaena glacialis*)	Endangered	No
Humpback whale (*Megaptera novaeangliae*)	Endangered	No
Fin whale (*Balaenoptera physalus*)	Endangered	No
Sei whale (*Balaenoptera borealis*)	Endangered	No
Blue whale (*Balaenoptera musculus*)	Endangered	No
Sperm whale (*Physeter macrocephalus*	Endangered	No
Pygmy sperm whale (Kogia breviceps)	Protected	No
Dwarf sperm whale (Kogia sima)	Protected	No
Minke whale (*Balaenoptera acutorostrata*)	Protected	Yes
Pilot whale (*Globicephala spp.*)	Protected	Yes
Risso's dolphin (*Grampus griseus*)	Protected	Yes
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected	Yes
Short Beaked Common dolphin (*Delphinus delphis*)[2]	Protected	Yes
Atlantic Spotted dolphin (*Stenella frontalis*)	Protected	No
Striped dolphin (Stenella coeruleoalba)	Protected	No
Beaked whales (Ziphius and Mesoplodon spp)	Protected	No
Bottlenose dolphin (*Tursiops truncatus*)	Protected	Yes
Harbor porpoise (*Phocoena phocoena*)	Protected	Yes
Sea Turtles		
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered	Yes
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered	Yes
Green sea turtle (*Chelonia mydas*)	Endangered[11]	Yes
Loggerhead sea turtle (*Caretta caretta*), Northwest Atlantic DPS	Threatened	Yes
Hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered	No
Fish		
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered	No
Atlantic salmon (*Salmo salar*)	Endangered	Yes
Atlantic sturgeon *(Acipenser oxyrinchus)*, New York Bight, Chesapeake Bay, Carolina, & South Atlantic DPSs	Endangered	Yes
Pinnipeds		
Harbor seal (*Phoca vitulina*)	Protected	Yes
Gray seal (*Halichoerus grypus*)	Protected	Yes
Harp seal (*Phoca groenlandicus*)	Protected	No
Hooded seal (*Cystophora cristata*)	Protected	No
Critical Habitat		
North Atlantic Right Whale[12]	ESA-listed	No
Loggerhead Sea Turtle, Northwest Atlantic DPS	ESA-listed	No

[11] Green turtles in U.S. waters are listed as threatened except for the Florida breeding population, which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green turtles are considered endangered wherever they occur in U.S. waters. On March 23, 2015, a proposed rule was issued to remove the range-wide listing and instead list eight DPSs as threatened and three as endangered (80 *Federal Register* 15272).

[12] Originally designated June 3, 1994. Newly proposed February 20, 2015 (80 *Federal Register* 9314).

6.3.1. Interactions Between Trawl Gear and Protected Species

A subset of protected species of fish, marine mammals, and sea turtles are known to be vulnerable to interactions with mid-water and/or bottom trawl gear (Table 7). The following sections summarize available information on interactions between protected species and trawl gear (the only gear type that is affected by the management alternatives described in this document).

6.3.1.1. Interactions Between Trawl Gear and Marine Mammals

Cetaceans and pinnipeds are found throughout the waters of the Northwest Atlantic. As they feed, travel, and breed in many of the same ocean areas utilized for commercial fishing, they are at risk of becoming entangled or bycaught in various types of fishing gear with interactions resulting in serious injury or mortality to the animal. Some marine mammals have been observed to be seriously injured or killed in mid-water and/or bottom trawl gear.

Pursuant to the MMPA, NMFS publishes a List of Fisheries (LOF) annually, classifying U.S. commercial fisheries into one of three categories based on the relative frequency of incidental serious injuries and/or mortalities of marine mammals in each fishery.[13] Fisheries with frequent incidental serious injury or mortality interactions with marine mammals are designated as Category I fisheries. Those with occasional interactions are designated as Category II fisheries and those with remote or no likelihood of such interactions are Category III fisheries. Mid-Atlantic and Northeast trawl fisheries are designated as Category II fisheries. Table 8 provides information on cetacean and pinniped species observed seriously injured and/or killed by these Category II fisheries from 2007-2011 (see Waring *et al*. 2014). Additional information on marine mammal stocks can be found at http://www.nmfs.noaa.gov/pr/sars/.

Minke whales are the only species of large whales that have been observed seriously injured and killed in trawl gear. The frequency of interactions with bottom trawl gear has declined since 2006 (estimated annual mortality=3.7 whales), with no observed interactions in 2010 and 2011. The annual average estimated mortality and serious injury from the Northeast bottom trawl fishery from 2007 to 2011 was 1.8 whales (Waring *et al*. 2014). Since 2003, there has been only one observed minke whale incidentally taken in mid-water trawl gear (NEFSC 2015C).

Multiple species of small cetaceans (bottlenose, common, risso's, and white-sided dolphins; short-and long finned pilot whales; harbor porpoise) and pinnipeds (gray, harbor, and harp seals) have been observed seriously injured or killed in fisheries using mid-water and/or bottom trawl gear. For further information on these interactions, see Waring *et al*. 2014.

The Atlantic Trawl Gear Take Reduction Team (ATGTRT) was convened in 2006 to address the incidental mortality and serious injury of long-finned pilot whales (*Globicephala melas*),

[13] The most recent LOF was issued August 25, 2014; 79 *Federal Register* 50589.

shortfinned pilot whales (*Globicephala macrorhynchus*), common dolphins (*Delphinus delphis*), and white sided dolphins (*Lagenorhynchus acutus*) incidental to bottom and mid-water trawl fisheries operating in both the Northeast and Mid-Atlantic regions. Because none of the marine mammal stocks of concern to the ATGTRT are classified as a "strategic stock," nor do they currently interact with a Category I fishery, it was determined that development of a take reduction plan was not necessary.[14] In lieu of a take reduction plan, the ATGTRT agreed to develop an Atlantic Trawl Gear Take Reduction Strategy (ATGTRS). The ATGTRS identifies informational and research tasks, as well as education and outreach needs to decrease mortalities and serious injuries of marine mammals to insignificant levels approaching zero mortality and serious injury rates. The ATGTRS also identifies several potential voluntary measures that can be adopted by certain trawl fishing sectors to potentially reduce the incidental capture of marine mammals. More information on the ATGTRS is available at: http://www.greateratlantic.fisheries.noaa.gov/Protected/mmp/atgtrp/

[14] A strategic stock is defined under the MMPA as a marine mammal stock: for which the level of direct human-caused mortality exceeds the potential biological removal level; which, based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; or which is listed as a threatened or endangered species under the ESA, or is designated as depleted under the MMPA.

Table 8: Cetacean and pinniped species observed seriously injured and/or killed by Northeast and Mid-Atlantic trawl fisheries. An asterisk (*) indicates those species driving the fisheries classification.

Category II			
Fishery/Gear Type	**Species Observed Injured/Killed**	**Observed in 2007-2011**	**Mean Annual Mortality[15]**
Mid-Atlantic mid-water Trawl (Including Pair Trawl)	Risso's dolphin	Y	0.2
	White-sided dolphin*	Y	6
	Short-beaked common dolphin	Y	0.6
	Long and short-finned pilot whales	Y	2.4
	Gray seal	Y	0.2
Northeast mid-water trawl (including pair trawl)	White-sided dolphin	N	N/A
	Long and short-finned pilot whales*	Y	4
	Harbor seal	Y	0.7
Northeast bottom trawl	Harp seal	Y	0.4
	Harbor seal	Y	0.8
	Gray seal	Y	9.2
	Long and short-finned pilot whales	Y	10
	Short-beaked common dolphin	Y	19
	White-sided dolphin*	Y	73
	Harbor porpoise	Y	4.5
	Bottlenose dolphin (offshore)	Y	20
	Minke whale	Y	1.8
	Risso's dolphin	Y	2.5
Mid-Atlantic bottom trawl	White-sided dolphin	Y	4
	Long and short-finned pilot whales*	Y	26
	Short-beaked common dolphin*	Y	96
	Risso's dolphin*	Y	42
	Bottlenose dolphin (offshore)	Y	20
	Harbor seal	Y	0.2
Sources: Waring *et al*. 2014; August 25, 2014, List of Fisheries (79 *Federal Register* 50589).			

[15] Based on observer data from 2007-2011, estimates of serious injury and estimates of mortality are provided for every year of observation in Waring *et al*. 2014. Estimated "combined mortality" per year of observation is also provided in Waring *et al.* (2014); this is equal to the "estimated serious injury" + "estimated mortality" for every year observed. The "mean annual mortality" is the average of each "estimated combined mortality" value over the 5 year period of observation (Waring *et al.* 2014).

6.3.1.2. Interactions Between Trawl Gear and Sea Turtles

Sea turtles have been incidentally injured or killed in trawl gear.[16] Most of the observed interactions occurred in the Mid-Atlantic. The following bycatch estimates are based on observed sea turtle interactions in bottom trawl gear in the Mid-Atlantic. An estimated average of 292 annual loggerhead interactions with bottom trawl gear in the Mid-Atlantic occurred from 2005 through 2008. Approximately 44 of those turtles were adult equivalents.[17] An additional 61 loggerheads interacted with trawl gear, but were released through a Turtle Excluder Device (Warden 2011). These estimates represent a decrease from the average annual loggerhead bycatch in bottom otter trawls during 1996-2004, which Murray (2008) estimated to be 616 sea turtles. This decrease is likely due to decreased fishing effort in high-interaction areas (Warden 2011). Since 2008, the NEFSC has documented 16 loggerhead sea turtles, two leatherbacks, one green sea turtle, and four turtles of unknown species in bottom trawl gear on trips where the top landed species was longfin squid (NEFSC 2015C).

The risk of an interaction between sea turtles and trawl gear is affected by multiple factors, including where and when fishing effort is focused, environmental conditions, and sea turtle occurrence and distribution.

6.3.1.3. Interactions Between Trawl Gear and Atlantic Sturgeon

Estimated Atlantic sturgeon mortality rates otter trawl gear is estimated to be 5.0% (Miller and Shepard 2011). Atlantic sturgeon deaths have rarely been reported in bottom otter trawl gear (ASMFC 2007). Non-lethal effects of an interaction may occur long after the interaction. The overall impacts to Atlantic sturgeon survival from trawl interactions is uncertain; therefore, trawls should not be completely discounted as a form of gear that poses a mortality risk to Atlantic sturgeon.

6.3.1.4. Interactions Between Trawl Gear and Atlantic Salmon

There have been few observed Atlantic salmon interactions with fisheries and various gear types. There were a total of 15 observed individual salmon incidentally caught on over 60,000 observed commercial fishing trips from 1989 through August 2013, four of which were caught with bottom trawls. All 15 salmon were considered to be part of the Gulf of Maine Distinct Population Segment (NMFS 2013, Kocik *et al*. 2014). It is likely that some additional interactions with Atlantic salmon have occurred, but have not been observed or reported.

[16] Although sea turtles have the potential to interact with mid-water trawl gear, the risk of an interaction is likely to be low (i.e., since 1993, only 5 sea turtles, all leatherbacks, have been observed seriously injured or killed in mid-water trawl gear; tuna was the primary species being landed; NEFSC 2015C).

[17] Adult equivalence considers the reproductive value of the animal (Warden 2011, Murray 2013), providing a "common currency" of expected reproductive output from the affected animals (Wallace *et al*. 2008), and is an important metric for understanding population level impacts (Haas 2010).

6.4. Human Communities and Economic Environment

6.4.1. Scup

Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP includes a detailed description of the economic aspects of scup fisheries (MAFMC 2002). Updates to this information and recent trends in landings and ex-vessel values are presented here.

In 2014, commercial fishermen from Maine through North Carolina landed 15.96 million pounds of scup, valued at $9.53 million (an average of $0.60/pound). A moratorium permit is required to commercially harvest scup in Federal waters. 702 vessels held scup moratorium permits in 2014.

Recreational anglers landed an estimated 4.68 million pounds of scup in 2014 and took an estimated 0.42 million trips for which scup was the primary target.[18]

Section 6.1 contains more information on recent commercial and recreational scup landings.

6.4.2. Longfin Squid

In 2014 commercial longfin squid landings totaled about 26.59 million pounds and generated $25.96 million in ex-vessel revenues, for an average price of about $0.98 per pound. In 2014 there were 337 potentially active butterfish/longfin squid limited access or "moratorium" permits. Another 64 were not potentially active but have had their history documented under "Confirmation of Permit History." See section 6.1 for more information on recent commercial longfin squid landings.

There is some recreational longfin squid fishing but it is not currently quantifiable. MRIP does not collect data on recreational catch of invertebrates.

6.4.3. Black Sea Bass

In 2014, commercial fishermen from Maine through North Carolina landed about 2.40 million pounds of black sea bass, valued at $7.71 million (an average of $3.21/pound). A moratorium permit is required to commercially harvest black sea bass in Federal waters. 744 vessels held black sea bass moratorium permits in 2014.

According to MRIP data for Maine through North Carolina, recreational anglers landed an estimated 3.6 million pounds of black sea bass in 2014 and took an estimated 0.40 million trips for which black sea bass was the primary target.[19]

See section 6.1 for more information on recent commercial and recreational black sea bass landings.

[18] MRIP estimates downloaded June 13, 2016.

[19] MRIP estimates downloaded June 13, 2016.

6.4.4. Silver Hake

In 2014, commercial fishermen from Massachusetts through North Carolina (which roughly corresponds to the geographic area of the southern stock of silver hake) landed about 15.52 million pounds of silver hake, valued at $10.96 million (an average of $0.71/pound). The silver hake fishery is managed through a series of exemptions to the Northeast Multispecies FMP. Vessels fishing for silver hake in an exemption program must possess either an open access (Category K) or limited access (Categories A-F) Northeast Multispecies permit. In 2014, 1,748 vessels held one of these permits; however, the number of vessels which fished for silver hake in 2014 is likely much lower.

According to MRIP data for Massachusetts through North Carolina, recreational anglers caught an estimated 20,811 pounds of silver hake in 2014. There were no reported recreational trips between Massachusetts and North Carolina in 2014 for which silver hake was either the primary or the secondary target species.[20]

See section 6.1 for more information on recent commercial and recreational landings of silver hake.

7. ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This EA analyzes the impacts of each alternative relative to each VEC. The direction of the impacts on each VEC are described as negative, neutral, or positive. Impacts which are described with only a directional indicator are meant to represent moderate impacts (i.e. “positive” and “negative” should be read as “moderate positive” and “moderate negative”;
Table 9).

In considering impacts on each VEC, the alternatives are compared to the *status quo* (alternatives 1A and 2A, i.e. the existing GRAs) and to the current environmental baseline conditions. The *status quo* alternatives represent the current state of management and fishery operations. The environmental baseline conditions are the conditions of the scup, longfin squid, black sea bass, and silver hake stocks and the associated fisheries and their interactions with the VECs over the most recent 5 years (section 6.1). For the economic environment, the most recent 3-5 years of complete economic data (depending on the dataset) are used as a quantitative baseline condition. The alternatives are compared to the baseline conditions in recent years to determine if those interactions are expected to change as a result of implementing the alternatives described in this document.

The nature and extent of the management programs for the scup, longfin squid, black sea bass, and silver hake fisheries have been examined in detail in EAs and Environmental Impact Statements (EISs) prepared for previously implemented management actions under the respective FMPs. The aspects of the VECs that could be affected by the proposed actions in this

[20] MRIP estimates downloaded June 14, 2016.

EA are detailed in section 6 of this document. The analysis in this section focuses on impacts of the alternatives described in section 5 relative to each VEC.

The baseline condition does not describe "what if" the affected fisheries did not exist and the interactions between the fisheries and the VECs were not occurring. That would be an unrealistic baseline because these fisheries have occurred for many decades and are expected to continue to occur into the foreseeable future. The baseline conditions are essentially the current state of the VECs.

Impacts to scup, longfin squid, black sea bass, silver hake, and other non-target species, as well as impacts to habitat and protected resources are described in relation to expected changes in fishing effort under each of the alternatives. Alternatives which may result in an increase in fishing effort could lead to an increase in fishing mortality for scup, longfin squid, black sea bass, silver hake, and other non-target species, and therefore may have negative biological impacts for those species compared to the *status quo*. Conversely, alternatives which may result in a decrease in fishing effort may result in positive impacts for those species by potentially resulting in a decrease in fishing mortality. Alternatives which may cause a reduction in fishing effort may have positive impacts for habitat and protected species by decreasing the time that fishing gear is in the water and thus reducing the potential for interactions between fishing gear and habitat and fishing gear and protected species. Alternatives which may cause an increase in fishing effort may result in negative impacts to habitat and protected species due to increased potential for interactions between fishing gear and habitat and fishing gear and protected species. A neutral impact could result from negligible or no changes in effort. Taking no action (i.e. maintaining *status quo*) may result in a neutral impact; however, the impacts could be different (positive or negative) if the environmental conditions change. It is not possible to quantify with confidence how effort will change under each alternative; therefore, expected changes are described qualitatively.

Socioeconomic impacts are considered in relation to potential changes in landings under each alternative, compared to the *status quo* (alternatives 1A and 2A). Alternatives which could lead to an increase in fishing effort or an increase in catch per unit effort (CPUE) could lead to increased landings. Alternatives which could result in an increase in landings are generally considered to have positive socioeconomic impacts because they could result in increased revenues; however, if an increase in fishing effort leads to a decrease in SSB for any of the landed species, then negative socioeconomic impacts could occur over the long-term. In addition, market conditions may impact the decisions to target and land species. Changes in market demand may drive some of the changes in fishing effort.

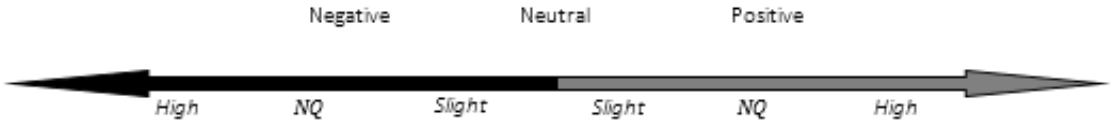
As previously stated, the GRA regulations apply to vessels fishing for or possessing longfin squid, black sea bass, or silver hake and using mesh smaller than 5.0 inches in diameter from November 1 through March 15. The alternatives listed in this document are expected to affect the amount of fishing effort with small-mesh during the effective times of the year and in the

affected areas, but they are not expected to change patterns in fishing effort with other gear types, with larger mesh sizes, at other times of the year, or in areas outside the boundaries of the GRA alternatives.

Table 9: Definition of impact and impact qualifiers.

Impact Definition			
	Directional Impact		
VEC	Positive (+)	Negative (-)	Neutral (0)
Allocated Target Species, Other Landed Species, and Protected Species	Actions that increase stock / populations size	Actions that decrease stock / populations size	Actions that have no positive or negative impacts on stock / populations size
Physical Environment / Habitat / EFH	Actions that improve the quality or reduce disturbance of habitat	Actions that degrade the quality or increase disturbance of habitat	Actions that have no positive or negative impacts on habitat quality
Human Communities (Socioeconomic)	Actions that increase revenue and social well-being of fishermen and/or associated business	Actions that decrease revenue and social well-being of fishermen and/or associated business	Actions that have no positive or negative impacts on revenue and social well-being of fishermen and/or associated business

Impact Qualifiers	
Slight (sl), as in slight positive or slight negative)	To a lesser degree / minor
No qualifier, as in positive or negative	To an average degree (i.e., more than “slight”, but not “high”)
High (H), as in high positive or high negative	To a substantial degree
Likely	Some degree of uncertainty associated with the impact



7.1. Biological Impacts

This section summarizes the impacts of each alternative on the scup, longfin squid, black sea bass, and silver hake stocks, as well as on other non-target species. Northeast Fisheries Observer Program (NEFOP) data were used to examine patterns in fishing effort and in scup discards within the GRA areas. Much of this analysis is summarized in Terceiro and Miller 2014. NEFSC bottom trawl survey data were used to examine patterns in scup, longfin squid, black sea bass, and silver hake abundance within the boundaries of each of the GRA alternatives. Abundances were interpolated based on catches in the NEFSC spring and fall bottom trawl surveys during 2011-2015 using an inverse distance weighted algorithm (Figure 17 and Figure 18). The interpolation focused on 2011-2015 in order to describe recent patterns in abundance and distribution. Recent survey catches are assumed to provide a more accurate prediction of future impacts of the alternatives than a longer time series of catch data. Fall survey catches were used to examine scup, longfin squid, black sea bass, and silver hake availability within the Northern GRA, which is in effect during November and December each year. Spring survey catches were used to examine availability within the Southern GRA, which is in effect from January 1 through March 15 each year. The biological impacts of each alternative are considered in relation to the estimated increase or decrease in the amount of scup, longfin squid, black sea bass, and silver hake found within the boundaries of each GRA alternative, expressed as a percentage of survey catches of each species found within the boundaries of the *status quo* alternative and as a percentage of total interpolated catches within the entire survey area. In this way, impacts are expressed as a change relative to the *status quo* and relative to a proxy for the entire stock of each species. An increase in the percent of any of these species found within the GRAs means that fewer of these species will be available to capture with small-mesh during the times of year when the GRAs are in effect. This could lead to a decrease in small-mesh fishing effort in those areas and during those times of year. A decrease in the percent of any of these species found within the GRA boundaries means that more of these species would be available to capture with small-mesh during the effective times of year, thus small-mesh fishing effort could increase in those areas and times. Expected impacts to each VEC are described based on these potential changes in small-mesh fishing effort.

There are several caveats to this approach. First, this approach uses NEFSC survey catches and not stock assessment estimates. The survey catches provide information on the spatial distribution of scup in the spring and the fall during 2011 through 2015, but they are not meant to describe overall stock abundances in the same way that a stock assessment would. Secondly, the inverse distance weighted algorithm assumed that abundance could be interpolated based only on survey catches in nearby locations. It did not account for other variables which may influence abundance, such as depth. Thirdly, the 2011-2015 spring and fall survey dates only partially overlapped with the GRA time periods. During 2011-2015, the spring surveys took place from late February through late May and the fall surveys took place from early September through mid-November. This analysis assumes that the survey catches are reflective of abundance during

the GRA time periods. During the coldest months of the year (usually January through early March), scup generally remain in one location (Dr. Mark Terceiro, NEFSC, personal communication); therefore; this may be a reasonable assumption. Despite these important caveats, the NEFSC bottom trawl survey data are considered the best available data on abundance of scup, longfin squid, black sea bass, and silver hake. No other fishery-independent stratified random survey encompasses the GRA areas during the months of November-March.

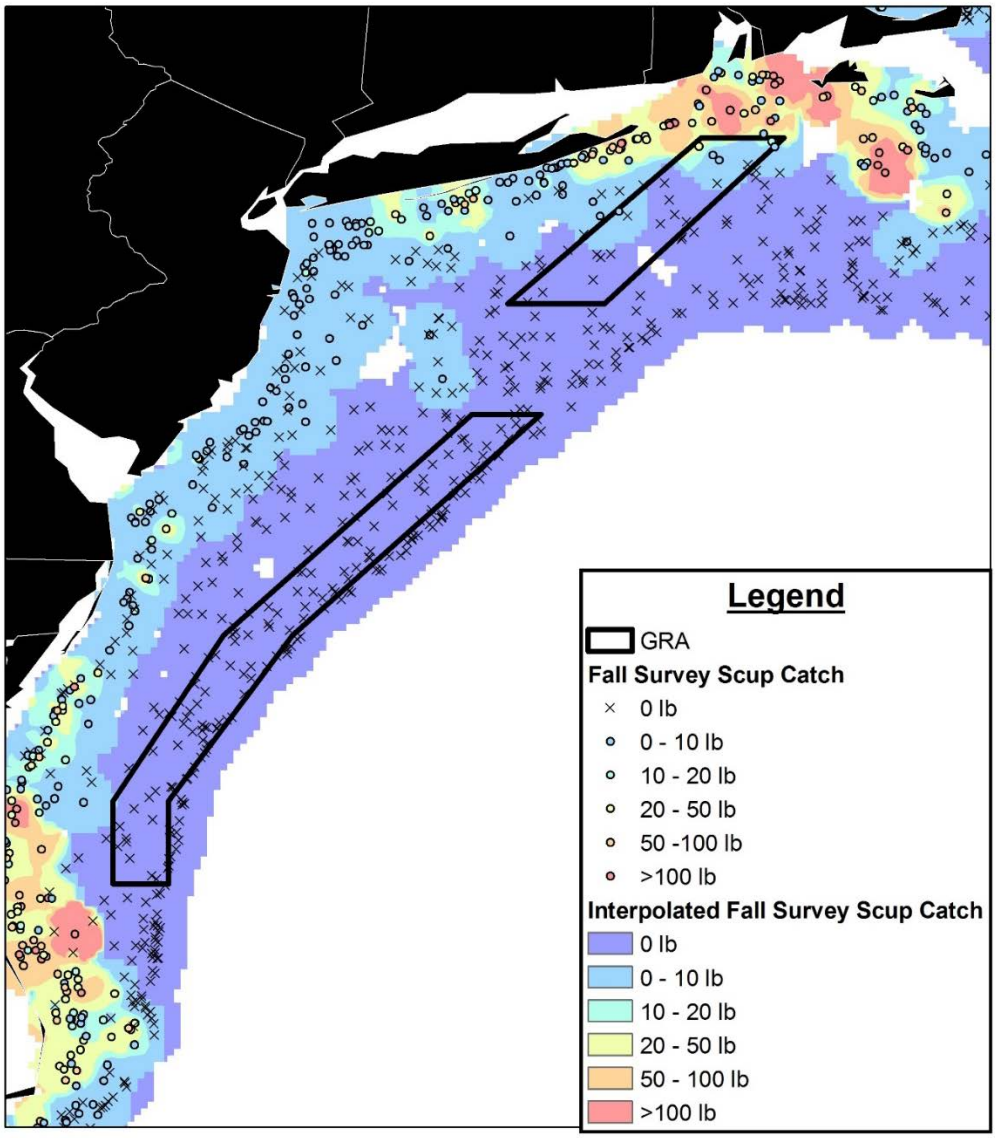


Figure 17: Actual and interpolated scup catches in the NEFSC fall bottom trawl survey in the Mid-Atlantic, 2011-2015.

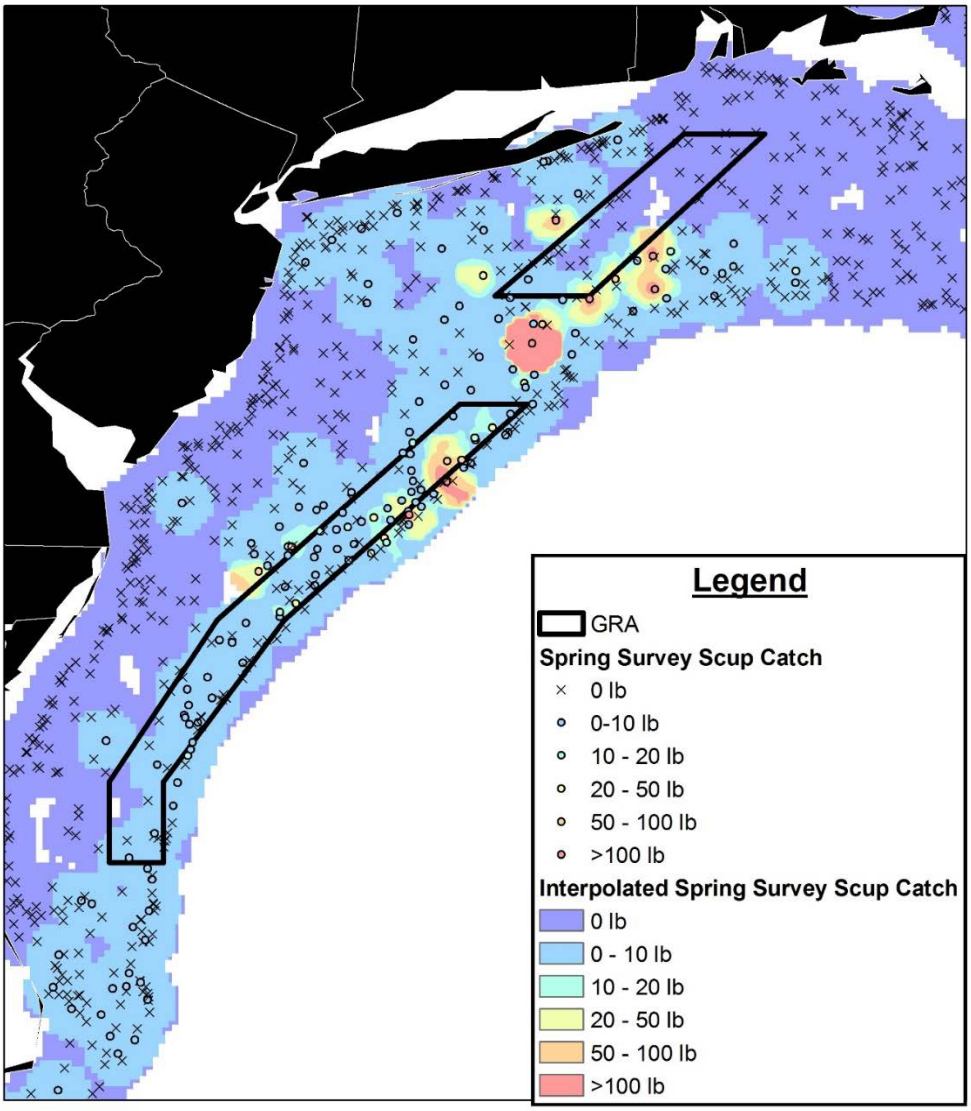


Figure 18: Actual and interpolated scup catches in the NEFSC spring bottom trawl survey in the Mid-Atlantic, 2011-2015.

7.1.1. Biological Impacts of Northern GRA Alternatives

The biological impacts of the Northern GRA alternatives range from negative to slight positive. Of the Northern GRA alternatives, alternative 1B has the highest potential for positive biological impacts, followed by alternative 1A, and 1C, in that order.

7.1.1.1. Biological Impacts of Alternative 1A (*Status Quo* Northern GRA; Preferred Northern GRA Alternative)

Alternative 1A is the *status quo* alternative for the Northern GRA. Under this alternative, the Northern GRA regulations would remain unchanged. This is the preferred Northern GRA alternative.

Estimated scup discards in small-mesh fisheries have generally decreased in the Northern GRA statistical areas during the fourth quarter of the year since implementation of the GRAs. Estimated scup discards in small-mesh tows in the Northern GRA statistical areas decreased from an average of 939,296 pounds during 1989-1999 to an average of 280,808 pounds during 2000-2014, a decrease of about 70% (Figure 3).

Observed catches of longfin squid, black sea bass, and silver hake within the Northern GRA during November and December, expressed as a percentage of total observed catches of these species, decreased since GRA implementation. The same is true for the number of observed trips. This suggests that small-mesh fishing effort for these species decreased within the Northern GRA since the GRAs were first implemented (Table 10); however, this change cannot be definitively attributed to the GRAs.

NEFSC bottom trawl survey data suggest that scup abundances are low within the Northern GRA in the fall. When measured both in numbers of scup and in weight, less than 1% of the 2011-2015 fall survey scup catch occurred within the boundaries of the Northern GRA. Most spring survey scup catch occurred inshore of the GRAs (Figure 17). Scup caught within the boundaries of the Northern GRA weighed 0.8 pounds on average, compared to an average of 0.12 pounds for scup caught outside of the Northern GRA.[21]

Overall, the observer and survey data suggest that the Northern GRA resulted in positive impacts for scup by reducing discard mortality and has potentially resulted in slight positive impacts for longfin squid, black sea bass, and silver hake by reducing catches of those species within the Northern GRA during November and December. Alternative 1A would perpetuate these positive impacts. Because the Northern GRA has been a component of baseline environmental conditions since 2000, and because the baseline has not changed substantially in recent years, alternative 1A would have neutral biological impacts compared to the baseline.

[21] These statements refer to actual survey catches and not interpolated survey catches.

Table 10: Observed catches of non-exempt species (in pounds) during November and December in bottom trawl tows using a codend or codend liner mesh size of 5.0 inches or smaller, before and after implementation of the GRAs.

	1989-1999				2000-2015			
Species	**Observed catch**	**Observed trips**	**Observed catch in N GRA**	**Observed trips in N GRA**	**Observed catch**	**Observed trips**	**Observed catch in N GRA**	**Observed trips in N GRA**
Longfin squid	736,162	7,000	258,203 (35%)	693 (10%)	3,361,187	5,555	8,633 (2%)	80 (1%)
Black sea bass	566,209	1,732	196,125 (35%)	609 (40%)	1,959,056	4,248	8,325 (4%)	84 (2%)
Silver hake	648,455	2,077	223,889 (34%)	687 (33%)	2,726,171	5,540	8,728 (<1%)	70 (1%)

7.1.1.2. Biological Impacts of Alternative 1B (Northern GRA Expanded into Area 613)

Alternative 1B would expand the Northern GRA into statistical area 613. Alternative 1B would increase the size of the Northern GRA by 945 square nautical miles, or approximately 63%, compared to the *status quo* (alternative 1A). Based on interpolated fall NEFSC bottom trawl survey catches, alternative 1B would increase the amount of scup found within the Northern GRA by 293%, compared to the *status quo* (alternative 1A). It would increase the amount of longfin squid in the Northern GRA by 60%, the amount of black sea bass by 184%, and the amount of silver hake by 30% (Table 11 and Table 12).

When expressed as a percentage of 2011-2015 interpolated fall survey catches within the entire survey area, the amount of scup found within the Northern GRA would increase from 0.4% under the *status quo* (alternative 1A) to 1.5% under alternative 1B. The amount of longfin squid would increase from 5.3% to 8.5%. The amount of black sea bass would increase from 3.0% to 8.5%. The amount of silver hake would increase from 1.0% to 1.2% (Table 13 and Table 14).

By increasing the amount of scup, longfin squid, black sea bass, and silver hake found within the Northern GRA, alternative 1B would reduce the amount of these species available to small-mesh fisheries during November and December. In doing so, it could result in a decrease in fishing effort for those species, and thus a decrease in fishing mortality, during November and December in a 945 square nautical mile. Alternative1B is thus expected to have positive biological impacts compared to the *status quo* (alternative 1A).

Table 11: Size and interpolated 2011-2015 fall survey catch of scup, longfin squid, black sea bass, and silver hake within the boundaries of each Northern GRA alternative (with the exception of alternative 1C, which would eliminate the Northern GRA).

Alternative	Size (square nautical miles)	Scup (lb)	Longfin squid (lb)	Black sea bass (lb)	Silver hake (lb)
1A	1,489	391	6,456	157	2,605
1B	2,434	1,537	10,341	445	3,379

Table 12: Size and interpolated 2011-2015 fall NEFSC bottom trawl survey catch of scup, longfin squid, black sea bass, and silver hake within the boundaries of alternative 1B, expressed as a percentage of the *status quo* alternative (alternative 1A).

Alternative	Size	Scup	Longfin squid	Black sea bass	Silver hake
1B	+63%	+293%	+60%	+184%	+30%

Table 13: Total interpolated 2011-2015 spring and fall NEFSC bottom trawl survey catch of scup, longfin squid, black sea bass, and silver hake.

	Scup (lb)	Longfin squid (lb)	Black sea bass (lb)	Silver hake (lb)
Spring survey	65,968	47,466	8,060	219,941
Fall survey	111,368	133,567	5,753	300,613

Table 14: Interpolated 2011-2015 fall NEFSC bottom trawl survey catch of scup, longfin squid, black sea bass, and silver hake within the boundaries of each Northern GRA alternative (with the exception of alternative 1C, which would eliminate the Northern GRA), expressed as a percentage of the total interpolated fall survey catch of each species.

Alternative	Scup	Longfin squid	Black sea bass	Silver hake
1A	0.4%	5.3%	3.0%	1.0%
1B	1.5%	8.5%	8.5%	1.2%

7.1.1.3. Biological Impacts of Alternative 1C (Eliminate the Northern GRA)

Alternative 1C would eliminate the Northern GRA. As described in section 7.1.1, NEFOP data and NEFSC bottom trawl survey data suggest that the Northern GRA may be partially responsible for a reduction in scup discards in statistical areas 537, 539, and 613 since 1989. Since their implementation, the GRAs have likely reduced the discard mortality of small scup and improved the post-recruitment survival of these small scup (Terceiro and Miller 2014). Eliminating the Northern GRA could lead to an increase in discard mortality of small scup and thus is expected to have negative biological impacts to the scup stock. It could also lead to increased small-mesh fishing effort and thus increased fishing mortality for other species,

including longfin squid, black sea bass, and silver hake, and non-target species in those fisheries. Alternative 1C is thus expected to have negative biological impacts, compared to the *status quo* (alternative 1A).

7.1.2. Biological Impacts of Southern GRA Alternatives

The biological impacts of the Southern GRA alternatives range from negative to positive. Of the nine Southern GRA alternatives, alternative 2H has the highest potential for positive biological impacts, followed by alternatives 2A, 2D, 2B, 2C, 2F, 2G, 2E, and 2I, in that order.

7.1.2.1. Biological Impacts of Alternative 2A (*Status Quo* Southern GRA)

Alternative 2A is the *status quo* alternative for the Southern GRA. Under this alternative, the Southern GRA regulations would remain unchanged.

When measured in numbers of scup, about 77% of the 2011-2015 NEFSC spring survey scup catch occurred within the boundaries of the Southern GRA; however, only about 4% of the scup catch in weight occurred within the Southern GRA. Scup caught within the boundaries of the Southern GRA weighed 0.13 pounds on average, compared to an average of 0.33 pounds for scup caught outside of the Southern GRA. This suggests that scup in the Southern GRA tend to be smaller than scup in other areas in the spring. The Southern GRA appears to provide a higher protective value for scup in general, and for juvenile scup in particular, than the Northern GRA (section 7.1.1).

NEFOP data suggest that small-mesh catch of longfin squid and black sea bass in the Southern GRA during January 1 – March 15 has not changed significantly since implementation of the GRAs. Observed catch of longfin squid within the Southern GRA decreased by 2% since implementation of the GRAs. Observed catch of black sea bass did not change and observed catch of silver hake increased by 52%. The amount of observed small-mesh trips in the Southern GRA which caught longfin squid, black sea bass, and silver hake, expressed as a percentage of total observed trips which caught these species, decreased slightly since implementation of the GRAs (Table 15).

Overall, the survey and NEFOP data suggest that the Southern GRA has had positive impacts for the scup stock by decreasing discard mortality. Patterns in NEFOP data suggest that the Southern GRA has had neutral to slight positive impacts on catch of longfin squid, black sea bass, and silver hake (Table 15) . Alternative 2A would perpetuate these neutral to slight positive impacts by maintaining a *status quo* Southern GRA. Because the Southern GRA, as currently configured, has been a component of baseline environmental conditions since late 2004, and because the baseline has not changed substantially in recent years, alternative 2A is expected to have neutral biological impacts compared to the baseline.

Table 15: Observed catches of non-exempt species (in pounds) during January 1 – March 15 in bottom trawl tows using a codend or codend liner mesh size of 5.0 inches or smaller, before and after implementation of the GRAs.

	1989-1999				2000-2015			
Species	**Observed catch**	**Observed trips**	**Observed catch in S GRA**	**Observed trips in S GRA**	**Observed catch**	**Observed trips**	**Observed catch in S GRA**	**Observed trips in S GRA**
Longfin squid	1,543,835	4,407	124,415 (8%)	850 (19%)	6,676,397	9,348	395,525 (6%)	999 (11%)
Black sea bass	1,298,226	4,164	95,636 (7%)	830 (20%)	5,854,351	8,812	387,591 (7%)	1,041 (12%)
Silver hake	1,485,084	4,395	105,509 (7%)	849 (19%)	6,134,239	9,313	3,642,145 (59%)	968 (10%)

7.1.2.2. Biological Impacts of Alternative 2B (2012 AP Proposal)

Alternative 2B is the 2012 AP proposal. Alternative 2B would decrease the size of the Southern GRA by 230 square nautical miles, or about 7%, compared to the *status quo* Southern GRA (alternative 2A). According to interpolated NEFSC bottom trawl survey data, alternative 2B would reduce the amount of scup found in the Southern GRA by 4%. It would reduce the amount of longfin squid found in the Southern GRA by 16%, the amount of black sea bass by 13%, and the amount of silver hake by 23% (Table 16 and Table 17).

When expressed as a percentage of 2011-2015 interpolated spring survey catches within the entire survey area, the amount of scup found within the Southern GRA would decrease from 6.3% under the *status quo* (alternative 2A) to 6.0% under alternative 2B. The amount of longfin squid would decrease from 17.0% to 14.4%. The amount of black sea bass would decrease from 44.5% to 38.5%. The amount of silver hake would decrease from 0.6% to 0.5% (Table 13 and Table 18).

By decreasing the amount of these species found in the Southern GRA, alternative 2B would increase the amount available to small-mesh fisheries during January 1 – March 15 and therefore could result in an increase in fishing effort, and thus an increase in fishing mortality for scup, longfin squid, black sea bass, silver hake, and non-target species. The increase in fishing effort is expected to be slight to moderate compared to the *status quo* and will occur in a relatively small area; therefore, the biological impacts of alternative 2B are expected to be slight negative.

Table 16: Size and interpolated 2011-2015 spring NEFSC bottom trawl survey catch of scup, longfin squid, black sea bass, and silver hake within the boundaries of each Southern GRA alternative (with the exception of alternative 2I, which would eliminate the Southern GRA).

Alternative	Size (square nautical miles)	Scup (lb)	Longfin squid (lb)	Black Sea Bass (lb)	Silver Hake (lb)
2A	3,117	4,127	8,071	3,586	1,373
2B	2,887	3,959	6,815	3,107	1,064
2C	2,868	3,959	6,815	3,107	1,064
2D	2,635	4,121	7,214	3,566	1,332
2E	2,009	3,045	3,878	2,600	638
2F	2,140	3,349	4,036	3,316	944
2G	2,086	3,280	3,975	2,925	828
2H	3,996	41,133	11,437	5,433	3,273

Table 17: Size and interpolated 2011-2015 spring NEFSC bottom trawl survey catch of scup, longfin squid, black sea bass, and silver hake within the boundaries of each Southern GRA alternative (with the exception of alternative 2I, which would eliminate the Southern GRA), expressed as a percentage of the *status quo* Southern GRA (alternative 2A).

Alternative	Size	Scup	Longfin squid	Black Sea Bass	Silver Hake
2B	-7%	-4%	-16%	-13%	-23%
2C	-8%	-4%	-16%	-13%	-23%
2D	-15%	<1%	-11%	-1%	-3%
2E	-36%	-26%	-52%	-28%	-54%
2F	-31%	-19%	-50%	-8%	-31%
2G	-33%	-21%	-51%	-18%	-40%
2H	+28%	+897%	+42%	+51%	+138%

Table 18: Interpolated 2011-2015 spring NEFSC bottom trawl survey catch of scup, longfin squid, black sea bass, and silver hake within the boundaries of each Southern GRA alternative (with the exception of alternative 2I, which would eliminate the Southern GRA), expressed as a percentage of the total interpolated spring survey catch of each species (Table 13).

Alternative	Scup	Longfin squid	Black Sea Bass	Silver Hake
2A	6.3%	17.0%	44.5%	0.6%
2B	6.0%	14.4%	38.5%	0.5%
2C	6.0%	14.2%	38.2%	0.5%
2D	6.2%	15.2%	44.2%	0.6%
2E	4.6%	8.2%	32.3%	0.3%
2F	5.1%	8.5%	41.1%	0.4%
2G	5.0%	8.4%	36.3%	0.4%
2H	62.4%	24.1%	67.4%	1.5%

7.1.2.3. Biological Impacts of Alternative 2C (2012 AP Proposal with Coral Areas Removed)

Alternative 2C is the 2012 AP proposal with areas of overlap with the deep sea coral protection zones removed. Alternative 2C would decrease the size of the Southern GRA by 249 square nautical miles, or about 8%, compared to the *status quo* Southern GRA (alternative 2A). According to interpolated NEFSC bottom trawl survey data, alternative 2C would reduce the amount of scup found in the Southern GRA by 4%, compared to the *status quo* (alternative 2A). It would reduce the amount of longfin squid found in the Southern GRA by 16%, the amount of black sea bass by 13%, and the amount of silver hake by 23% (Table 16 and Table 17).

When expressed as a percentage of 2011-2015 interpolated spring survey catches within the entire survey area, the amount of scup found within the Southern GRA would decrease from 6.3% under the *status quo* (alternative 2A) to 6.0% under alternative 2C. The amount of longfin squid would decrease from 17.0% to 14.2%. The amount of black sea bass would decrease from 44.5% to 38.2%. The amount of silver hake would decrease from 0.6% to 0.5% (Table 13 and Table 18).

By decreasing the amount of these species found in the Southern GRA, alternative 2C would increase the amount available to small-mesh fisheries during January 1 – March 15 and therefore could result in an increase in fishing effort. An increase in fishing effort could result in increased fishing mortality for scup, longfin squid, black sea bass, silver hake, and non-target species. The increase in fishing effort is expected to be slight to moderate compared to the *status quo* and would occur in a relatively small area; therefore, biological impacts of alternative 2C are expected to be slight negative.

7.1.2.4. Biological Impacts of Alternative 2D (Area 632 Removed from Southern GRA)

Alternative 2D would remove statistical area 632 from the Southern GRA and would decrease the size of the Southern GRA by 482 square nautical miles, or about 15%, compared to the *status quo* Southern GRA (alternative 2A). According to interpolated NEFSC bottom trawl survey data, alternative 2D would reduce the amount of scup found in the Southern GRA by less than 1%. It would reduce the amount of longfin squid found in the Southern GRA by 11%, the amount of black sea bass by 1%, and the amount of silver hake by 3% (Table 16 and Table 17).

When expressed as a percentage of 2011-2015 interpolated spring survey catches within the entire survey area, the amount of scup found within the Southern GRA would decrease from 6.3% under the *status quo* (alternative 2A) to 6.2% under alternative 3C. The amount of longfin squid would decrease from 17.0% to 15.2%. The amount of black sea bass would decrease from 44.5% to 44.2%. The amount of silver hake would not change (Table 13 and Table 18).

By slightly decreasing the amount of these species found in the Southern GRA, alternative 2D would slightly increase the amount available to small-mesh fisheries during January 1 – March 15. Alternative 2D is not expected to result in a notable change in fishing effort for scup, black sea bass, or silver hake, based on the estimated changes in availability of these species. It may result in a slight increase in fishing effort for longfin squid, which could result in a slight increase in fishing mortality for longfin squid and other non-target species caught in the squid fishery. The biological impacts of alternative 2D are thus expected to be neutral to slight negative, compared to the *status quo* (alternative 2A).

7.1.2.5. Biological Impacts of Alternative 2E (January 2016 AP Proposal)

Alternative 2E is the January 2016 AP proposal. Alternative 2E would decrease the size of the Southern GRA by 1,108 square nautical miles, or about 36%, compared to the *status quo* Southern GRA (alternative 2A). According to interpolated NEFSC bottom trawl survey catches, alternative 2E would reduce the amount of scup found in the Southern GRA by 26%, compared to the *status quo*. It would reduce the amount of longfin squid found in the Southern GRA by 52%, the amount of black sea bass by 28%, and the amount of silver hake by 54% (Table 16 and Table 17).

When expressed as a percentage of 2011-2015 interpolated spring survey catches within the entire survey area, the amount of scup found within the Southern GRA would decrease from 6.3% under the *status quo* (alternative 2A) to 4.6% under alternative 2E. The amount of longfin squid would decrease from 17.0% to 8.2%. The amount of black sea bass would decrease from 44.5% to 32.3%. The amount of silver hake would decrease from 0.6% to 0.3% (Table 13 and Table 18).

By decreasing the amount of these species found in the Southern GRA, alternative 2E would increase the amount available to small-mesh fisheries and therefore could result in an increase in fishing effort in a 1,108 square nautical mile area during January 1 – March 15. Alternative 2E was designed with the intent of restoring access to important winter fishing areas for longfin squid and it is expected to decrease the amount of longfin squid found within the Southern GRA by 52%; therefore, it is expected to result in a moderate increase in fishing effort for longfin squid during January 1 – March 15. It may also result in an increase in fishing effort for other species. An increase in fishing effort could lead to increased fishing mortality for longfin squid and other target and non-target species. The biological impacts of alternative 2E are thus expected to be slight to moderate negative compared to the *status quo*, depending on the degree of the increase in fishing effort. If the distribution of effort changes, but overall effort remains similar to the *status quo*, then biological impacts would be minimal.

7.1.2.6. Biological Impacts of Alternative 2F (Modified January 2016 AP Proposal)

Alternative 2F is a modified version of the January 2016 AP proposal (section 5.2.6). It would decrease the size of the Southern GRA by 977 square nautical miles, or about 31%, compared to

the *status quo* Southern GRA (alternative 2A). According to interpolated NEFSC bottom trawl survey data, alternative 2F would reduce the amount of scup found in the Southern GRA by 19%. It would reduce the amount of longfin squid found in the Southern GRA by 50%, the amount of black sea bass by 8%, and the amount of silver hake by 31% (Table 16 and Table 17). By decreasing the amount of these species found in the Southern GRA, it would increase the amount available to small-mesh fisheries during January 1 – March 15.

When expressed as a percentage of 2011-2015 interpolated spring survey catches within the entire survey area, the amount of scup found within the Southern GRA would decrease from 6.3% under the *status quo* (alternative 2A) to 5.1% under alternative 2F. The amount of longfin squid would decrease from 17.0% to 8.5%. The amount of black sea bass would decrease from 44.5% to 41.1%. The amount of silver hake would decrease from 0.6% to 0.4% (Table 13 and Table 18).

By decreasing the amount of these species found in the Southern GRA, alternative 2F would increase the amount available to small-mesh fisheries during January 1 – March 15 in a 977 square nautical mile area and therefore could result in an increase in fishing effort. Alternative 2F was designed with the intent of restoring access to important winter fishing areas for longfin squid and it is expected to decrease the amount of longfin squid found within the Southern GRA by 50%; therefore, it is expected to result in a moderate increase in fishing effort for longfin squid during January 1 – March 15. It may also result in an increase in fishing effort for other species. An increase in fishing effort could lead to increased fishing mortality for longfin squid and other target and non-target species. The biological impacts of alternative 2F are thus expected to be slight to moderate negative compared to the *status quo*, depending on the degree of the increase in fishing effort. If the distribution of effort changes, but overall effort remains similar to the *status quo*, then biological impacts would be minimal.

7.1.2.7. Biological Impacts of Alternative 2G (Combination of Alternative 2B and 2E; Preferred Southern GRA Alternative)

Alternative 2G is the preferred Southern GRA alternative and represents a combination of the 2012 and 2016 AP proposals. Alternative 2G would decrease the size of the Southern GRA by 1,031 square nautical miles, or 33%, compared to the *status quo* Southern GRA (alternative 2A). According to interpolated NEFSC bottom trawl survey data, alternative 2G would reduce the amount of scup found in the Southern GRA by 21%. It would reduce the amount of longfin squid found in the Southern GRA by 51%, the amount of black sea bass by 18%, and the amount of silver hake by 40% (Table 16 and Table 17). By decreasing the amount of these species found in the Southern GRA, it would increase the amount available to small-mesh fisheries during January 1 – March 15.

When expressed as a percentage of 2011-2015 interpolated spring survey catches within the entire survey area, the amount of scup found within the Southern GRA would decrease from

6.3% under the *status quo* (alternative 2A) to 5.0% under alternative 2G. The amount of longfin squid would decrease from 17.0% to 8.4%.The amount of black sea bass would decrease from 44.5% to 36.3%. The amount of silver hake would decrease from 0.6% to 0.4% (Table 13 and Table 18).

By decreasing the amount of scup, longfin squid, black sea bass, and silver hake found in the Southern GRA, Alternative 2G would increase the amount available to small-mesh fisheries during January 1 – March 15 in a 1,031 square nautical mile area and therefore could result in an increase in fishing effort. Alternative 2G was designed with the intent of restoring access to important winter fishing areas for longfin squid and it is expected to decrease the amount of longfin squid found within the Southern GRA by 51%; therefore, it is expected to result in a moderate increase in fishing effort for longfin squid during January 1 – March 15. It may also result in an increase in fishing effort for other species. An increase in fishing effort could lead to increased fishing mortality for longfin squid and other target and non-target species. The biological impacts of alternative 2G are thus expected to be slight to moderate negative compared to the *status quo*, depending on the degree of the increase in fishing effort. If the distribution of effort changes, but overall effort remains similar to the *status quo*, then biological impacts would be minimal.

7.1.2.8. Biological Impacts of Alternative 2H (Southern GRA Expanded into Area 616)

Alternative 2H would expand the Southern GRA into statistical area 616 and would increase the size of the Southern GRA by 879 square nautical miles, or about 28%, compared to the *status quo* (alternative 2A). According to interpolated NEFSC bottom trawl survey data, alternative 2H would increase the amount of scup found in the Southern GRA by 897%. It would increase the amount of longfin squid found in the Southern GRA by 42%, the amount of black sea bass by 51%, and the amount of silver hake by 138% (Table 16 and Table 17).

When expressed as a percentage of 2011-2015 interpolated spring survey catches within the entire survey area, the amount of scup found within the Southern GRA would increase from 6.3% under the *status quo* (alternative 2A) to 62.4% under alternative 2H. The amount of longfin squid would increase from 17.0% to 24.1%. The amount of black sea bass would increase from 44.5% to 67.4%. The amount of silver hake would increase from 0.6% to 1.5% (Table 13 and Table 18).

By increasing the amount of these species found in the Southern GRA, alternative 2G would decrease the amount available to small-mesh fisheries during January 1 – March 15 in an 879 square nautical mile area. Alternative 2G would add much of Hudson Canyon to the Southern GRA. As previously described, Hudson Canyon is an important fishing area for many species. As the percentages of survey catches indicate, alternative 2G would greatly decrease the amount of scup available to capture with small-mesh during January 1 - March 15. It would substantially

decrease the amount of silver hake available and would result in moderate decreases for longfin squid and black sea bass. For these reasons, alternative 2G is expected to result in a substantial decrease in overall small-mesh fishing effort in an 879 square nautical mile during January 1 – March 15. It is therefore expected to result in a decrease in fishing mortality for target and non-target species, compared to the *status quo* (alternative 2A). Alternative 2H is thus expected to have positive biological impacts.

7.1.2.9. Biological Impacts of Alternative 2I (Eliminate the Southern GRA)

Alternative 2I would eliminate the Southern GRA. As described in section 7.1.2.1, observer and NEFSC survey data suggest that the Southern GRA continues to provide protective value to the scup stock overall and to juvenile scup in particular. Eliminating the Southern GRA could lead to an increase in discard mortality of small scup and thus is expected to have negative biological impacts to the scup stock. By eliminating the existing restrictions on small-mesh fishing in the Southern GRA during January 1 – March 15, alternative 2I is expected to result in an increase in small-mesh fishing effort, particularly for longfin squid, compared to the *status quo* (alternative 2A). By allowing for an increase in fishing effort, alternative 2I is expected to result in an increase in fishing mortality for target and non-target species and is therefore expected to have overall negative biological impacts, compared to the *status quo*.

7.2. Habitat Impacts

This section summarized the expected impacts of each alternative on habitat, including EFH. Alternatives which could result in an increase in fishing effort are expected to have negative habitat impacts due to the increased potential for interactions between fishing gear and habitat. Alternatives which could result in a decrease in fishing effort are expected to have positive habitat impacts due to the decreased potential for interactions between fishing gear and habitat. The expected changes in fishing effort under each alternative are based on the amount of scup, longfin squid, black sea bass, and silver hake included in the GRAs under each alternative, compared to the *status quo* (section 7.1).

7.2.1. Habitat Impacts of Northern GRA Alternatives

The expected impacts of the Northern GRA alternatives on habitat range from slight negative to slight positive. Of the three Northern GRA alternatives, alternative 1B has the highest potential for positive impacts to habitat, followed by alternative 1A, and then alternative 1C.

7.2.1.1. Habitat Impacts of Alternative 1A (*Status Quo* Northern GRA; Preferred Northern GRA Alternative)

Alternative 1A is the *status quo* Northern GRA alternative. It is the preferred Northern GRA alternative. As described in more detail in section 7.1.1.1, NEFOP data suggest that small-mesh fishing effort within the Northern GRA during November and December has decreased since

implementation of the GRAs (Table 10). However, a change in fishing effort cannot be definitively attributed to the GRAs. If overall small-mesh fishing effort did not change as a result of the Northern GRA, then habitat impacts of the Northern GRA are neutral and alternative 1A would have continued neutral impacts. If the Northern GRA has caused a reduction in overall small-mesh effort in November and December, then the habitat impacts of the Northern GRA are positive because a decrease in fishing effort would reduce the time that fishing gear is in the water and would thus reduce the potential for interactions between small-mesh fishing gear and physical habitat. If this is the case, then alternative 1A would perpetuate those positive impacts. Because the Northern GRA has been a component of baseline environmental conditions since 2000, and because the baseline has not changed substantially in recent years, alternative 1A is expected to have neutral habitat impacts compared to the baseline.

7.2.1.2. Habitat Impacts of Alternative 1B (Northern GRA Expanded into Area 613)

As described in more detail in section 7.1.1.2, alternative 1B would expand the Northern GRA into statistical area 613 and could result in a reduction in small-mesh fishing effort in a 945 square nautical mile area during November and December. If small-mesh fishing effort decreases as a result of alternative 1B, then the amount of time that fishing gear is in the water would decrease and the potential for interactions between fishing gear and physical habitat would also decrease. If this were to occur, then alternative 1B would have slight positive habitat impacts compared to the *status quo* (alternative 1A). The impacts would be slight positive because alternative 1B will only affect small-mesh fishing effort in a 945 square nautical mile area during two months each year. It will not affect other gear types, other areas, or other times of the year. If alternative 1B were to cause small-mesh fishing effort to shift out of the Northern GRA and into other areas, then overall effort could remain similar to the *status quo*, which would result in neutral habitat impacts. The impacts of alternative 1B on habitat are thus expected to range from neutral to slight positive.

7.2.1.3. Habitat Impacts of Alternative 1C (Eliminate the Northern GRA)

Alternative 1C would eliminate the Northern GRA. As described in more detail in section 7.1.1.1, NEFOP data suggest that fishing effort within the Northern GRA has decreased since implementation of the GRAs (Table 10). Elimination of the Northern GRA could result in an increase in small-mesh fishing effort in November and December in a 1,489 square nautical mile area. Alternatively, alternative 1C could result in a shift in the distribution of fishing effort without a change in the amount of effort. If effort increases, then impacts to habitat would be slight negative due to an increase in the amount of time that fishing gear is in the water and thus increased potential for interactions between fishing gear and physical habitat. The impacts are expected to be slight negative because alternative 1C only affects small-mesh fishing gear in the Northern GRA for two months each year. It does not affect other gear types, other areas, or other times of the year. If effort remains similar to the *status quo* (alternative 1A), then habitat impacts

would be neutral. The habitat impacts of alternative 1C are thus expected to range from neutral to slight negative.

7.2.2. Habitat Impacts of Southern GRA Alternatives

The impacts of the Southern GRA alternatives on habitat range from slight negative to slight positive. Of the nine Southern GRA alternatives, alternative 2H has the highest potential for positive habitat impacts, followed by alternatives 2A, 2D, 2B, 2C, 2F, 2G, 2E, and 2I in that order.

7.2.2.1. Habitat Impacts of Alternative 2A (*Status Quo* Southern GRA)

Alternative 2A is the *status quo* Southern GRA alternative. As described in more detail in section 7.1.2.1, NEFOP data suggest that small-mesh fishing effort within the Southern GRA during January-March decreased slightly since implementation of the GRAs (Table 15). However, a change in fishing effort cannot be definitively attributed to the GRAs. If overall small-mesh fishing effort did not change as a result of the Southern GRA, then habitat impacts of the Southern GRA are neutral and alternative 2A would have continued neutral impacts. If the Southern GRA caused a reduction in overall small-mesh effort, then habitat impacts may be slight positive due to a decrease in the amount of time that fishing gear is in the water and thus a decreased potential for interactions between small-mesh fishing gear and physical habitat. In this case, alternative 2A would have continued slight positive habitat impacts. Because the Southern GRA has been a component of baseline environmental conditions since late 2004, and because the baseline has not changed substantially in recent years, alternative 2A would have neutral impacts to habitat compared to the baseline.

7.2.2.2. Habitat Impacts of Alternative 2B (2012 AP Proposal)

Alternative 2B is the 2012 AP proposal. It is intended to restore access to important areas for longfin squid fishing. As described in more detail in section 7.1.2.2, it is expected to result in an increase in small-mesh fishing effort, especially for longfin squid, in a 230 square nautical mile area during January 1 – March 15. If CPUE is higher under alternative 2B than under the *status quo* (alternative 2A), then increased squid catches could occur without an increase in effort. If alternative 2B results in an increase in small- mesh fishing effort, it could result in slight negative habitat impacts by increasing the time that fishing gear is in the water and thus increasing the potential for interactions between fishing gear and physical habitat in a relatively small area during January 1 – March 15. If alternative 2B causes an increase in CPUE or a change in the distribution of fishing effort without changing the overall amount of effort, then impacts to habitat would be neutral. The habitat impacts of alternative 2B are thus expected to range from slight negative to neutral.

7.2.2.3. Habitat Impacts of Alternative 2C (2012 AP Proposal with Coral Areas Removed)

Alternative 2C is the 2012 AP proposal with areas of overlap with the deep sea coral protection areas removed. It is intended to restore access to important areas for longfin squid fishing. As described in more detail in section 7.1.2.3, it could result in an increase in small-mesh fishing effort, particularly for longfin squid, in a 249 square nautical mile area during January 1 – March 15. If CPUE is higher under alternative 2C than under the *status quo* (alternative 2A), then increased squid catches could occur without an increase in effort. If alternative 2C results in an increase in effort, it could result in slight negative habitat impacts by increasing the time that fishing gear is in the water and thus increasing the potential for interactions between fishing gear and physical habitat. If alternative 2C causes an increase in CPUE or a change in the distribution of fishing effort without changing the overall amount of effort, then impacts to habitat would be neutral. The habitat impacts of alternative 2C are thus expected to range from slight negative to neutral.

7.2.2.4. Habitat Impacts of Alternative 2D (Area 632 Removed from Southern GRA)

Alternative 2D would remove statistical area 632 from the Southern GRA. Alternative 2D would decrease the amount of scup found within the Southern GRA by less than 1%, the amount of longfin squid by 11%, the amount of black sea bass by 1%, and the amount of silver hake by 3%, compared to the *status quo* (alternative 2A; Table 16 and Table 17). Alternative 2D could result in a slight increase fishing effort for longfin squid, but is not expected to change fishing effort for the other species. If fishing effort increases under alternative 2D, then slight negative habitat impacts would be expected due to an increase in the amount of time that small-mesh fishing gear is in the water and thus an increase in the potential for interactions between fishing gear and physical habitat. If the distribution of fishing effort changes but the overall amount of effort does not change, then impacts to habitat would be neutral. The habitat impacts of alternative 2D are thus expected to range from slight negative to neutral.

7.2.2.5. Habitat Impacts of Alternative 2E (January 2016 AP Proposal)

Alternative 2E is the January 2016 AP proposal and is intended to restore access to important areas for longfin squid fishing. As described in more detail in section 7.1.2.5, it is expected to result in an increase in small-mesh fishing effort, particularly for longfin squid, in a 1,108 square nautical mile area during January 1 – March 15. If CPUE is higher under alternative 2E than under the *status quo* (alternative 2A), then increased squid catches could occur without an increase in effort. If fishing effort increases under alternative 2E, then impacts to habitat would be slight negative due to an increase in the amount of time that fishing gear is in the water and an increase in the potential for interactions between fishing gear and habitat. If alternative 2E causes an increase in CPUE or a change in the distribution of fishing effort without changing the overall

amount of effort, then impacts to habitat would be neutral. The habitat impacts of alternative 2E are thus expected to range from slight negative to neutral.

7.2.2.6. Habitat Impacts of Alternative 2F (Modified January 2016 AP Proposal)

Alternative 2F is a modification of the January 2016 AP proposal and is intended to restore access to important areas for longfin squid fishing. As described in more detail in section 7.1.2.6, alternative 2F could result in an increase in fishing effort, particularly for longfin squid, in a 977 square nautical mile area during January 1 – March 15. If CPUE is higher under alternative 2F than under the *status quo* (alternative 2A), then increased squid catches could occur without an increase in effort. If fishing effort increases under alternative 2F, then impacts to habitat would be slight negative due to an increase in the amount of time that small-mesh fishing gear is in the water and thus an increase in the potential for interactions between fishing gear and habitat. If alternative 2F causes an increase in CPUE or a change in the distribution of fishing effort without changing the overall amount of effort, then impacts to habitat would be neutral. The habitat impacts of alternative 2F are thus expected to range from slight negative to neutral.

7.2.2.7. Habitat Impacts of Alternative 2G (Combination of Alternatives 2B and 2E; Preferred Southern GRA Alternative)

Alternative 2G is the preferred Southern GRA alternative. It represents a combination of the 2012 and 2016 AP proposals and is designed to restore access to fishing areas for longfin squid. As described in more detail in section 7.1.2.7, it would decrease the amount of longfin squid found within the Southern GRA by 51%, compared to the *status quo* (alternative 2A; Table 16 and Table 17). Alternative 2G could result in a moderate increase in fishing effort, and therefore an increase in the amount of time that small-mesh fishing gear is in the water and thus an increase in the potential for interactions between fishing gear and physical habitat, in a 1,031 square nautical mile area during January 1 – March 15. If CPUE is higher under alternative 2G than under the *status quo* (alternative 2A), then increased catches could occur without an increase in effort. If alternative 2G causes an increase in CPUE or a change in the distribution of fishing effort without changing the overall amount of effort, then impacts to habitat would be neutral. The habitat impacts of alternative 2G are thus expected to range from slight negative to neutral.

7.2.2.8. Habitat Impacts of Alternative 2H (Southern GRA Expanded into Area 616)

Alternative 2H would expand the Southern GRA into statistical area 616. It would increase the amount of scup found in the southern GRA by 897%, the amount of longfin squid by 42%, the amount of black sea bass by 51%, and the amount of silver hake by 138%, compared to the *status quo* (alternative 2A; Table 16 and Table 17). It is expected to result in a substantial decrease in small-mesh fishing effort in an 880 square nautical mile area during January 1 – March 15. By reducing small-mesh fishing effort, it would reduce the amount of time that fishing gear is in the water and would thus decrease the potential for interactions between fishing gear

and physical habitat. Although alternative 2H is expected to result in a substantial decrease in small-mesh fishing effort in an 880 square nautical mile area for three and a half months each year, it will not affect other gear types, other times of the year, and other areas, therefore the overall impacts on habitat are expected to be moderately positive compared to the *status quo* (alternative 2A).

7.2.2.9. Habitat Impacts of Alternative 2I (Eliminate the Southern GRA)

Alternative 2I would eliminate the Southern GRA. As described in more detail in section 7.1.2.9, NEFOP data suggest that fishing effort within the Southern GRA has decreased slightly since implementation of the GRAs (Table 15). Elimination of the Southern GRA could result in an increase in small-mesh fishing effort in a 3,117 square nautical mile area during January 1 - March 15. Alternatively, alternative 2I could result in a shift in the distribution of fishing effort without a change in the amount of effort. If effort increases, then impacts to habitat would be slight negative due to an increase in the amount of time that small-mesh fishing gear is in the water and thus an increase in the potential for interactions between fishing gear and physical habitat. If effort remains similar to the *status quo* (alternative 2A), then habitat impacts would be neutral. The habitat impacts of alternative 2I are thus expected to range from neutral to slight negative.

7.3. Impacts to ESA and MMPA Protected Species

This section summarizes the expected impacts of each alternative on protected species (i.e. species listed as endangered or threatened under the ESA and species afforded protection under the MMPA). Alternatives which could result in an increase in fishing effort are expected to have negative impacts to protected species due to an increase in the amount of time that fishing gear is in the water and thus an increase in the potential for interactions between fishing gear and protected species. Alternatives which could result in a decrease in fishing effort are expected to have positive impacts to protected species due to a decrease in the amount of time that fishing gear is in the water and thus a decrease in the potential for interactions between fishing gear and protected species. The expected changes in fishing effort under each alternative are based on the amount of longfin squid, black sea bass, and silver hake included in the GRAs under each alternative, compared to the *status quo* (section 7.1).

7.3.1. Protected Species Impacts of Northern GRA Alternatives

The expected impacts of the Northern GRA alternatives on protected species range from slight negative to slight positive. Of the three Northern GRA alternatives, alternative 1B has the highest potential for positive impacts to protected species, followed by alternative 1A, and then alternative 1C.

7.3.1.1. Protected Species Impacts of Alternative 1A (*Status Quo* Northern GRA; Preferred Northern GRA Alternative)

Alternative 1A is the *status quo* Northern GRA alternative. It is the preferred Northern GRA alternative. As described in more detail in section 7.1.1.1, NEFOP data suggest that small-mesh fishing effort within the Northern GRA during November and December has decreased since implementation of the GRAs (Table 10). However, a change in fishing effort cannot be definitively attributed to the GRAs. If overall small-mesh fishing effort did not change as a result of the Northern GRA, then impacts of the Northern GRA on protected species are neutral and alternative 1A would have continued neutral impacts. If the Northern GRA has caused a reduction in overall small-mesh effort in November and December, then the impacts of the Northern GRA on protected species are positive because a decrease in fishing effort would have reduced the time that fishing gear is in the water and would thus reduce the potential for interactions between small-mesh fishing gear and protected species. If this is the case, then alternative 1A would perpetuate those positive impacts. Because the Northern GRA has been a component of baseline environmental conditions since 2000, and because the baseline has not changed substantially in recent years, alternative 1A is expected to have neutral impacts on protected species compared to the baseline.

7.3.1.2. Protected Species Impacts of Alternative 1B (Northern GRA Expanded into Area 613)

As described in more detail in section 7.1.1.2, alternative 1B would expand the Northern GRA into statistical area 613 and could result in a reduction in small-mesh fishing effort in a 945 square nautical mile area during November and December. If small-mesh fishing effort decreases as a result of alternative 1B, then the amount of time that fishing gear is in the water would decrease and the potential for interactions between fishing gear and protected species would also decrease. If this were to occur, then alternative 1B would have slight positive impacts on protected species compared to the *status quo* (alternative 1A). The impacts would be slight positive because alternative 1B will only affect small-mesh fishing effort in a 945 square nautical mile area during two months each year. It will not affect other gear types, other areas, or other times of the year. If alternative 1B were to cause small-mesh fishing effort to shift out of the Northern GRA and into other areas, then overall effort could remain similar to the *status quo*, which would result in neutral impacts to protected species. The impacts of alternative 1B on protected species are thus expected to range from neutral to slight positive.

7.3.1.3. Protected Species Impacts of Alternative 1C (Eliminate the Northern GRA)

Alternative 1C would eliminate the Northern GRA. As described in more detail in section 7.1.1.1, NEFOP data suggest that fishing effort within the Northern GRA has decreased since implementation of the GRAs (Table 10). Elimination of the Northern GRA could result in an increase in small-mesh fishing effort in November and December in a 1,489 square nautical mile

area. Alternatively, alternative 1C could result in a shift in the distribution of fishing effort without a change in the amount of effort. If effort increases, then impacts to protected species would be slight negative due to an increase in the amount of time that fishing gear is in the water and thus increased potential for interactions between fishing gear and protected species. The impacts are expected to be slight negative because alternative 1C only affects small-mesh fishing gear in the Northern GRA for two months each year. It does not affect other gear types, other areas, or other times of the year. If effort remains similar to the *status quo* (alternative 1A), then impacts to protected species would be neutral. The impacts of alternative 1C on protected species are thus expected to range from neutral to slight negative.

7.3.2. Protected Species Impacts of Southern GRA Alternatives

The impacts of the Southern GRA alternatives on protected species range from slight negative to slight positive. Of the nine Southern GRA alternatives, alternative 2H has the highest potential for positive impacts to protected species, followed by alternatives 2A, 2D, 2B, 2C, 2F, 2G, 2E, and 2I, in that order.

7.3.2.1. Protected Species Impacts of Alternative 2A (*Status Quo* Southern GRA)

Alternative 2A is the *status quo* Southern GRA alternative. As described in more detail in section 7.1.2.1, NEFOP data suggest that small-mesh fishing effort within the Southern GRA during January-March decreased slightly since implementation of the GRAs (Table 15). However, a change in fishing effort cannot be definitively attributed to the GRAs. If overall small-mesh fishing effort did not change as a result of the Southern GRA, then the impacts of the Southern GRA on protected species are neutral and alternative 2A would have continued neutral impacts. If the Southern GRA caused a reduction in overall small-mesh effort, then impacts on protected species may be slight positive due to a decrease in the amount of time that fishing gear is in the water and thus a decreased potential for interactions between small-mesh fishing gear and protected species. If this is the case, then alternative 2A would have continued slight positive impacts. Because the Southern GRA has been a component of baseline environmental conditions since late 2004, and because the baseline has not changed substantially in recent years, alternative 2A would have neutral impacts on protected species compared to the baseline.

7.3.2.2. Protected Species Impacts of Alternative 2B (2012 AP Proposal)

Alternative 2B is the 2012 AP proposal. It is intended to restore access to important areas for longfin squid fishing. As described in more detail in section 7.1.2.2, it is expected to result in an increase in small-mesh fishing effort, especially for longfin squid, in a 230 square nautical mile area during January 1 – March 15. If CPUE is higher under alternative 2B than under the *status quo* (alternative 2A), then increased squid catches could occur without an increase in effort. If alternative 2B results in an increase in small- mesh fishing effort, it could result in slight negative impacts to protected species by increasing the time that fishing gear is in the water and thus increasing the potential for interactions between fishing gear and protected species in a

relatively small area during January 1 – March 15. If alternative 2B causes an increase in CPUE or a change in the distribution of fishing effort without changing the overall amount of effort, then impacts to protected species would be neutral. The impacts of alternative 2B on protected species are thus expected to range from slight negative to neutral.

7.3.2.3. Protected Species Impacts of Alternative 2C (2012 AP Proposal with Coral Areas Removed)

Alternative 2C is the 2012 AP proposal with areas of overlap with the deep sea coral protection areas removed. It is intended to restore access to important areas for longfin squid fishing. As described in more detail in section 7.1.2.3, it could result in an increase in small-mesh fishing effort, particularly for longfin squid, in a 249 square nautical mile area during January 1 – March 15. If CPUE is higher under alternative 2C than under the *status quo* (alternative 2A), then increased squid catches could occur without an increase in effort. If alternative 2C results in an increase in effort, it could result in slight negative impacts to protected species by increasing the time that fishing gear is in the water and thus increasing the potential for interactions between fishing gear and protected species. If alternative 2C causes an increase in CPUE or a change in the distribution of fishing effort without changing the overall amount of effort, then impacts to protected species would be neutral. The impacts of alternative 2C on protected species are thus expected to range from slight negative to neutral.

7.3.2.4. Protected Species Impacts of Alternative 2D (Area 632 Removed from Southern GRA)

Alternative 2D would remove statistical area 632 from the Southern GRA. Alternative 2D would decrease the amount of scup found within the Southern GRA by less than 1%, the amount of longfin squid by 11%, the amount of black sea bass by 1%, and the amount of silver hake by 3%, compared to the *status quo* (alternative 2A; Table 16 and Table 17). Alternative 2D could result in a slight increase fishing effort for longfin squid, but is not expected to change fishing effort for the other species. If fishing effort increases under alternative 2D, then slight negative impacts to protected species would be expected due to an increase in the amount of time that small-mesh fishing gear is in the water and thus an increase in the potential for interactions between fishing gear and protected species. If the distribution of fishing effort changes but the overall amount of effort does not change, then impacts to protected species would be neutral. The impacts of alternative 2D on protected species are thus expected to range from slight negative to neutral.

7.3.2.5. Protected Species Impacts of Alternative 2E (January 2016 AP Proposal)

Alternative 2E is the January 2016 AP proposal and is intended to restore access to important areas for longfin squid fishing. As described in more detail in section 7.1.2.5, it is expected to result in an increase in small-mesh fishing effort, particularly for longfin squid, in a 1,108 square nautical mile area during January 1 – March 15. If CPUE is higher under alternative 2E than under the *status quo* (alternative 2A), then increased squid catches could occur without an

increase in effort. If fishing effort increases under alternative 2E, then impacts to protected species would be slight negative due to an increase in the amount of time that fishing gear is in the water and an increase in the potential for interactions between fishing gear and protected species. If alternative 2E causes an increase in CPUE or a change in the distribution of fishing effort without changing the overall amount of effort, then impacts to protected species would be neutral. The impacts of alternative 2E on protected species are thus expected to range from slight negative to neutral.

7.3.2.6. Protected Species Impacts of Alternative 2F (Modified January 2016 AP Proposal)

Alternative 2F is a modification of the January 2016 AP proposal and is intended to restore access to important areas for longfin squid fishing. As described in more detail in section 7.1.2.6, alternative 2F could result in an increase in fishing effort, particularly for longfin squid, in a 977 square nautical mile area during January 1 – March 15. If CPUE is higher under alternative 2F than under the *status quo* (alternative 2A), then increased squid catches could occur without an increase in effort. If fishing effort increases under alternative 2F, then impacts to protected species would be slight negative due to an increase in the amount of time that small-mesh fishing gear is in the water and thus an increase in the potential for interactions between fishing gear and protected species. If alternative 2F causes an increase in CPUE or a change in the distribution of fishing effort without changing the overall amount of effort, then impacts to protected species would be neutral. The impacts of alternative 2F on protected species are thus expected to range from slight negative to neutral.

7.3.2.7. Protected Species Impacts of Alternative 2G (Combination of Alternatives 2B and 2E; Preferred Southern GRA Alternative)

Alternative 2G is the preferred Southern GRA alternative. It represents a combination of the 2012 and 2016 AP proposals and is designed to restore access to fishing areas for longfin squid. As described in more detail in section 7.1.2.7, it would decrease the amount of longfin squid found within the Southern GRA by 51%, compared to the *status quo* (alternative 2A; Table 16 and Table 17). Alternative 2G could result in a moderate increase in fishing effort, and therefore an increase in the amount of time that small-mesh fishing gear is in the water and thus an increase in the potential for interactions between fishing gear and protected species, in a 1,031 square nautical mile area during January 1 – March 15. If CPUE is higher under alternative 2G than under the *status quo* (alternative 2A), then increased catches could occur without an increase in effort. If alternative 2G causes an increase in CPUE or a change in the distribution of fishing effort without changing the overall amount of effort, then impacts to protected species would be neutral. The impacts of alternative 2G on protected species are thus expected to range from slight negative to neutral.

7.3.2.8. Protected Species Impacts of Alternative 2H (Southern GRA Expanded into Area 616)

Alternative 2H would expand the Southern GRA into statistical area 616. It would increase the amount of scup found in the southern GRA by 897%, the amount of longfin squid by 42%, the amount of black sea bass by 51%, and the amount of silver hake by 138%, compared to the *status quo* (alternative 2A; Table 16 and Table 17). It is expected to result in a substantial decrease in small-mesh fishing effort in an 880 square nautical mile area during January 1 – March 15. By reducing small-mesh fishing effort, it would reduce the amount of time that fishing gear is in the water and would thus decrease the potential for interactions between fishing gear and protected species. Although alternative 2H is expected to result in a substantial decrease in small-mesh fishing effort in an 880 square nautical mile area for three and a half months each year, it will not affect other gear types, other times of the year, and other areas, therefore the overall impacts on protected are expected to be moderately positive compared to the *status quo* (alternative 2A).

7.3.2.9. Protected Species Impacts of Alternative 2I (Eliminate the Southern GRA)

Alternative 2I would eliminate the Southern GRA. As described in more detail in section 7.1.2.9, NEFOP data suggest that fishing effort within the Southern GRA has decreased slightly since implementation of the GRAs (Table 15). Elimination of the Southern GRA could result in an increase in small-mesh fishing effort in a 3,117 square nautical mile area during January 1 - March 15. Alternatively, alternative 2I could result in a shift in the distribution of fishing effort without a change in the amount of effort. If effort increases, then impacts to protected species would be slight negative due to an increase in the amount of time that small-mesh fishing gear is in the water and thus an increase in the potential for interactions between fishing gear and physical habitat. If effort remains similar to the *status quo* (alternative 2A), then impacts to protected species would be neutral. The impacts of alternative 2I on protected species are thus expected to range from neutral to slight negative.

7.4. Socioeconomic Impacts

This section summarizes the expected socioeconomic impacts of each alternative. Alternatives which could result in increased landings of longfin squid, black sea bass, or silver hake are expected to have positive socioeconomic impacts. Alternatives which could result in decreased landings are expected to have negative socioeconomic impacts. The expected changes in landings under each alternative are based on the amount of longfin squid, black sea bass, and silver hake included in the GRAs under each alternative, compared to the *status quo* (section 7.1).

7.4.1. Socioeconomic Impacts of Northern GRA Alternatives

The expected socioeconomic impacts of the Northern GRA alternatives range from slight negative to positive. Of the three Northern GRA alternatives, alternative 1C has the highest potential for positive socioeconomic impacts, followed by alternative 1A, and then 1B.

7.4.1.1. Socioeconomic Impacts of Alternative 1A (*Status Quo* Northern GRA; Preferred Northern GRA Alternative)

Alternative 1A is the *status quo* Northern GRA alternative. It is the preferred Northern GRA alternative. As described in more detail in section 7.1.1, NEFOP data suggest that small-mesh fishing effort for longfin squid, black sea bass, and silver hake within the Northern GRA during November and December has decreased since implementation of the GRAs (Table 10); however, this change cannot be definitively attributed to the GRAs. If overall small-mesh fishing effort and resulting catches have not changed as a result of the GRAs, then alternative 1A will have continued neutral socioeconomic impacts by maintaining a *status quo* Northern GRA. If small-mesh fishing effort and/or catch has decreased due to the GRAs, then alternative 1A would have continued slight negative socioeconomic impacts on the longfin squid, black sea bass, and silver hake fisheries. Many advisors stated that the GRAs have negatively impacted their revenues from longfin squid fishing by preventing them from fishing in productive areas during certain times of the year.

As described in previous sections, the GRAs likely played a role in decreasing discard mortality of juvenile scup and may be partly responsible for the increase in scup SSB over the past several years (Terceiro and Miller 2014). In this way, the GRAs likely resulted in positive socioeconomic impacts for scup fisheries and alternative 1A would continue these positive socioeconomic impacts for the scup fishery.

Overall, because the Northern GRA has been component of baseline environmental conditions since 2000, and because the baseline has not changed substantially in recent years, alternative 1A is expected to have neutral socioeconomic impacts compared to the baseline.

7.4.1.2. Socioeconomic Impacts of Alternative 1B (Northern GRA Expanded into Area 613)

Alternative 1B would expand the Northern GRA into statistical area 613. As described in more detail in section 7.1.1.2, alternative 1B would increase the amount of scup, longfin squid, black sea bass, and silver hake found within the Northern GRA, and would thus decrease the amount of these species available to small-mesh fisheries during November and December in a 945 square nautical mile area (Table 12). Alternative 1B could thus reduce the potential profits of small-mesh fisheries by resulting in decreased landings during November and December and thus could result in slight negative socioeconomic impacts for those fisheries. If fishing effort shifts

out of the areas added to the Northern GRA under this alternative and into other areas, some negative economic impacts could be mitigated.

Alternative 1B could have long-term positive socioeconomic impacts for the associated fisheries if scup, longfin squid, black sea bass, or silver hake SSB increases in the future as a result of a decrease in small-mesh fishing effort in November and December. Alternative 1B would likely have a greater positive impacts on scup and black sea bass SSB than on longfin squid or silver hake SSB; it would nearly triple the protective value of the Northern GRA for scup and would nearly double the protective value of black sea bass (Table 12). In recent years (i.e. 2010-2014), the average value of scup in November and December was lower than that of longfin squid, black sea bass, and silver hake. The average value of black sea bass was much higher than the others (Table 19). Landings data from 2015 and 2016 (to date) are not summarized in this document; however, some AP members have reported that longfin squid prices in 2015 and in early 2016 were higher than in recent years due to high global demand and decreased landings in other parts of the world, in part due to El Niño.

Overall, the expected socioeconomic impacts of alternative 1B range from neutral to slight negative.

Table 19: Average dealer-reported value of scup, longfin squid, black sea bass, and silver hake during January-March and November-December from 2010 through 2014.

	Scup ($/lb)	**Longfin Squid ($/lb)**	**Black Sea Bass ($/lb)**	**Silver Hake ($/lb)**
Jan 1 - Mar 31	$0.58	$1.04	$3.33	$0.67
Nov 1 - Dec 31	$0.64	$1.06	$3.18	$0.78

7.4.1.3. Socioeconomic Impacts of Alternative 1C (Eliminate Northern GRA)

Alternative 1C would eliminate the Northern GRA and would allow vessels to fish for or possess longfin squid, black sea bass, and silver hake while using mesh smaller than 5.0 inches in a 1,489 square nautical mile area where they are currently prohibited from doing so during November and December. Alternative 1C is expected to have positive socioeconomic impacts for the small-mesh fisheries because it could allow for increased landings during November and December. It could result in negative socioeconomic impacts to the scup fishery if scup SSB is negatively impacted; however, fishing mortality for scup is not expected to increase to the extent that the sustainability of the scup stock is threatened. The Summer Flounder, Scup, and Black Sea Bass FMP contains accountability measures (AMs) which are implemented if the commercial scup annual catch limit (ACL) is exceeded. The ACL accounts for both landings and discards. If the ACL is exceeded, “repayments” in the form of quota deductions can be required in future years. Similar management measures exist for other managed species, including black sea bass and

silver hake. AMs thus provide some degree of protection against negative impacts due to catches in excess of the ACL.

7.4.2. Socioeconomic Impacts of Southern GRA Alternatives

The expected socioeconomic impacts of the Southern GRA alternatives range from negative to positive. Of the nine Southern GRA alternatives, alternative 2I has the highest potential for positive socioeconomic impacts, followed by alternatives 2E, 2G, 2F, 2D, 2C, 2B, 2A, and 2H, in that order.

7.4.2.1. Socioeconomic Impacts of Alternative 2A (*Status Quo* Southern GRA)

Alternative 2A is the *status quo* Southern GRA alternative. As described in more detail in section 7.1.2.1, NEFOP data suggest that small-mesh fishing effort for scup, longfin squid, black sea bass, and silver hake within the Southern GRA during January 1 – March 15 decreased slightly since implementation of the GRAs (Table 15); however, this change cannot be definitively attributed to the GRAs. If small-mesh fishing effort and resulting catches did not changed as a result of the GRAs, then alternative 1B would have continued neutral socioeconomic impacts. If small-mesh fishing effort and associated catches decreased since implementation of the GRAs, then alternative 2A would have continued negative socioeconomic impacts to small-mesh fisheries by continuing to restrain catches. Multiple advisors have stated that the scup GRAs, especially the Southern GRA, have negatively impacted their revenues from longfin squid fishing by preventing them from fishing in productive areas in the winter and early spring.

As described in previous sections, the GRAs likely played a role in decreasing discard mortality of juvenile scup and may be partly responsible for the increase in scup SSB over the past several years (Terceiro and Miller 2014). In this way, the GRAs may have resulted in positive socioeconomic impacts for scup fisheries and alternative 2A would continue these positive socioeconomic impacts for the scup fishery.

Overall, because the Southern GRA has been a component of baseline environmental conditions since late 2004, and because the baseline has not changed substantially in recent years, alternative 2A would have neutral biological impacts compared to the baseline.

7.4.2.2. Socioeconomic Impacts of Alternative 2B (2012 AP Proposal)

Alternative 2B is the 2012 AP proposal. As described in more detail in section 7.1.2.2, it would decrease the amount of scup, longfin squid, black sea bass, and silver hake found within the Southern GRA, and would thus increase the amount of those species available to capture with small-mesh in a 230 square nautical mile area during January 1 – March 15 (Table 17). Alternative 2B is intended to restore access to important areas for longfin squid fishing. The socioeconomic impacts of alternative 2B are expected to result mostly from changes in the amount of longfin squid available to small-mesh fisheries during January 1 – March 15.

According to AP members, global demand and ex-vessel prices for longfin squid in 2015 and 2016 (to date) were higher than in recent years, due in part to decreased squid landings in other parts of the world because of El Niño. If this trend continues, alternative 2B would be expected to result in an increase in longfin squid landings, and thus positive socioeconomic impacts compared to the *status quo* (alternative 2A).

Changes in the availability of scup are expected to have only slight positive economic impacts because vessels which use trawl mesh smaller than 5.0 inches in diameter (the only gear type affected by the Scup GRA regulations) may not possess more than 500 pounds of scup from November 1 through April 30[22] (which encompasses the times of year when both GRAs are in effect) and may not land scup that are smaller than 9 inches total length. Because of these limitations, alternative 2B is not expected to result in a substantial increase in the amount of scup landed during January 1 – March 15 each year.

Alternative 2B is not expected to result in a notable increase in the amount of black sea bass landed in commercial fisheries. Commercial black sea bass landings reached or exceeded 95% of the commercial quota in every year between 2007 and 2015. If recent trends in black sea bass landings continue, then alternative 2B will not result in a notable increase in black sea bass landings because an increase could cause the quota to be exceeded and would trigger accountability measures. Additionally, any increase in black sea bass landings as a result of alternative 2B would happen early in the year, because this alternative only affects small-mesh fisheries in certain areas during January 1-March 15. If NMFS anticipates that the commercial black sea bass quota will be exceeded prior to the end of the year, NMFS has the authority to close the fishery for the remainder of the year. Therefore, any increase in the amount of black sea bass landings early in the year as a result of alternative 2B could be offset by reduced landings later in the year, or in the following year if accountability measures are triggered.

Alternative 2B is not expected to result in a notable change in silver hake landings. It is expected to increase the amount of silver hake available to small-mesh fisheries during January 1 – March 15 by 23%, compared to the *status quo* Southern GRA; however, the amount of silver hake found within the Southern GRA is relatively low and a 23% change compared to the *status quo* represents a minor increase in absolute terms (Table 13, Table 17, and Table 18)

Overall, the socioeconomic impacts of alternative 2B are expected to be slightly to moderately positive due to potential increases in longfin squid landings and thus increased revenues for longfin squid fishermen.

[22] On May 23, 2016 NMFS published a proposed rule to increase this amount to 1,000 pounds of scup.

7.4.2.3. Socioeconomic Impacts of Alternative 2C (2012 AP Proposal with Coral Areas Removed)

Alternative 2C is the 2012 AP proposal with areas of overlap with the deep sea coral protection areas removed. As described in more detail in section 7.1.2.3, it would decrease the amount of scup, longfin squid, black sea bass, and silver hake found within the Southern GRA, and would thus increase the amount of those species available to capture with small-mesh in a 249 square nautical mile area during January 1 – March 15 (Table 17). For all of the same reasons as detailed in the previous section for alternative 2B, the socioeconomic impacts of alternative 2C are expected to result primarily from changes in longfin squid landings. Overall, the socioeconomic impacts of alternative 2C are expected to be slightly to moderately positive, compared to the *status quo* (alternative 2A).

7.4.2.4. Socioeconomic Impacts of Alternative 2D (Area 632 Removed from Southern GRA)

Alternative 2D would remove statistical area 632 from the Southern GRA. As described in more detail in section 7.1.2.4, it would slightly decrease the amount of longfin squid found within the Southern GRA and would thus slightly increase the amount of longfin squid available to capture with small-mesh in a 249 square nautical mile area during January 1 – March 15. It would result in very small changes in the amount of scup, black sea bass, and silver hake found within the Southern GRA (Table 17). Alternative 2D may result in a minor increase in small-mesh fishing effort for and catches of longfin squid. It is not expected to result in a change in fishing effort for or catches of other species. According to AP members, ex-vessel prices and global demand for longfin squid in 2015 and 2016 (to date) were higher than in recent years. If prices remain high, fishing effort for squid could increase under alternative 2D, despite the fact that alternative 2D would increase squid availability by only 11%, compared to the *status quo* (alternative 1B). Alternative 2D is thus expected to have neutral to slight positive socioeconomic impacts.

7.4.2.5. Socioeconomic Impacts of Alternative 2E (January 2016 AP Proposal)

Alternative 2E is the January 2016 AP proposal. As described in more detail in section 7.1.2.5, it would decrease the amount of scup, longfin squid, black sea bass, and silver hake found within the Southern GRA and would thus increase the amount of those species available to capture with small-mesh in a 1,108 square nautical mile area during January 1 – March 15 (Table 17). For all of the same reasons as detailed in section 7.4.2.2 for alternative 2B, the socioeconomic impacts of alternative 2E are expected to result primarily from changes in longfin squid landings. Overall, the socioeconomic impacts of alternative 2E are expected to be positive, compared to the *status quo* (alternative 2A).

Long-term negative socioeconomic impacts to the scup fishery could result if scup SSB is negatively impacted; however, fishing mortality for scup is not expected to increase to the extent that the sustainability of the scup stock is threatened. The Summer Flounder, Scup, and Black

Sea Bass FMP contains accountability measures (AMs) which are implemented if the commercial scup annual catch limit (ACL) is exceeded. The ACL accounts for both landings and discards. If the ACL is exceeded, "repayments" in the form of quota deductions can be required in future years. AMs thus provide some degree of protection against negative impacts due to catches in excess of the ACL.

7.4.2.6. Socioeconomic Impacts of Alternative 2F (Modified January 2016 AP Proposal)

Alternative 2F is a modified version of the January 2016 AP proposal. As described in more detail in section 7.1.2.6, it would decrease the amount of scup, longfin squid, black sea bass, and silver hake found within the Southern GRA and would thus increase the amount of those species available to capture with small-mesh in a 977 square nautical mile area during January 1 – March 15 (Table 17). For all of the same reasons as detailed in section 7.4.2.2 for alternative 2B, the socioeconomic impacts of alternative 2F are expected to result primarily from changes in longfin squid landings. Overall, the socioeconomic impacts of alternative 2F are expected to be positive, compared to the *status quo* (alternative 2A).

Long-term negative socioeconomic impacts to scup fisheries could result if scup SSB is negatively impacted; however, fishing mortality for scup is not expected to increase to the extent that the sustainability of the scup stock is threatened. The Summer Flounder, Scup, and Black Sea Bass FMP contains AMs which are implemented if the commercial scup ACL is exceeded. The ACL accounts for both landings and discards. If the ACL is exceeded, "repayments" in the form of quota deductions can be required in future years. AMs thus provide some degree of protection against negative impacts due to catches in excess of the ACL.

7.4.2.7. Socioeconomic Impacts of Alternative 2G (Combination of Alternatives 2B and 2E; Preferred Southern GRA Alternative)

Alternative 2G represents a combination of the 2012 and 2016 AP proposals and is the preferred Southern GRA alternative. As described in more detail in section 7.1.2.7, it would decrease the amount of scup, longfin squid, black sea bass, and silver hake found within the Southern GRA, and would thus increase the amount of those species available to capture with small-mesh in a 1,031 square nautical mile area during January 1 – March 15 (Table 17). For all of the same reasons as detailed in section 7.4.2.2 for alternative 2B, the socioeconomic impacts of alternative 2G are expected to result primarily from changes in longfin squid landings. Overall, the socioeconomic impacts of alternative 2G are expected to be positive, compared to the *status quo* (alternative 2A).

Long-term negative socioeconomic impacts to scup fisheries could result if scup SSB is negatively impacted; however, fishing mortality for scup is not expected to increase to the extent that the sustainability of the scup stock is threatened. The Summer Flounder, Scup, and Black Sea Bass FMP contains AMs which are implemented if the commercial scup ACL is exceeded.

The ACL accounts for both landings and discards. If the ACL is exceeded, “repayments” in the form of quota deductions can be required in future years. AMs thus provide some degree of protection against negative impacts due to catches in excess of the ACL.

7.4.2.8. Socioeconomic Impacts of Alternative 2H (Southern GRA Expanded into Area 616)

Alternative 2H would expand the Southern GRA into statistical area 616. As described in more detail in section 7.1.2.8, it would substantially increase the amount of scup, longfin squid, black sea bass, and silver hake found within the Southern GRA and would thus decrease the amount of those species available to capture with small-mesh in an 880 square nautical mile area during January 1 – March 15 (Table 17). Because alternative 2H would add Hudson Canyon, an important fishing area for many species, to the Southern GRA, it is expected to result in a decrease in small-mesh fishing effort and would likely lead to decreased landings in small-mesh fisheries during January 1 – March 15. As described in section 5.2.6, Hudson Canyon was once included in the GRAs, but was later removed due to concerns of severe negative economic impacts. Alternative 2H is expected to have negative socioeconomic impacts due to the potential for reduced landings of several species. Some negative impacts may be mitigated if fishing effort shifts to other areas to compensate for the expansion of the Southern GRA; however, overall, the socioeconomic impacts of alternative 2H are expected to be negative.

7.4.2.9. Socioeconomic Impacts of Alternative 2I (Eliminate Southern GRA)

Alternative 2I would eliminate the Southern GRA and would allow vessels to fish for or possess longfin squid, black sea bass, and silver hake while using mesh smaller than 5.0 inches in diameter in a 3,117 square nautical mile area where they are currently prohibited from doing so during January 1 – March 15. Alternative 2I is expected to have positive socioeconomic impacts for small-mesh fisheries because it could allow for increased landings of several species during January 1 – March 15. It could result in long-term negative socioeconomic impacts to scup fisheries if scup SSB is negatively impacted; however, fishing mortality for scup is not expected to increase to the extent that the sustainability of the scup stock is threatened. The Summer Flounder, Scup, and Black Sea Bass FMP contains AMs which are implemented if the commercial scup ACL is exceeded. The ACL accounts for both landings and discards. If the ACL is exceeded, “repayments” in the form of quota deductions can be required in future years. AMs thus provide some degree of protection against negative impacts due to catches in excess of the ACL.

7.5. Cumulative Effects Analysis

A cumulative effects analysis (CEA) is required by the Council on Environmental Quality (CEQ; 40 CFR part 1508.7). The purpose of CEA is to consider the combined effects of many actions on the human environment over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of

an action from every conceivable perspective. The intent is rather to focus on those effects that are truly meaningful. A formal cumulative impact assessment is not necessarily required under NEPA as part of an EA as long as the significance of cumulative impacts have been considered. The following remarks address the significance of the expected cumulative impacts as they relate to the federally managed scup, longfin squid, black sea bass, and silver hake fisheries.

7.5.1. Consideration of the VECs

The VECs that exist within the scup, longfin squid, black sea bass, and silver hake fishery environment are identified in section 6.0. The significance of the cumulative effects will be discussed in relation to the following VECs:

- The managed stocks most directly affected by the Scup GRA regulations (i.e. scup, longfin squid, black sea bass, and silver hake) and non-target species caught in fisheries for those stocks,
- Habitat for the managed stocks and non-target species,
- Species afforded protection under the ESA and/or the MMPA, and
- Human communities (the social and economic aspects of the affected environment).

7.5.2. Geographic Boundaries

The analysis of impacts focuses on actions related to the harvest of scup, longfin squid, black sea bass, and silver hake within the boundaries of the scup GRAs during the effective times of the year. The core geographic scope for each of the VECs is focused on the Western Atlantic Ocean (section 6). The management units are the core geographic scopes for the managed resources (section 6.1). For non-target species, the ranges may be expanded and would depend on the biological range of each individual non-target species in the Western Atlantic Ocean. The core geographic scope for habitat impacts is focused on EFH within the EEZ but includes all habitat utilized by scup, longfin squid, black sea bass, silver hake, and non-target species in the Western Atlantic Ocean. The core geographic scope for endangered and protected species can be considered the overall range of these species in the Western Atlantic Ocean. The core geographic boundaries for human communities are defined as those U.S. fishing communities directly involved in the harvest or processing of the managed resources and which are located in coastal states from Maine through North Carolina.

7.5.3. Temporal Boundaries

The temporal scope of past and present actions for VECs is primarily focused on actions that have occurred after 2000, when the scup GRAs were first implemented. The temporal scope of future actions for all five VECs extends about three years (2021) into the future beyond the analyzed time frame of the proposed actions in this document. The dynamic nature of resource

management for the managed species and lack of information on projects that may occur in the future make it very difficult to predict impacts beyond this timeframe with any certainty.

7.5.4. Actions Other Than Those Proposed in this Document

The impacts of each of the alternatives considered in this document are described in sections 7.1 through 7.4. Table 20 presents meaningful past (P), present (Pr), or reasonably foreseeable future (RFF) actions to be considered other than those actions considered in this specifications document. These impacts are described in chronological order and qualitatively, as the actual impacts of these actions are too complex to be quantified in a meaningful way. When any of these abbreviations (P, Pr, or RFF), occur together it indicates that some past actions are still relevant to the present and/or future actions.

Past and Present Actions

The historical management practices of the Mid-Atlantic and New England Fishery Management Councils have resulted in positive impacts on the health of the scup, longfin squid, black sea bass, and silver hake stocks (section 6.1). The Councils have taken numerous actions to manage the commercial and recreational fisheries for these species through amendment and framework adjustment actions. The MSA is the statutory basis for Federal fisheries management. To the degree with which this regulatory regime is complied, the cumulative impacts of past, present, and reasonably foreseeable future federal fishery management actions on the VECs should generally be associated with positive long-term outcomes. Constraining fishing effort through regulatory actions can often have negative short-term socioeconomic impacts. These impacts are usually necessary to bring about long-term sustainability of a given resource, and as such should, in the long-term, promote positive effects on human communities.

Non-fishing activities that introduce chemical pollutants, sewage, changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment pose a risk to all the identified VECs. Human-induced non-fishing activities tend to be localized in nearshore areas and marine project areas where they occur. Examples of these activities include, but are not limited to agriculture, port maintenance, beach nourishment, coastal development, marine transportation, marine mining, dredging and the disposal of dredged material. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and as such may indirectly constrain the sustainability of the managed resources, non-target species, and protected species. Decreased habitat suitability would tend to reduce the tolerance of these VECs to the impacts of fishing effort. Mitigation of this outcome through regulations that would reduce fishing effort could then negatively impact human communities. The overall impact to the affected species and their habitats on a population level is unknown, but likely to be neutral to low negative, since a large portion of these species have a limited or minor exposure to these local non-fishing perturbations.

In addition to guidelines mandated by the MSA, NMFS reviews these types of effects through the review processes required by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act for certain activities that are regulated by federal, state, and local authorities. The jurisdiction of these activities is in "waters of the U.S." and includes both riverine and marine habitats.

Reasonably Foreseeable Future Actions

For many of the proposed non-fishing activities to be permitted under other federal agencies (e.g. beach nourishment, offshore wind facilities, etc.), those agencies would conduct examinations of potential impacts on the VECs. The MSA (50 CFR 600.930) imposes an obligation on other federal agencies to consult with the Secretary of Commerce on actions that may adversely affect EFH. The eight Fishery Management Councils are engaged in this review process by making comments and recommendations on any federal or state action that may affect habitat, including EFH, for their managed species and by commenting on actions likely to substantially affect habitat, including EFH.

In addition to mortality on the scup stock due to fishing, there are other indirect effects from non-fishing anthropogenic activities in the Atlantic Ocean (e.g. climate change, point source and non-point source pollution, shipping, dredging, etc.); however, these effects are generally difficult to quantify.

Under the Fish and Wildlife Coordination Act (section 662), “whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the U.S., or by any public or private agency under federal permit or license, such department or agency first shall consult with the U.S. Fish and Wildlife Service (USFWS), Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular state wherein the” activity takes place. This act provides another avenue for review of actions by other federal and state agencies that may impact resources that NMFS manages in the reasonably foreseeable future.

NMFS and the USFWS share responsibility for implementing the ESA. The ESA requires NMFS to designate "critical habitat" (i.e. areas that contain physical or biological features essential to conservation, which may require special management considerations or protection) for any species it lists under the ESA and to develop and implement recovery plans for threatened and endangered species. The ESA provides another avenue for NMFS to review actions by other entities that may impact endangered and protected species whose management units are under NMFS’ jurisdiction.

Table 20: Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this document).

Action	**Description**	**Impacts on Scup and Other Species**	**Impacts on Habitat and EFH**	**Impacts on Protected Species**	**Impacts on Human Communities**
P, Pr Original FMPs and subsequent FMP Amendments and Frameworks	Established commercial and recreational management measures	**Indirect Positive** Regulatory tool available to rebuild and manage stocks and to regulate fishing effort	**Indirect Positive** Reduced fishing effort	**Indirect Positive** Reduced fishing effort	**Indirect Positive** Benefited domestic businesses
P, Pr, RFF Specifications for managed resources	Establish quotas, recreational harvest limits, and other fishery regulations (commercial and recreational)	**Indirect Positive** Regulatory tool to specify catch limits, and other regulations; allows response to annual stock updates	**Indirect Positive** Reduced effort levels; gear requirements	**Indirect Positive** Reduced effort levels; gear requirements	**Indirect Positive** Benefited domestic businesses
P, Pr, RFF Standardized Bycatch Reporting Methodology	Established acceptable level of precision and accuracy for monitoring of bycatch in fisheries	**Neutral** May improve data quality for monitoring total removals	**Neutral** Will not affect distribution of effort	**Neutral** May increase observer coverage and will not affect distribution of effort	**Uncertain – Likely Indirect Negative** May impose an inconvenience on vessel operations
P, Pr, RFF Agricultural runoff	Nutrients applied to agricultural land are introduced into aquatic systems	**Indirect Negative** Reduced habitat quality	**Direct Negative** Reduced habitat quality	**Indirect Negative** Reduced habitat quality	**Indirect Negative** Reduced habitat quality negatively affects resource
P, Pr, RFF Port maintenance	Dredging of coastal, port and harbor areas for port maintenance	**Uncertain – Likely Indirect Negative** Dependent on mitigation effects	**Uncertain – Likely Direct Negative** Dependent on mitigation effects	**Uncertain – Likely Indirect Negative** Dependent on mitigation effects	**Uncertain – Likely Mixed** Dependent on mitigation effects

Table 20 (continued): Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this document).

Action	Description	Impacts on Scup and Other Species	Impacts on Habitat and EFH	Impacts on Protected Species	Impacts on Human Communities
P, Pr, RFF Beach nourishment	Offshore mining of sand for beaches	**Indirect Negative** Localized decreases in habitat quality	**Direct Negative** Reduced habitat quality	**Indirect Negative** Localized decreases in habitat quality	**Mixed** Positive for mining companies, possibly negative for fishing industry
	Placement of sand to nourish beach shorelines	**Indirect Negative** Localized decreases in habitat quality	**Direct Negative** Reduced habitat quality	**Indirect Negative** Localized decreases in habitat quality	**Positive** Beachgoers like sand; positive for tourism
P, Pr, RFF Marine transportation	Expansion of port facilities, vessel operations and recreational marinas	**Indirect Negative** Localized decreases in habitat quality	**Direct Negative** Reduced habitat quality	**Indirect Negative** Localized decreases in habitat quality	**Mixed** Positive for some interests, potential displacement for others
P, Pr, RFF Offshore disposal of dredged materials	Disposal of dredged materials	**Indirect Negative** Reduced habitat quality	**Direct Negative** Reduced habitat quality	**Indirect Negative** Reduced habitat quality	**Indirect Negative** Reduced habitat quality negatively affects resource viability
P, Pr, RFF Renewable and Non-renewable Offshore and Nearshore Energy Development	Transportation of oil, gas, and electric through pipelines &cables; Construction of oil platforms, wind facilities, liquefied natural gas facilities; Additional port development infrastructure	**Uncertain – Likely Indirect Negative** Dependent on mitigation effects	**Uncertain – Likely Direct Negative** Reduced habitat quality; offshore platforms may benefit structure oriented fish species habitat	**Uncertain - Likely Direct Negative** Dependent on mitigation effects	**Uncertain – Likely Mixed** Dependent on mitigation effects

Table 20 (continued): Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this document).

Action	Description	Impacts on Scup and Other Species	Impacts on Habitat and EFH	Impacts on Protected Species	Impacts on Human Communities
[P, Pr, RFF] Deep Sea Corals Amendment to the Mackerel, Squid, and Butterfish FMP	Prohibits the use of bottom-tending gear in certain areas known or highly likely to contain deep sea corals.	**Direct Positive** If areas protected from bottom trawling result in increased productivity	**Direct Positive** Reduced gear impacts in protected areas	**Direct Positive** Reduced likelihood of gear interactions in protected areas	**Mixed** Negative impacts to fishermen who previously used bottom-tending gear in protected areas; positive impacts due to potential increased productivity for some species.
[RFF] Unmanaged Forage Omnibus Amendment	Will prohibit the development of new and expansion of existing directed commercial fisheries on unmanaged forage species in Mid-Atlantic Federal waters until the Council has had the opportunity to consider available scientific information and potential impacts	**Indirect Positive** Is intended to protect the food source for a variety of species in the Mid-Atlantic	**Neutral** Is not likely to result in a substantial change in overall fishing effort.	**Indirect Positive** Is intended to protect the food source for a variety of species in the Mid-Atlantic	**Mixed** Could have positive impacts by maintaining a food source for several fish stocks. Could have negative impacts for fishermen who already harvest unmanaged forage species.
[RFF] Convening of Take Reduction Teams (periodically)	Recommend measures to reduce mortality and injury to marine mammals and sea turtles	**Indirect Positive** Will improve data quality for monitoring total removals; Reducing availability of gear could reduce bycatch	**Indirect Positive** Reducing availability of gear could reduce gear impacts	**Indirect Positive** Reducing availability of gear could reduce encounters	**Indirect Negative** Reducing availability of gear could reduce revenues

7.5.5. Magnitude and Significance of Cumulative Effects

In determining the magnitude and significance of the cumulative effects, the additive and synergistic effects of the proposed action, as well as past, present, and future actions, must be taken into account. The following section discusses the effects of these actions on each of the VECs.

7.5.5.1. Magnitude and Significance of Cumulate Effects on Scup, Longfin Squid, Black Sea Bass, Silver Hake, and Other Non-Target Species

Those past, present, and reasonably foreseeable future actions whose effects may impact the managed resources (i.e. stocks of scup, longfin squid, black sea bass, silver hake, and other non-target species), and the direction of those potential impacts, are summarized in Table 21. The indirectly negative actions described in Table 21 are localized in nearshore areas and marine areas where the projects occur. Therefore, the magnitude of those impacts on the managed resources is expected to be limited due to a lack of exposure to the population at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude; however, the impact on productivity of the managed resources is not quantifiable. NMFS has several means under which it can review non-fishing actions of other federal or state agencies that may impact NMFS' managed resources prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on resources under NMFS' jurisdiction.

Past fishery management actions taken through the respective FMPs and the annual specification process have had a positive cumulative effect on the managed resources. It is anticipated that the future management actions described in Table 21 will result in additional indirect positive effects on the managed resources through actions which reduce and monitor bycatch, protect habitat, and protect the ecosystem services on which scup, longfin squid, black sea bass, and silver hake productivity depends. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to the managed resources have had a positive cumulative effect.

Catch limits, commercial quotas and recreational harvest limits for each of the managed resources have been specified to ensure these rebuilt stocks are managed in a sustainable manner, and measures are consistent with the objectives of the FMP under the guidance of the MSA. The impacts of annual specification of management measures established in previous years on the managed resources are largely dependent on how effective those measures were in meeting the objectives of preventing overfishing and achieving optimum yield (OY), and on the extent to which mitigating measures were effective. The proposed actions described in this document would positively reinforce the past and anticipated positive cumulative effects on the scup stock, by achieving the objectives specified in the FMP. Therefore, the proposed action would not have

any significant effect on the managed resources individually or in conjunction with other anthropogenic activities (Table 21).

Table 21: Summary of the effects of past, present, and reasonably foreseeable future actions on the managed resources, including target and non-target species.

Action	Past to the Present	Reasonably Foreseeable Future
Original FMPs and subsequent amendments and frameworks	**Indirect Positive**	
Annual specifications	**Indirect Positive**	
Standardized Bycatch Reporting Methodology	**Neutral**	
Agricultural runoff	**Indirect Negative**	
Port maintenance	**Uncertain – Likely Indirect Negative**	
Beach nourishment – offshore sand mining	**Indirect Negative**	
Beach nourishment – sand placement	**Indirect Negative**	
Marine transportation	**Indirect Negative**	
Offshore disposal of dredged materials	**Indirect Negative**	
Renewable and non-renewable offshore and nearshore energy development	**Uncertain – Likely Indirect Negative**	
Deep Sea Corals Amendment		**Direct Positive**
Unmanaged Forage Omnibus Amendment		**Indirect Positive**
Convening Gear Take Reduction Teams (periodically)		**Indirect Positive**
Summary of past, present, and future actions excluding those proposed in this document	**Overall, actions have had, or will have, positive impacts on the managed resources**	

7.5.5.2. Magnitude and Significance of Cumulate Effects on Habitat

Those past, present, and reasonably foreseeable future actions, whose effects may impact habitat (including EFH), and the direction of those potential impacts, are summarized in (Table 22). The direct and indirect negative actions described in Table 22 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on habitat is expected to be limited due to a lack of exposure to habitat at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude; however, the impact on habitat and EFH is not quantifiable. NMFS has several means under which it can review non-fishing actions of other federal or state agencies that may impact NMFS' managed resources and the habitat on which they rely prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of direct and indirect negative impacts those actions could have on habitat utilized by resources under NMFS' jurisdiction.

Past fishery management actions taken through the respective FMPs and annual specification process have had a positive cumulative effect on habitat and EFH. The actions have constrained fishing effort at a large scale and locally and have implemented gear requirements which may reduce habitat impacts. As required under these FMP actions, EFH and Habitat Areas of Particular Concern were designated for the managed resources. It is anticipated that the future management actions, described in Table 22, will result in additional direct or indirect positive effects on habitat through actions which protect EFH for federally-managed species and protect ecosystem services on which these species' productivity depends. These impacts could be broad in scope. All of the VECs are interrelated; therefore, the linkages among habitat quality and EFH, managed resources and non-target species productivity, and associated fishery yields should be considered. For habitat and EFH, there are direct and indirect negative effects from actions which may be localized or broad in scope; however, positive actions that have broad implications have been, and will likely continue to be, taken to improve the condition of habitat. Some actions, such as coastal population growth and climate change may indirectly impact habitat and ecosystem productivity; however, these actions are beyond the scope of NMFS and Council management. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to habitat have had a neutral to positive cumulative effect.

The proposed actions described in this document would not significantly change the past and anticipated cumulative effects on habitat and thus would not have any significant effect on habitat individually or in conjunction with other anthropogenic activities (Table 22).

Table 22: Summary of the effects of past, present, and reasonably foreseeable future actions on the habitat and EFH.

Action	Past to the Present	Reasonably Foreseeable Future
Original FMPs and subsequent amendments and frameworks	**Indirect Positive**	
Annual specifications	**Indirect Positive**	
Standardized Bycatch Reporting Methodology	**Neutral**	
Agricultural runoff	**Direct Negative**	
Port maintenance	**Uncertain – Likely Direct Negative**	
Beach nourishment – offshore sand mining	**Direct Negative**	
Beach nourishment – sand placement	**Direct Negative**	
Marine transportation	**Direct Negative**	
Offshore disposal of dredged materials	**Direct Negative**	
Renewable and non-renewable offshore and nearshore energy development	**Uncertain – Likely Direct Negative**	
Deep Sea Corals Amendment		**Direct Positive**
Unmanaged Forage Omnibus Amendment		**Neutral**
Convening Gear Take Reduction Teams (periodically)		**Indirect Positive**
Summary of past, present, and future actions excluding those proposed in this document	**Overall, actions have had, or will have, neutral to positive impacts on habitat, including EFH**	

7.5.5.3. Magnitude and Significance of Cumulate Effects on ESA Listed and MMPA Protected Species

Those past, present, and reasonably foreseeable future actions, whose effects may impact ESA listed and MMPA protected species, and the direction of those potential impacts, are summarized in Table 23. The indirectly negative actions described in Table 23 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on protected species, relative to the range of many of the protected species, is expected to be limited due to a lack of exposure to the population at large. Agricultural runoff may be much broader in scope and the impacts of nutrient inputs to the coastal system may be of a larger magnitude; however, the impact on protected species is not quantifiable. NMFS has several means under which it can review non-fishing actions of other federal or state agencies that may impact NMFS' protected species prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on protected species under NMFS' jurisdiction.

Past fishery management actions taken through the respective FMPs and annual specification process have had a positive cumulative effect on protected species through the reduction of

fishing effort (and thus reduction in potential interactions) and implementation of gear requirements. It is anticipated that future management actions, described in Table 23, will result in additional indirect positive effects on the protected species. These impacts could be broad in scope. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to protected species have had a positive cumulative effect.

The proposed actions described in this document would not change the past and anticipated cumulative effects on protected species and thus would not have any significant effect on protected species individually or in conjunction with other anthropogenic activities (Table 23).

Table 23**:** Summary of the effects of past, present, and reasonably foreseeable future actions on protected species.

Action	Past to the Present	Reasonably Foreseeable Future
Original FMP and subsequent amendments and frameworks	**Indirect Positive**	
Annual specifications	**Indirect Positive**	
Standardized Bycatch Reporting Methodology	**Neutral**	
Agricultural runoff	**Indirect Negative**	
Port maintenance	**Uncertain – Likely Indirect Negative**	
Beach nourishment – offshore sand mining	**Indirect Negative**	
Beach nourishment – sand placement	**Indirect Negative**	
Marine transportation	**Indirect Negative**	
Offshore disposal of dredged materials	**Indirect Negative**	
Renewable and non-renewable offshore and nearshore energy development	**Uncertain – Likely Direct Negative**	
Deep Sea Corals Amendment		**Direct Positive**
Unmanaged Forage Omnibus Amendment		**Indirect Positive**
Convening Gear Take Reduction Teams (periodically)		**Indirect Positive**
Summary of past, present, and future actions excluding those proposed in this document	**Overall, actions have had, or will have, positive impacts on protected species**	

7.5.5.4. Magnitude and Significance of Cumulate Effects on Human Communities

Those past, present, and reasonably foreseeable future actions, whose effects may impact human communities and the direction of those potential impacts, are summarized in Table 24. The indirectly negative actions described in Table 24 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on human communities is expected to be limited in scope. Those actions may, however, displace fishermen from project areas. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal ecosystem may be of a larger magnitude. This may result in indirect negative impacts on human communities by reducing resource availability; however, this effect is not quantifiable. NMFS has several means under which it can review non-fishing actions of other federal or state agencies prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on human communities.

Past fishery management actions taken through the respective FMPs and annual specification process have had both positive and negative cumulative effects by benefiting domestic fisheries through sustainable fishery management practices, while at the same time potentially reducing the availability of the resource to all participants. Sustainable management practices are, however, expected to yield broad positive impacts to fishermen, their communities, businesses, and the nation as a whole. It is anticipated that the future management actions, described in Table 24, will result in positive effects for human communities due to sustainable management practices, although additional indirect negative effects on the human communities could occur through management actions if they result in reduced revenues. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to human communities have had an overall positive cumulative effect.

Catch limits, commercial quotas, and recreational harvest limits for each of the managed resources have been specified to ensure these rebuilt stocks are managed in a sustainable manner, and measures are consistent with the objectives of the FMP under the guidance of the MSA. The impacts from annual specification measures established in previous years on the managed resources are largely dependent on how effective those measures were in meeting their intended objectives and the extent to which mitigating measures were effective. Overages may alter the timing of commercial fishery revenues (revenues realized a year earlier), and there may be impacts on some fishermen caused by unexpected reductions in their opportunities to earn revenues in the commercial fisheries in the year during which the overages are deducted. Similarly recreational fisheries may have decreased harvest opportunities due to reduced harvest limits as a result of overages, or more restrictive management measures such as minimum fish size, possession limits, fishing seasons that must be implemented to address overages.

Despite the potential for negative short-term effects on human communities, positive long-term effect on human communities are expected due to the long-term sustainability of the managed

stocks. Overall, the proposed actions described in this document would not change the past and anticipated cumulative effects on human communities and thus, would not have any significant effect on human communities individually, or in conjunction with other anthropogenic activities (Table 24).

Table 24: Summary of the effects of past, present, and reasonably foreseeable future actions on human communities.

Action	Past to the Present	Reasonably Foreseeable Future
Original FMPs and subsequent amendments and frameworks	**Indirect Positive**	
Annual specifications	**Indirect Positive**	
Standardized Bycatch Reporting Methodology	**Uncertain – Likely Indirect Negative**	
Agricultural runoff	**Indirect Negative**	
Port maintenance	**Uncertain – Likely Mixed**	
Beach nourishment – offshore sand mining	**Mixed**	
Beach nourishment – sand placement	**Positive**	
Marine transportation	**Mixed**	
Offshore disposal of dredged materials	**Indirect Negative**	
Renewable and non-renewable offshore and nearshore energy development	**Uncertain – Likely Mixed**	
Deep Sea Corals Amendment		**Mixed**
Unmanaged Forage Omnibus Amendment		**Mixed**
Convening Gear Take Reduction Teams (periodically)		**Indirect Negative**
Summary of past, present, and future actions excluding those proposed in this document	**Overall, actions have had, or will have, positive impacts on human communities.**	

7.5.5.5. Cumulative Effects of Preferred Action on all VECs

The Council's preferred alternatives (alternatives 1A and 2G) are described in section 5.1.1 and section 5.2.7. The direct and indirect impacts of the proposed action on the VECs are described in section 7. The magnitude and significance of the cumulative effects, including additive and synergistic effects of the proposed actions, as well as past, present, and future actions, have been taken into account.

When considered in conjunction with all other pressures placed on the fisheries by past, present, and reasonably foreseeable future actions, the preferred alternatives are not expected to result in any significant impacts, positive or negative. Implementation of the measures listed in previous sections are expected to generate positive impacts by maintaining optimal stock sizes and by allowing optimal yield to be taken while minimizing adverse impacts to the environment. The

preferred alternatives are consistent with other management measures (i.e. commercial quotas and recreational harvest limits) that have been implemented in the past for these fisheries. These measures are part of a broader management scheme for the scup fishery. This management scheme has helped to rebuild the scup stock and ensure long-term sustainability, while minimizing environmental impacts.

The regulatory atmosphere within which Federal fishery management operates requires that management actions be taken in a manner that will optimize the conditions of resources, habitat, and human communities. Consistent with NEPA, the MSA requires that management actions be taken only after consideration of impacts to the biological, physical, economic, and social dimensions of the human environment. As long as management continues to prevent overfishing, the fisheries and their associated communities should continue to benefit. As noted above, the development of the FMPs and subsequent amendments and frameworks impacted the VECs. Given this regulatory environment, and because fishery management actions must strive to create and maintain sustainable resources, impacts on all VECs from past, present and reasonably foreseeable future actions, when combined with baseline conditions, have generally been positive and are expected to continue in that manner for the foreseeable future. This is not to say that some aspects of the various VECs are not experiencing impacts, but rather that when taken as a whole and as a result of the management measure implemented in these fisheries, the overall long-term trend is positive (Table 25).

There are no significant cumulative effects associated with the preferred alternatives based on the information and analyses presented in this document and in past FMP documents (Table 25). Cumulatively, through 2021, it is anticipated that the preferred alternatives will result in generally positive impacts on the all VECs. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to the VECs have had a neutral to positive cumulative effect.

Table 25: Magnitude and significance of the cumulative, additive, and synergistic effects of the 2016-2018 preferred alternatives, as well as past (P), present (PR), and reasonably foreseeable future (RFF) actions.

VEC	Status in 2015	Net Impact of P, Pr, and RFF Actions	Impact of the Preferred Alternatives	Significant Cumulative Effects
Scup, longfin squid, black sea bass, silver hake, and other non-target species	Complex and variable (section 6.1)	Positive (sections 7.5.4 and 7.5.5.1)	Slight to moderate negative (section 7.1.2.7)	**None**
Habitat	Complex and variable (section 6.2)	Neutral to positive (sections 7.5.4 and 7.5.5.2)	Neutral to slight negative (section 7.2.2.7)	**None**
Protected species	Complex and variable (section 6.3)	Positive (sections 7.5.4 and 7.5.5.3)	Neutral to slight negative (section 7.3.2.7)	**None**
Human communities	Complex and variable (section 6.4)	Positive (sections 7.5.4 and 1.1.1.1)	Positive (section 7.4.2.7)	**None**

8. APPLICABLE LAWS

8.1. Magnuson-Stevens Fishery Conservation and Management Act (MSA)

8.1.1. National Standards

Section 301 of the MSA requires that FMPs contain conservation and management measures that are consistent with the ten National Standards. The most recent FMP amendments describe how the management actions implemented comply with the National Standards. The Council continues to meet the obligations of National Standard 1 by adopting and implementing conservation and management measures that will continue to prevent overfishing, while achieving, on a continuing basis, the optimum yield (OY) for scup, longfin squid, black sea bass, and silver hake fisheries and the U.S. fishing industry. The Council uses the best scientific information available (National Standard 2) and manages scup, longfin squid, and the northern stock of black sea bass throughout their range. The New England Council manages silver hake throughout its range (National Standard 3). These management measures do not discriminate among residents of different states (National Standard 4) and they do not have economic allocation as their sole purpose (National Standard 5). The measures account for variations in these fisheries (National Standard 6), they avoid unnecessary duplication (National Standard 7), they take into account the fishing communities (National Standard 8) and they promote safety at sea (National Standard 10). The proposed actions are consistent with National Standard 9, which addresses bycatch in fisheries. The Council has implemented many regulations, including the scup GRAs, which have indirectly reduced fishing gear impacts on EFH. By continuing to meet

the National Standards requirements of the MSA through future FMP amendments, framework actions, and the annual specification setting process, the Council will insure that cumulative impacts of these actions will remain positive overall for the managed resources, the ports and communities that depend on these fisheries, and the Nation as a whole.

8.2. NEPA FINDING OF NO SIGNIFICANT IMPACT (FONSI)

National Oceanic and Atmospheric Administration Administrative Order 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action (i.e. the preferred alternatives). In addition, the CEQ regulations at 40 CFR §1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

1) Can the proposed action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?

None of the alternatives proposed in this document are expected to jeopardize the sustainability of any of the target species affected by the action (i.e. scup, longfin squid, black sea bass, and silver hake). The alternatives under consideration would impact scup discards in small-mesh fisheries. Scup SSB is currently more than double the target biomass level. Any alternatives which could cause an increase in scup discards are not expected to do so to the extent that they jeopardize the scup stock. The alternatives could also change the amount of longfin squid, black sea bass, and silver hake available to small-mesh fisheries during certain times of the year. These fisheries are regulated with commercial fishery quotas, gear regulations, and other measures. The alternatives under consideration through this framework will not modify the quotas or other commercial measures for these species and are thus not expected to jeopardize the sustainability of these fisheries (section 7.1).

2) Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?

None of the alternatives presented in this document are expected to jeopardize the sustainability of any non-target species, including ESA and MMPA protected species. Some of the alternatives are expected to result in changes in small-mesh fishing effort in certain areas for a few months each year; however, these changes are not expected to threaten non-target species (sections 7.1 and 7.3).

3) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?

The proposed action is not expected to cause substantial damage to the ocean, coastal habitats, and/or EFH as defined under the MSA and identified in the FMP. The small-mesh trawl gear impacted by the proposed action does have the potential to negatively impact habitat and EFH. The proposed action could lead to an increase in small-mesh fishing effort in certain areas during January 1 through March 15; however, adverse impacts to benthic habitats is not expected to be substantial (section 7.2).

4) Can the proposed action be reasonably expected to have a substantial adverse impact on public health or safety?

None of the alternatives will alter the manner in which the industry conducts fishing activities for the target species. Therefore, no changes in fishing behavior that would affect safety are anticipated. The overall effect of the proposed action on these fisheries, including the communities in which they operate, will not adversely impact public health or safety.

5) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

None of the alternatives presented in this document are expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of those species. Some of the alternatives are expected to result in changes in small-mesh fishing effort in certain areas for a few months each year; however, these changes are not expected to result in substantial negative impacts to protected species or habitats (sections 7.2 and 7.3).

6) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g. benthic productivity, predator-prey relationships, etc.)?

The proposed action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area. Some of the alternatives are expected to result in changes in small-mesh fishing effort in certain areas for a few months each year in certain areas; however, none of these changes are expected to be substantial enough to impact biodiversity and/or ecosystem function within the affected area.

7) Are significant social or economic impacts interrelated with natural or physical environmental effects?

The proposed action is not expected to have a substantial impact on the natural or physical environment. Some of the alternatives, including one of the preferred alternatives (alternative 2G), are expected to result in a change in small-mesh fishing effort in certain areas for a few

months each year; however, none of the alternatives are expected to cause fishing effort to increase to a level that results in a significant impact on the natural or physical environment (section 7).

8) Are the effects on the quality of the human environment likely to be highly controversial?

The proposed action would modify the boundaries of the Southern Scup Gear Restricted Area and is expected to result in an increase in small-mesh fishing effort in certain areas during January 1 through March 15. This proposed change is informed by NEFOP data, NEFSC trawl survey data, and recommendations from advisors, and is not expected to jeopardize any stocks or threaten the sustainability of any fisheries. The proposed action is therefore not expected to be highly controversial.

9) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?

The proposed action is expected to result in an increase in small-mesh fishing effort in certain areas during January 1 through March 15. Other types of commercial fishing already occur in these areas during this time of year. Small-mesh fishing effort is not restricted in these areas during other times of the year. It is possible that historic or cultural resources such as shipwrecks could be present in these areas; however, vessels try to avoid fishing too close to wrecks due to possible loss or entanglement of fishing gear. It is not likely that the proposed action would result in substantial impacts to unique areas.

10) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

The impacts of the preferred alternatives on the human environment are described in section 7.4. The proposed action is informed by advisor recommendations, NEFOP and NEFSC trawl survey data, and is not expected to have highly uncertain effects or to involve unique or unknown risks on the human environment.

11) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

As discussed in section 7.5, the preferred alternatives are not expected to have individually insignificant, but cumulatively significant impacts. The synergistic interaction of improvements in the efficiency of the fishery is expected to generate insignificant positive impacts overall. The proposed action, together with past, present, and reasonably foreseeable future actions, are not expected to result in significant cumulative impacts on the biological, physical, and human components of the environment.

12) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

There are no districts, sites, highways, structures, or objects, including shipwrecks, listed in or eligible for listing in the National Register of Historical Places that will be affected by the proposed action; none are found within the area which would be removed from the Southern GRA under the preferred alternatives.

13) Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?

There is no evidence or indication that the fisheries impacted by the Scup GRAs have ever resulted in the introduction or spread of nonindigenous species; therefore, it is highly unlikely that the proposed action would result in the introduction or spread of a non-indigenous species.

14) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

The proposed action is not expected to results in significant effects, nor does it represent a decision in principle about a future consideration. The impact of any future changes to the Scup GRAs will be analyzed as to their significance in the process of developing future framework actions.

15) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

The proposed action is not expected to alter fishing methods or activities such that they threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment. The proposed measures have been found to be consistent with other applicable laws (sections 8.1 through 8.11).

16) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

The impacts of the proposed action on the biological, physical, and human environment are described in section 7. The cumulative effects of the proposed action on target and non-target species, including ESA and MMPA protected species, are detailed in section 7.5. The proposed action is not expected to result in cumulate adverse effects that could have a substantial effect on target or non-target species.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting EA prepared for Framework Adjustment 9 to the Summer Flounder, Scup, and Black Sea Bass FMP, it is hereby determined that the proposed actions will not significantly impact the quality of the human environment as described above and in the EA. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

_____ _____

Regional Administrator for GARFO, NMFS, NOAA *Date*

8.3. Endangered Species Act

Sections 6.3 and 7.3 contain an assessment of the impacts of the proposed action on endangered species and protected resources. This action is not expected to affect endangered or threatened species or critical habitat in any manner not considered in previous consultations on the fisheries.

8.4. Marine Mammal Protection Act

Sections 6.3 and 7.3 contain an assessment of the impacts of the proposed action on endangered species and protected species. This action is not expected to affect endangered or threatened species or critical habitat in any manner not considered in previous consultations on the fisheries.

8.5. Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972, as amended, provides measures for ensuring productive fishery habitat while striving to balance development pressures with social, economic, cultural, and other impacts on the coastal zone. The Council has developed this framework document and will submit it to NMFS. NMFS will determine whether the proposed actions are consistent to the maximum extent practicable with the coastal zone management programs for each state (Maine through North Carolina).

8.6. Administrative Procedure Act

Sections 551-553 of the Federal Administrative Procedure Act establish procedural requirements applicable to informal rulemaking by federal agencies. The purpose of these requirements is to ensure public access to the Federal rulemaking process and to give the public notice and opportunity to comment before the agency promulgates new regulations.

The Administrative Procedure Act requires solicitation and review of public comments on actions taken in the development of an FMP and subsequent amendments and framework adjustments. There were many opportunities for public review, input, and access to the

rulemaking process during the development of the proposed management measures described in this document and during the development of this document. This action was developed through a multi-stage process that was open to review by affected members of the public. The public had the opportunity to review and comment on management measures during Council meetings on February 12, 2014 (in New Bern, NC), April 9, 2014 (in Montauk, NY), December 8, 2015 (in Annapolis, MD), February 9, 2016 (in New Bern, NC), and April 13, 2016 (in Montauk, NY) as well as during an Advisory Panel webinar on March 18, 2014 and during an Advisory Panel meeting on January 20, 2016 in Long Branch, NJ. The public will have further opportunity to comment on this specifications document once NMFS publishes a request for comments notice in the *Federal Register*.

8.7. Section 515 (Data Quality Act)

Utility of Information Product

This action proposes modifications to the boundaries of the scup GRAs. This document includes a description of the alternatives considered, the preferred action and rationale for selection, and any changes to the implementing regulations of the FMP. As such, this document enables the implementing agency (NMFS) to make a decision on implementation of annual specifications (i.e. management measures) and this document serves as a supporting document for the proposed rule.

This framework document was developed to be consistent with the FMP, MSA, and other applicable laws, through a multi-stage process that was open to review by affected members of the public. The public had the opportunity to review and comment on management measures during a number of public meetings (section 8.6). The public will have further opportunity to comment on this specifications document once NMFS publishes a request for comments notice in the *Federal Register*.

Integrity of Information Product

This information product meets the standards for integrity under the following types of documents: Other/Discussion (e.g. Confidentiality of Statistics of the MSA; NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics; 50 CFR 229.11, Confidentiality of information collected under the Marine Mammal Protection Act).

Objectivity of Information Product

The category of information product that applies here is “Natural Resource Plans.” Section 8 describes how this document was developed to be consistent with any applicable laws, including MSA. The analyses used to develop the alternatives (i.e. policy choices) are based upon the best scientific information available. The most up to date information was used to develop the EA which evaluates the impacts of those alternatives (section 7). The specialists who worked with

these core data sets and population assessment models are familiar with the most recent analytical techniques and are familiar with the available data and information relevant to the scup, longfin squid, black sea bass, and silver hake fisheries.

The review process for this specifications document involves Council, NEFSC, GARFO, and NMFS headquarters. The NEFSC technical review is conducted by senior level scientists with specialties in fisheries ecology, population dynamics and biology, as well as economics and social anthropology. The Council review process involves public meetings at which affected stakeholders have the opportunity to comment on proposed management measures. Review by GARFO is conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, and compliance with the applicable law. Final approval of the specifications document and clearance of the rule is conducted by staff at NOAA Fisheries Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

8.8. Paperwork Reduction Act

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 businesses, state and local governments, and other persons, as well as to maximize the usefulness of information collected by the Federal government. There are no changes to the existing reporting requirements previously approved under this FMP for vessel permits, dealer reporting, or vessel logbooks. This action does not contain a collection-of-information requirement for purposes of the PRA.

8.9. Impacts of the Plan Relative to Federalism/Executive Order 13132

This framework document does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order (EO) 13132.

8.10. Environmental Justice/ Executive Order 12898

EO 12898 provides that “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” EO 12898 directs each Federal agency to analyze the environmental effects, including human health, economic, and social effects of Federal actions on minority populations, low-income populations, and Indian Tribes, when such analysis is required by NEPA. Agencies are further directed to “identify potential effects and mitigation measures in consultation with affected communities, and improve the accessibility of meetings, crucial documents, and notices.”

The proposed actions are not expected to affect participation in the scup, longfin squid, black sea bass, and silver hake fisheries. Because the proposed action represents no changes relative to the current levels of participation in these fisheries, no negative economic or social effects in the

context of EO 12898 are anticipated as a result. Therefore, the proposed action is not expected to cause disproportionately high and adverse human health, environmental or economic effects on minority populations, low-income populations, or Indian Tribes.

8.11. Regulatory Impact Review and Regulatory Flexibility Act Analysis

8.11.1. Introduction

This section provides analysis to address the requirements of Executive Order 12866 (Regulatory Planning and Review) and the Regulatory Flexibility Act (RFA). Since many of the requirements of these mandates duplicate those required under the MSA and NEPA, this section contains references to other sections of this document. The following sections provide information which can be used to determine if the preferred alternatives are significant under E.O. 12866 and if they will have a significant economic impact on a substantial number of small entities under the RFA.

NMFS requires the preparation of a Regulatory Impact Review (RIR) for all regulatory actions that either implement or significantly amend an FMP. The RIR summarizes the economic effects associated with a proposed or final regulatory action, provides a review of the problem to be addressed, evaluates the major alternatives that could be used to address the problem, and ensures that the regulatory agency considers all available alternatives so that public welfare can be enhanced in the most efficient and cost-effective way. The RIR also serves as the basis for determining whether the proposed regulations are a "significant regulatory action" under E.O. 12866.

The RIR in the following sections provides a comprehensive review of the expected changes in net economic benefits to society associated with the preferred alternatives.

8.11.2. Regulatory Impact Review (RIR)

8.11.2.1. Description of the Fishery

Section 6.1 contains a description of the fisheries affected by the proposed action.

8.11.2.2. Statement of the Problem

The purpose of this framework is to consider modifications to the Scup GRAs. This action is needed to ensure the continued effectiveness of the GRAs given changes in scup stock status and an updated analysis of scup discards in and near the GRAs.

8.11.2.3. Description of Alternatives

The Council considered twelve management alternatives as part of this framework. The preferred alternatives would modify the boundaries of the Southern GRA and would leave all other aspects of the GRA regulations, including the boundaries of the Northern GRA, unchanged. For the purposes of the RIR, only the preferred alternatives are considered in detail in this section. The

other alternatives are described in more detail in section 5. The expected socioeconomic impacts of the other alternatives are described in section 7.4.

As previously described, the preferred alternative would modify the eastern boundary of the Southern GRA based on a proposal developed by several members of the Council's Advisory Panels in January 2016, except that in areas of overlap with NMFS Statistical Area 616, the boundary would align with that proposed by advisors in 2012. This alternative is intended to restore access to important winter fishing areas for longfin squid. It would remove certain canyon areas and depths greater than about 55 to 60 fathoms (depending on the area) from the Southern GRA. It would reduce the size of the Southern GRA by 1,031 square nautical miles, or 33%, compared to the *status quo* Southern GRA. All other regulations regarding the Scup GRAs, including the boundaries of the Northern GRA, the times of the year when the GRAs are in effect, and the gear types regulated, would remain unchanged.

The Council considered two additional alternatives which would have greater positive socioeconomic impacts than the preferred alternative, including an alternative which would reduce the size of the Southern GRA by a greater amount than the preferred alternative (i.e. alternative 2E, the January 2016 AP proposal) and alternatives which would eliminate either the Northern or the Southern GRA (alternatives 1C and 2I, respectively). These alternatives are described in more detail in section 5. The Council did not select these alternatives because the preferred alternative was deemed sufficient to improve fishing opportunities for the longfin squid fishery while still maintaining a conservation benefit for the scup stock. The Council did not select either of the alternatives which would eliminate the Northern or Southern GRAs because the Council wished to maintain some of the conservation benefit for the scup stock provided by the GRAs.

8.11.2.4. Methodology to Evaluate Economic Impacts of Alternatives

This section evaluates the economic impacts of the management measures considered in this framework. Potential impacts on several areas of interest are discussed in order to comprehensively evaluate the economic effects of the various alternatives. The types of effects that are considered include 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 limited knowledge of elasticities of supply and demand, a qualitative approach to the economic assessment was adopted. Quantitative measures are provided whenever possible. A more detailed description of the economic concepts involved can be found in "Guidelines for Economic Review of National Marine Fisheries Service Regulatory Actions" (NMFS 2007). Only a brief summary of key concepts is presented here.

Benefit-cost analysis is conducted to evaluate the net social benefit 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. CS thus represents net benefit to consumers. When the information necessary to plot the supply and demand curves for a particular commodity is available, CS 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 (species for which landings could be impacted due to area closure/gear requirements) was determined by the market clearing price or the intersection 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.

The law of demand states that price and quantity demanded are inversely related. Given a demand curve for a commodity (good or service), the elasticity of demand is a measure of the responsiveness of the quantity that will be taken by consumers giving changes in the price of that commodity (while holding other variables constant). There are several major factors that influence the elasticity for a specific commodity. These factors largely determine whether demand for a commodity is price elastic or inelastic[23]: 1) the number and closeness of substitutes for the commodity under consideration, 2) the number of uses for the commodity; and 3) the price of the commodity relative to the consumers' purchasing power (income). There are other factors that may also determine the elasticity of demand but are not mentioned here because they are beyond the scope of this discussion. As the number and closeness of substitutes and/or the number of uses for a specific commodity increase, the demand for the specific commodity will tend to be more elastic. Demand for commodities that take a large amount of the consumer's income is likely to be elastic compared to services with low prices relative to the consumer's income. It is argued that the availability of substitutes is the most important of the factors listed in determining the elasticity of demand for a specific commodity (Leftwich 1973; Awk 1988). Seafood demand in general appears to be elastic. In fact, for most species, product groups, and product forms, demand is elastic (Asche and Bjørndal 2003).

For example, an increase in the ex-vessel price of a given species may increase PS. A decrease in the ex-vessel price for that species may also increase PS if we assumed that the demand for that

[23] Price elasticity of demand is elastic when a change in quantity demanded is large relative to the change in price. Price elasticity of demand is inelastic when a change in quantity demanded is small relative to the change in price. Price elasticity of demand is unitary when a change in quantity demanded and price are the same.

species is moderately to highly elastic. However, the magnitude of these changes cannot be entirely assessed without knowing the exact shape of the market demand curve for this species.

One of the more visible societal costs 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. Properly defined, enforcement costs are not equivalent to the budgetary expense of dockside or at-sea inspection of vessels. Rather, enforcement costs from an economic perspective, are measured by opportunity cost in terms of foregone enforcement services that must be diverted to enforcing the scup GRA regulations.

8.11.2.5. Description of the Management Objectives

This framework action, if implemented, will be implemented under the Summer Flounder, Scup, and Black Sea Bass FMP. The management objectives of that FMP are to:

- Reduce fishing mortality in the scup fishery to assure that overfishing does not occur.
- Reduce fishing mortality on immature scup to increase spawning stock biomass.
- Improve the yield from the fisheries.
- Promote compatible management regulations between state and federal jurisdictions.
- Promote uniform and effective enforcement of regulations.
- Minimize regulations to achieve the management objectives stated above.

The proposed action is consistent with, and does not modify these objectives. This action is taken under the authority of the MSA and regulations at 50 C.F.R. part 648.

8.11.2.5.1. Analysis of Alternatives

Alternatives 1A and 2G are the preferred alternatives. Under alternative 1A, no action would be taken to modify the regulations for the Northern GRA. Under alternative 2G, the eastern boundary of the Southern GRA would be modified to remove certain canyon areas and depths greater than about 55 to 60 fathoms (depending on the area) from the Southern GRA.

The Northern GRA, as currently configured, has been a component of the baseline economic environment since 2000; therefore, alternative 1A is not expected to affect fishing effort or the spatial or temporal distribution of current fishing effort relative to baseline conditions. The economic impacts of the preferred alternative are therefore only associated with the change in the boundaries of the Southern GRA. Based on an analysis of NEFSC trawl survey catches (described in more detail in section 7.1), the proposed change in the boundary of the Southern GRA is expected to reduce the amount of scup found within the Southern GRA by 21%, compared to the *status quo* Southern GRA. It is expected to reduce the amount of longfin squid

found within the Southern GRA by 51%, the amount of black sea bass by 18%, and the amount of silver hake by 40%. By decreasing the amounts of these species found within the Southern GRA, the preferred alternative would increase the amount available to capture with small-mesh during January 1 – March 15.

The economic impacts of the preferred alternative are expected to result primarily from changes in the availability of longfin squid. Changes in the availability of scup are expected to have only slight positive economic impacts because vessels which use trawl mesh smaller than 5.0 inches in diameter (the only gear type affected by the Scup GRA regulations) may not possess more than 500 pounds of scup from November 1 through April 30[24] (which includes the times of year when both GRAs are in effect) and may not land scup that are smaller than 9 inches total length. Because of these limitations, the preferred alternative is not expected to result in a substantial increase in the amount of scup landed during January 1 – March 15 each year.

The preferred alternative is also not expected to result in a notable increase in the amount of black sea bass landed in commercial fisheries. Commercial black sea bass landings reached or exceeded 95% of the commercial quota in every year between 2007 and 2015. If recent trends in black sea bass landings continue, then the preferred alternative will not result in a notable increase in black sea bass landings because an increase could cause the quota to be exceeded, which would trigger AMs. Additionally, any increase in black sea bass landings as a result of the preferred alternative would happen early in the year, because this alternative only affects small-mesh fisheries in certain areas during January 1 - March 15. If NMFS anticipates that the commercial black sea bass quota will be exceeded prior to the end of the year, NMFS has the authority to close the fishery for the remainder of the year. Therefore, any increase in the amount of black sea bass landings early in the year as a result of the preferred alternative could be offset by reduced landings later in the year, or in the following year if AMs are triggered.

The preferred alternative is not expected to result in a notable change in silver hake landings. It is expected to increase the amount of silver hake available to small-mesh fisheries during January 1 – March 15 by 40%, compared to the *status quo* Southern GRA; however, the amount of silver hake found within the Southern GRA is relatively low and a 40% change compared to the *status quo* represents a minor increase in absolute terms (Table 13, Table 17, and Table 18).

The preferred alternative is expected to result in a notable increase in the amount of longfin squid landed during January 1 – March 15. The preferred alternative was designed specifically to increase access to important winter fishing areas for longfin squid. Unlike black sea bass, there is room for longfin squid landings to increase without exceeding the quota. Longfin squid commercial landings have not met the annual commercial quota since 2005. The longfin squid fishery has been managed under a trimester system since 2007. Commercial landings have not exceeded the trimester I (January – April) quota since 2007. The preferred alternative is expected

[24] On May 23, 2016 NMFS published a proposed rule to increase this amount to 1,000 pounds of scup.

to reduce the amount of longfin squid found within the Southern GRA by 51%, compared to the *status quo* Southern GRA. In doing so, it would increase the amount of longfin squid available to small-mesh fisheries during January 1 – March 15 each year, compared to the *status quo*. A 51% change in potential availability might not translate into a 51% increase in landings during that time of year. A number of unrealistic assumptions would be required to predict both the degree of the increase in longfin squid landings as a result of the preferred alternative and the resulting change in revenues. Longfin squid landings are influenced by a variety of factors including, but not limited to, the trimester quotas, market demand, prices, weather, fuel costs, the abundance and availability of longfin squid, and the abundance, availability, and price of other species harvested by the vessels which participate in the longfin squid fishery. For this reason, we have not attempted to predict revenue gains associated with the preferred alternative.

Increases in landings sometimes cause a decrease in prices; however, this is not expected to occur for longfin squid in the near future if the preferred alternative is implemented. According to AP members with knowledge of the longfin squid fishery, ex-vessel prices and global demand for longfin squid in 2015 and 2016 (to date) were higher than in previous years, due in part to decreased squid landings in other parts of the world as a result of El Niño. If demand remains strong, then longfin squid landings could increase without leading to a decrease in price. If longfin squid prices remain similar to recent prices, then there will be no change in CS or PS.

The preferred alternative is expected to slightly decrease harvesting costs, compared to the *status quo*, by allowing vessels to harvest longfin squid in areas of relatively high abundance. It could result in an increase in CPUE, which could result in efficiencies in harvesting, and thus reduced harvesting costs.

Enforcement costs are not expected to change substantially if the preferred alternative is implemented. The preferred alternative represents a modification of existing regulations and will not change the GRA regulations in such a way that enforcement costs will be substantially different than under the *status quo*.

The preferred alternative is not expected to have distributional effects. It is expected to result in an increase in squid landings, and thus increased revenues and positive economic impacts for squid fishermen. It is not expected to result in substantial negative impacts for other sectors of the economy.

In summary, the preferred alternative will increase access to longfin squid during January 1 – March 15 and is expected to result in a slight to moderate increase in longfin squid landings during that time of year, without resulting in a decrease in price due to recent strong global demand. Economic impacts for the longfin squid fishery, as well as for ports where longfin squid are landed, and fishing communities that are partly dependent on the longfin squid fishery, are expected to be positive. Impacts to other sectors of the economy are expected to be neutral. The overall economic impacts of the preferred alternative are therefore expected to be positive.

8.11.2.5.2. Evaluation of Significance Under E.O. 12866

The proposed action (i.e. the preferred alternatives) 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. The change in revenues as a result of the preferred alternative is unknown, but will be far below $100 million. The total value of all commercial landings of scup, longfin squid, black sea bass, and the southern stock of silver hake in 2014 was approximately $54.16 million.

The proposed action benefits the economy, productivity, competition and jobs in a material way by allowing for increased longfin squid landings without jeopardizing the sustainability of other fisheries or creating negative impacts to other sectors of the economy. 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. No other agency has indicated that it plans an action that will affect the scup, longfin squid, or black sea bass fisheries in the EEZ. The action will not materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of their participants. The action does 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.

8.11.3. Regulatory Flexibility Analysis

The 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” or prepare an Initial Regulatory Flexibility Analysis (IRFA). An IRFA describes the impacts of the proposed rule on small entities and is prepared when a Federal agency publishes a notice of proposed rulemaking if the agency cannot certify that the proposed rule will not have a significant impact on a substantial number of small entities. The determination of whether to certify or prepare an IRFA depends on the context of the proposed action, the problem to be addressed, and the structure of the regulated industry. If the agency prepares an IRFA, a Final Regulatory Flexibility Analysis (FRFA) will be prepared when the final rule is promulgated.

8.11.3.1. Proposed Action

The purpose of this framework is to consider modifications to the Scup GRAs. The proposed action (i.e. the preferred alternatives) is needed to ensure the continued effectiveness of the GRAs given changes in scup stock status and an updated analysis of scup discards in and near the GRAs. This action is taken under the authority of the MSA and regulations at 50 CFR part 648.

As previously described, the proposed action would modify the eastern boundary of the Southern GRA based on a proposal developed by several members of the Council's Advisory Panels in January 2016. In areas of overlap with NMFS Statistical Area 616, the boundary would align with that proposed by advisors in 2012. This alternative is intended to restore access to important winter fishing areas for longfin squid. It would remove certain canyon areas and depths greater than about 55 to 60 fathoms (depending on the area) from the Southern GRA. It would reduce the size of the Southern GRA by 1,031 square nautical miles, or 33%, compared to the *status quo* Southern GRA. All other regulations surrounding the Scup GRAs, including the boundaries of the Northern GRA, the times of the year when the GRAs are in effect, and the gear types regulated, would remain unchanged.

There are no changes to the existing reporting requirements previously approved under this FMP for vessel permits, dealer reporting, or vessel logbooks. This action does not contain a collection-of-information requirement for purposes of the PRA. This action does not duplicate, overlap, or conflict with other Federal rules.

8.11.3.2. Universe of Regulated Entities

The RFA requires consideration of the economic impacts of proposed actions on directly affected entities. The proposed action described in this document will directly affect commercial harvesting entities. It will not *directly* affect seafood processors, recreational fishing entities, or other entities. More specifically, the proposed action will affect commercial fishing vessels that fish for or possess longfin squid, black sea bass, and/or silver hake during January 1 - March 15 and use trawl nets with mesh smaller than 5.0 inches in diameter (section 4.2). It will impact these vessels by modifying existing restrictions on where they can fish.

Vessel Trip Report (VTR) data were used to identify vessels which reported use of trawl nets with mesh smaller than 5.0 inches in diameter and reported catch or landings of longfin squid, black sea bass, and/or silver hake in the statistical areas which are partially included in the Southern GRA during January 1 – March 15 from 2012 through 2014. These vessels were then grouped together according to common owners. The resulting groupings were treated as a fishing business (i.e. "affiliates"). [25] Based on this methodology, 64 fishing businesses were identified as being potentially affected by the proposed action based on their fishing activities during 2012-2014. Each affiliate was then classified as either a small business or a large firm based on their revenues in 2014. The Small Business Administration (SBA) defines a small business in the commercial harvesting sector as a firm with up to $11 in annual gross receipts (gross revenues) from all commercial fishing activities. Of the 64 identified affiliates, three are considered large entities and 61 are considered small businesses based on their commercial fishing revenues in

[25] Ownership data used to identify affiliates for 2012-2014 were provided by Andrew Kitts and Min-Yang Lee, NMFS NEFSC Social Science Branch.

2014. None of these 64 affiliates held a party/charter permit; therefore, only commercial revenues are summarized in this section.

Table 26 includes summary information on total commercial fishing revenues, as well as revenues from scup, longfin squid, black sea bass, and silver hake during 2012-2014 for the 61 small businesses which may be affected by the proposed action. Of the four fisheries mostly directly impacted by the proposed action (i.e. scup, longfin squid, black sea bass, and silver hake), longfin squid accounted for the highest proportion of total gross receipts (i.e. receipts from all fishing revenues), at about 17% of total gross receipts. The average proportion of total gross receipts from silver hake, scup, and black sea bass were much smaller, at about 5%, 4%, and 1% respectively. Longfin squid, scup, and black sea bass revenues made up a higher proportion of total revenues for small businesses whose average revenues from commercial fishing ranged from $0.5 to $2 million per year, compared to vessels whose average revenues were greater than $2 million (Table 26).

The three firms that were categorized as large entities (not shown in Table 26) had average annual gross commercial fishing receipts of about $32.5 million during 2012-2014. These entities had average annual scup receipts of $3,553 (0.01% of total average annual commercial fishing receipts), average annual longfin squid receipts of $16,977 (0.05% of total average annual commercial fishing receipts), average annual black sea bass receipts of $19,842 (0.06% of total average annual commercial fishing receipts), and average annual silver hake receipts of $80 (0.0002% of total average annual commercial fishing receipts).

The information on revenues in Table 26 is summarized at the annual level and does not distinguish between revenues from small-mesh tows and tows with mesh 5.0 inches in diameter or larger. Although all of these affiliates reported at least one small-mesh tow which resulted in catch or landings of longfin squid, black sea bass, or silver hake during January 1 – March 15 in the Southern GRA statistical areas in 2012, 2013, or 2014, some of the revenues in Table 26 likely came from tows with larger mesh, outside of the Southern GRA, and/or at times of the year when the Southern GRA is not in effect. The information shown in Table 26 thus represents the maximum amount of average annual revenues that would be affected by the proposed action.

Table 26: Average annual total gross receipts from all fishing activities during 2012-2014 for the 61 small firms affected by the GRA regulations, as well as average annual scup, longfin squid, black sea bass, and silver hake receipts. Firms are grouped based on their average annual revenue from commercial fishing during 2012-2014.

Avg. Comm. Fishing Revenue 2012-2014	# of Firms	Avg. Gross Receipts ($)	Avg. Scup Receipts ($)	Scup as Proportion of Gross Receipts	Avg. Longfin Squid Receipts ($)	Longfin Squid as Proportion of Gross Receipts	Avg. Black Sea Bass Receipts ($)	BSB as Proportion of Gross Receipts	Avg. Silver Hake Receipts ($)	Silver Hake as Proportion of Gross Receipts
< $0.5 million	16	330,217	15,128	4.6%	96,879	29.3%	5,240	1.6%	13,698	4.1%
$0.5 million to < $1 million	20	738,395	68,093	9.2%	237,516	32.2%	19,892	2.7%	46,411	6.3%
$1 million to < $2 million	13	1,483,058	130,243	8.8%	295,063	19.9%	25,897	1.7%	157,791	10.6%
$2 to $5 million	8	3,388,407	103,985	3.1%	668,575	19.7%	12,360	0.4%	349,743	10.3%
>$5 million	4	11,681,959	65,306	0.6%	843,204	7.2%	20,754	0.2%	25,316	0.2%
Total	61	1,855,184	71,970	3.9%	309,141	16.7%	16,397	0.9%	99,965	5.4%

8.11.3.3. Expected Economic Impacts

Under the RFA, effects on profitability associated with the proposed management measures should be evaluated by assessing the impact of the proposed measures on the costs and revenues for individual business entities. Changes in gross revenues are used a proxy for profitability in the absence of cost data for individual business entities engaged in these fisheries. As previously described, changes in revenues as a result of the proposed action are expected to result predominantly from changes in longfin squid landings. A number of factors affect longfin squid landings, including quotas, prices, weather, and availability of longfin squid and of other species harvested by the same vessels; therefore, changes in landings, and thus changes in revenues, as a result of the proposed action cannot be precisely estimated. Changes in revenue are instead described in a general, qualitative sense.

The proposed action will increase the amount of longfin squid available to small-mesh fisheries during January 1 – March 15 by removing important winter fishing areas for longfin squid from the Scup GRAs. The proposed action is expected to result in an increase in longfin squid landings during January 1 – March 15. As previously described, an increase in landings is not expected to result in a notable change in price because global demand and price for longfin squid were higher in 2015 and early 2016 than in previous years due to decreased landings in other areas. If demand and price remain strong, then an increase in landings is not expected to result in a decrease in price. All directly affected businesses are expected to benefit from the anticipated increase in squid landings.

The proposed action is expected to directly affect 61 small businesses. On average, longfin squid made up about 17% of the average annual commercial fishing gross revenues for these small businesses. For the businesses which had average gross commercial fishing revenues of between $0.5 and $1 million, the contribution of squid to total average annual revenues was even higher, at about 32%. For all of the affected small businesses, and for the smaller of the small business in particular (i.e. those with average annual commercial fishing revenues of less than $5 million), the proposed action could have a noteworthy positive impact on their annual commercial fishing revenues by allowing for increased landings and thus increased revenues from longfin squid. The larger small business (i.e. those with average annual commercial fishing revenues of more than $5 million), and the large entities (i.e. those with gross commercial fishing revenues greater than $11 million in 2014) are also expected to experience positive economic impacts, though to a lesser degree than the smaller small businesses, due to their lesser dependence on longfin squid (Table 26). For reasons previously stated, assigning a number of pounds to the expected increase in landings and estimating the dollar amount of the expected increase in revenues would require a number of unrealistic assumptions and is therefore not done here.

According to the SBA definition of small business presented above, 95% (61 out of 64) of the business firms that were affected by the GRA regulations during 2012 through 2014 meet the definition of a small business, while 5% (3 out of 64 business firms) are categorized as large

entities. The proposed action is not expected to result in disproportional effects on profits, costs, or net revenue for a substantial number of small entities compared to large entities. It is not expected to place a substantial number of small entities at a significant competitive disadvantage compared to large entities. As previously described, all directly affected business, both large and small, are expected to experience economic benefits from the proposed action. Small businesses are expected to see a greater positive benefit than the large entities due to their greater dependence on longfin squid.

8.11.3.4. Other Alternatives

The Council considered three alternatives which, if implemented, would have greater positive socioeconomic impacts than the preferred alternative. One of these alternatives (alternative 2E, the January 2016 AP proposal) would reduce the size of the Southern GRA by a greater amount than the preferred alternative. A second alternatives would eliminate the Northern GRA (alternative 1C), and a third would eliminate the Southern GRA (alternative 2I). These alternatives are described in more detail in section 5. The expected socioeconomic impacts of these alternatives are described in section 7.4. The Council did not select these alternatives because the preferred alternative was deemed sufficient to improve fishing opportunities for the longfin squid fishery while still maintaining a conservation benefit for the scup stock. The Council did not select either of the alternatives which would eliminate the Northern or Southern GRAs because the GRAs likely played a role in the recovery of the scup stock and the Council wished to maintain some of the conservation benefit provided by the GRAs.

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10. LIST OF AGENCIES AND PERSONS CONSULTED

In preparing this specifications document, the Council consulted with NMFS, New England and South Atlantic Fishery Management Councils, Fish and Wildlife Service, and the states of Maine through North Carolina through their membership on the Mid-Atlantic and New England Fishery Management Councils. The advice of NMFS GARFO personnel was sought to ensure compliance with NMFS formatting requirements.

Copies of the document, including the Environmental Assessment and Regulatory Flexibility Act Analysis and other supporting documents are available from Dr. Christopher M. Moore, Executive Director, Mid-Atlantic Fishery Management Council, Suite 201, 800 North State Street, Dover, DE 19901

APPENDIX

Scup EFH Designations

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.

Appendix Table: Essential Fish Habitat descriptions for federally-managed species/life stages in the U.S. Northeast Shelf Ecosystem that are vulnerable to bottom tending fishing gear.

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
American plaice	juvenile	GOM, including estuaries from Passamaquoddy Bay to Saco Bay, ME and from Massachusetts Bay to Cape Cod Bay	45 - 150	Fine grained sediments, sand, or gravel
American plaice	adult	GOM, including estuaries from Passamaquoddy Bay to Saco Bay, ME and from Massachusetts Bay to Cape Cod Bay	45 - 175	Fine grained sediments, sand, or gravel
Atlantic cod	juvenile	GOM, GB, eastern portion of continental shelf off SNE, these estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay	25 - 75	Cobble or gravel
Atlantic cod	adult	GOM, GB, eastern portion of continental shelf off SNE, these estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay	10 - 150	Rocks, pebbles, or gravel
Atl halibut	juvenile	GOM and GB	20 - 60	Sand, gravel, or clay
Atl halibut	adult	GOM and GB	100 - 700	Sand, gravel, or clay
Barndoor skate	juvenile/ adult	Eastern GOM, GB, SNE, Mid-Atlantic Bight to Hudson Canyon	l0-750, most < 150	Mud, gravel, and sand
Black sea bass	juvenile	GOM to Cape Hatteras, NC, including estuaries from Buzzards Bay to Long Island Sound, Gardiners Bay, Barnegat Bay to Chesapeake Bay, Tangier/ Pocomoke Sound, and James River	1 - 38	Rough bottom, shellfish/ eelgrass beds, manmade structures, offshore clam beds, and shell patches
Black sea bass	adult	GOM to Cape Hatteras, NC, including Buzzards Bay, Narragansett Bay, Gardiners Bay, Great South Bay, Barnegat Bay to Chesapeake Bay, and James River	20 - 50	Structured habitats (natural and manmade), sand and shell substrates preferred
Clearnose skate	juvenile/adult	GOM, along continental shelf to Cape Hatteras, NC, including the estuaries from Hudson River/Raritan Bay south to the Chesapeake Bay mainstem	0 – 500, most < 111	Soft bottom and rocky or gravelly bottom
Haddock	juvenile	GB, GOM, and Mid-Atlantic south to Delaware Bay	35 - 100	Pebble and gravel
Haddock	adult	GB, eastern side of Nantucket Shoals, and throughout GOM	40 - 150	Broken ground, pebbles, smooth hard sand, and smooth areas between rocky patches
Little skate	juvenile/adult	GB through Mid-Atlantic Bight to Cape Hatteras, NC; includes estuaries from Buzzards Bay south to mainstem Chesapeake Bay	0-137, most 73 - 91	Sandy or gravelly substrate or mud
Ocean pout	eggs	GOM, GB, SNE, and Mid-Atlantic south to Delaware Bay, including the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay and Cape Cod Bay	<50	Generally sheltered nests in hard bottom in holes or crevices
Ocean pout	juvenile	GOM, GB, SNE, Mid-Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, and Cape Cod Bay	< 50	Close proximity to hard bottom nesting areas
Ocean pout	adult	GOM, GB, SNE, Mid-Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay, MA Bay, Boston Harbor, and Cape Cod Bay	< 80	Smooth bottom near rocks or algae
Pollock	adult	GOME, GB, SNE, and Mid-Atlantic south to New Jersey and the following estuaries: Passamaquoddy Bay, Damariscotta R., MA Bay, Cape Cod Bay, Long Island Sound	15 – 365	Hard bottom habitats including artificial reefs

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
Red hake	juvenile	GOM, GB, continental shelf off SNE, and Mid-Atlantic south to Cape Hatteras, including the following estuaries: Passamaquoddy Bay to Saco Bay, Great Bay, MA Bay to Cape Cod Bay; Buzzards Bay to CT River, Hudson River, Raritan Bay, and Chesapeake Bay	< 100	Shell fragments, including areas with an abundance of live scallops
Red hake	adult	GOM, GB, continental shelf off SNE, Mid-Atlantic south to Cape Hatteras, these estuaries: Passamaquoddy Bay to Saco Bay, Great Bay, MA Bay to Cape Cod Bay; Buzzards Bay to CT River, Hudson River, Raritan Bay, Delaware Bay, and Chesapeake Bay	10 - 130	In sand and mud, in depressions
Redfish	juvenile	GOM, southern edge of GB	25 - 400	Silt, mud, or hard bottom
Redfish	adult	GOM, southern edge of GB	50 - 350	Silt, mud, or hard bottom
Rosette skate	juvenile/ adult	Nantucket shoals and southern edge of GB to Cape Hatteras, NC	33-530, most 74-274	Soft substrate, including sand/mud bottoms
Scup	juvenile/adult	GOM to Cape Hatteras, NC, including the following estuaries: MA Bay, Cape Cod Bay to Long Island Sound, Gardiners Bay to Delaware inland bays, and Chesapeake Bay	0-38 for juv 2-185 for adult	Demersal waters north of Cape Hatteras and inshore estuaries (various substrate types)
Silver hake	juvenile	GOM, GB, continental shelf off SNE, Mid-Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Casco Bay, ME, MA Bay to Cape Cod Bay	20 – 270	All substrate types
Summer Flounder	juvenile/adult	GOM to Florida – estuarine and over continental shelf to shelf break	0-250	Demersal/estuarine waters, varied substrates. Mostly inshore in summer and offshore in winter.
Smooth skate	juvenile/ adult	Offshore banks of GOM	31–874, most 110-457	Soft mud (silt and clay), sand, broken shells, gravel and pebbles
Thorny skate	juvenile/ adult	GOM and GB	18-2000, most 111-366	Sand, gravel, broken shell, pebbles, and soft mud
Tilefish	juvenile/ adult	Outer continental shelf and slope from the U.S./Canadian boundary to the Virginia/North Carolina boundary	100 - 300	Burrows in clay (some may be semi-hardened into rock)
White hake	juvenile	GOM, southern edge of GB, SNE to Mid-Atlantic and the following estuaries: Passamaquoddy Bay, ME to Great Bay, NH, Massachusetts Bay to Cape Cod Bay	5 - 225	Seagrass beds, mud, or fine grained sand
Winter flounder	adult	GB, inshore areas of GOM, SNE, Mid- Atlantic south to Delaware Bay and the estuaries from Passamaquoddy Bay, ME to Chincoteague Bay, VA	1 - 100	Mud, sand, and gravel
Winter skate	juvenile/ adult	Cape Cod Bay, GB, SNE shelf through Mid-Atlantic Bight to North Carolina; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem	0 - 371, most < 111	Sand and gravel or mud
Witch flounder	juvenile	GOM, outer continental shelf from GB south to Cape Hatteras	50 - 450 to 1500	Fine grained substrate
Witch flounder	adult	GOME, outer continental shelf from GB south to Chesapeake Bay	25 - 300	Fine grained substrate
Yellowtail flounder	adult	GB, GOM, SNE and Mid-Atlantic south to Delaware Bay and these estuaries: Sheepscot River and Casco Bay, ME, MA Bay to Cape Cod Bay	20 - 50	Sand or sand and mud