Amendment 24 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Draft Environmental Impact Statement, Initial Regulatory Flexibility Act Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement

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ABBREVIATIONS AND ACRONYMS

ABC	Acceptable biological catch
ACCSP	Atlantic Coastal Cooperative Statistics Program
ACL	Annual Catch Limits
AM	Accountability Measure
ACT	Annual Catch Target
APA	Administrative Procedures Act
ASMFC	Atlantic States Marine Fisheries Commission
B	A measure of stock biomass in either weight or other appropriate unit
B_{MSY}	The stock biomass expected to exist under equilibrium conditions when fishing at F_{MSY}
B_{OY}	The stock biomass expected to exist under equilibrium conditions when fishing at F_{OY}
B_{CURR}	The current stock biomass
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
CFMC	Caribbean Fishery Management Council
CPUE	Catch per unit effort
CRP	Cooperative Research Program
CZMA	Coastal Zone Management Act
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EFH-HAPC	Essential Fish Habitat - Habitat Area of Particular Concern
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973
F	A measure of the instantaneous rate of fishing mortality
$F_{30\%SPR}$	Fishing mortality that will produce a static SPR = 30%.
$F_{45\%SPR}$	Fishing mortality that will produce a static SPR = 45%.
F_{CURR}	The current instantaneous rate of fishing mortality
F_{MSY}	The rate of fishing mortality expected to achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}
F_{OY}	The rate of fishing mortality expected to achieve OY under equilibrium conditions and a corresponding biomass of B_{OY}
$F_{REBUILD}$	The rate of fishing mortality expected to have a 50% chance of stock recovery in T_{MAX}.
FEIS	Final Environmental Impact Statement
FMP	Fishery management plan
FMU	Fishery management unit
FONSI	Finding of No Significant Impact
GFMC	Gulf of Mexico Fishery Management Council
IFQ	Individual fishing quota
M	Natural mortality rate
MARFIN	Marine Fisheries Initiative

MARMAP	Marine Resources Monitoring Assessment and Prediction Program
MBTA	Migratory Bird Treaty Act
MFMT	Maximum Fishing Mortality Threshold
MMPA	Marine Mammal Protection Act of 1972
MRFSS	Marine Recreational Fisheries Statistics Survey
MRIP	Marine Recreational Information Program
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
NEPA	National Environmental Policy Act of 1969
NMFS	National Marine Fisheries Service
NMSA	National Marine Sanctuary Act
NOAA	National Oceanic and Atmospheric Administration
OFL	Overfishing Limit
OY	Optimum Yield
PQBM	Post Quota Bycatch Mortality
PSE	Percent Standard Error
R	Recruitment
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SAFE Report	Stock Assessment and Fishery Evaluation Report
SAMFC	South Atlantic Fishery Management Council
SDDP	Supplementary Discard Data Program
SEDAR	Southeast Data Assessment and Review
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SFA	Sustainable Fisheries Act
SIA	Social Impact Assessment
SPR	Spawning Potential Ratio
SSC	Scientific and Statistical Committee
TAC	Total allowable catch
TL	Total length
T_{MIN}	The length of time in which a stock could rebuild to B_{MSY} in the absence of fishing mortality
USCG	U.S. Coast Guard

AMENDMENT 24 TO THE FISHERY MANAGEMENT PLAN FOR THE SNAPPER GROUPER FISHERY OF THE SOUTH ATLANTIC REGION

INCLUDING A DRAFT ENVIRONMENTAL IMPACT STATEMENT, INITIAL REGULATORY FLEXIBILITY ANALYSIS, DRAFT REGULATORY IMPACT REVIEW AND SOCIAL IMPACT ASSESSMENT/FISHERY IMPACT STATEMENT

Proposed actions:	For red grouper, specify the following: MSY; rebuilding plan (including ACLs, AMs, and OY); and allocations. For black grouper, specify OY, ABC Control Rule, ACLs, AMs, and allocations (both jurisdictional and sector).
Lead agency:	FMP Amendment – South Atlantic Fishery Management Council EIS - NOAA Fisheries Service
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ABSTRACT

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires the Regional Fishery Management Councils and NOAA Fisheries Service to prevent overfishing while achieving optimum yield (OY) from each fishery. When it is determined a stock is undergoing overfishing, measures must be implemented to end overfishing. In cases where stocks are overfished, the Councils and NOAA Fisheries Service must implement rebuilding plans. **The most recent assessment for the red grouper stock in the South Atlantic indicates that the stock is experiencing overfishing and is overfished (SEDAR 19 2010). The most recent assessment for the black grouper stock in the Gulf of Mexico/South Atlantic indicates that the stock is not experiencing overfishing and is not overfished (SEDAR 19 2010).**

The Magnuson-Stevens Act requires the Council and NOAA Fisheries Service to prepare and implement regulations to end overfishing and rebuild the red grouper stock within two years of notification. As the Council received notification of the stock status on June 9, 2010, regulations must be in place by June 9, 2012.

The *purpose* of Snapper Grouper Amendment 24 is threefold: (1) to implement harvest targets and limits for black grouper and red grouper to ensure that overfishing does not occur; (2) to implement a plan to rebuild the stock so it may ultimately produce optimum yield (OY); and (3) to minimize to the extent practicable adverse social and economic effects expected from the first two items. The *need* for the action is to bring the red grouper stock back to a level that will produce optimum yield (OY). OY, the ultimate goal of any fishery management plan, is the level of harvest that provides the greatest economic, social, and ecological benefit to the nation. By allowing the red grouper stock to increase in biomass and maximize its reproductive potential, the population will again produce the OY.

Current regulations for black grouper and red grouper include the following:

(1) Recreational bag limit
(2) 4 month annual closure
(3) Size limits
(4) Commercial ACL and AM

Additional regulations (commercial and recreational gag, black grouper, and red grouper ACL and recreational AMs) were proposed in Amendment 17B to the Snapper Grouper Fishery Management Plan; however, the Amendment was submitted to NOAA Fisheries but regulations are not currently in effect.

The reduction in bag limit and implementaton of the 4 month closure was implemented on July 29, 2009 through Amendment 16 to the Snapper Grouper Fishery Management Plan. The last year of data to determine the stock status of black grouper and red grouper was 2008. As such, additional management

measures may not be required to end overfishing of red grouper and rebuild the stock.

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

SNAPPER GROUPER AMENDMENT 24 LIST OF ACTIONS

PAGE

TABLE OF CONTENTS FOR THE ENVIRONMENTAL IMPACT STATEMENT

1 Introduction

1.1 Background

Management of the Federal snapper grouper fishery located off the South Atlantic in the 3-200 nautical mile (nm) U.S. Exclusive Economic Zone (EEZ) is conducted under the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 1983) (Figure 1-1). The FMP and its amendments are developed under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), other applicable Federal laws, and executive orders (E.O.s) **(Appendix F: Other Applicable Law)** and affect the management of 73 species listed in Table 1.1.

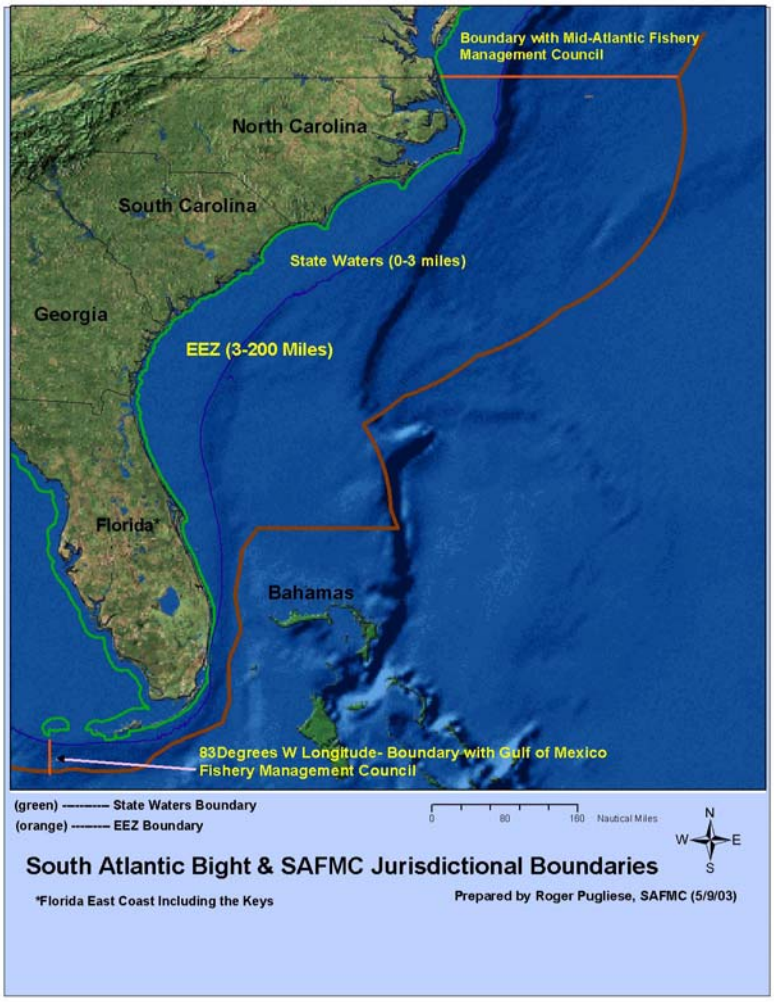

Figure 1-1. Jurisdictional boundaries of the South Atlantic Fishery Management Council.

Table 1-1. Species in the snapper grouper fishery management unit.

Almaco jack, *Seriola rivoliana*
Atlantic spadefish, *Chaetodipterus faber*
Banded rudderfish, *Seriola zonata*
Bank sea bass, *Centropristis ocyurus*
Bar jack, *Carangoides ruber*
Black grouper, *Mycteroperca bonaci*
Black margate, *Anisotremus surinamensis*
Black sea bass, *Centropristis striata*
Black snapper, *Apsilus dentatus*
Blackfin snapper, *Lutjanus buccanella*
Blue runner, *Caranx crysos*
Blueline tilefish, *Caulolatilus microps*
Bluestriped grunt, *Haemulon sciurus*
Coney, *Cephalopholis fulva*
Cottonwick, *Haemulon melanurum*
Crevalle jack, *Caranx hippos*
Cubera snapper, *Lutjanus cyanopterus*
Dog snapper, *Lutjanus jocu*
French grunt, *Haemulon flavolineatum*
Gag, *Mycteroperca microlepis*
Golden tilefish, *Lopholatilus chamaeleonticeps*
Goliath grouper, *Epinephelus itajara*
Grass porgy, *Calamus arctifrons*
Gray (mangrove) snapper, *Lutjanus griseus*
Gray triggerfish, *Balistes capriscus*
Graysby *Cephalopholis cruentata*
Greater amberjack, *Seriola dumerili*
Hogfish, *Lachnolaimus maximus*
Jolthead porgy, *Calamus bajonado*
Knobbed porgy, *Calamus nodosus*
Lane snapper, *Lutjanus synagris*
Lesser amberjack, *Seriola fasciata*
Longspine porgy, *Stenotomus caprinus*
Mahogany snapper, *Lutjanus mahogoni*
Margate, *Haemulon album*
Misty grouper, *Epinephelus mystacinus*
Mutton snapper, *Lutjanus analis*
Nassau grouper, *Epinephelus striatus*
Ocean triggerfish, *Canthidermis sufflamen*
Porkfish, *Anisotremus virginicus*
Puddingwife, *Halichoeres radiatus*
Queen snapper, *Etelis oculatus*
Queen triggerfish, *Balistes vetula*
Red grouper, *Epinephelus morio*
Red hind, *Epinephelus guttatus*
Red porgy, *Pagrus pagrus*
Red snapper, *Lutjanus campechanus*
Rock hind, *Epinephelus adscensionis*
Rock Sea Bass, *Centropristis philadelphica*
Sailors choice, *Haemulon parra*
Sand tilefish, *Malacanthus plumieri*
Saucereye porgy, *Calamus calamus*
Scamp, *Mycteroperca phenax*
Schoolmaster, *Lutjanus apodus*
Scup, *Stenotomus chrysops*
Sheepshead, *Archosargus probatocephalus*
Silk snapper, *Lutjanus vivanus*
Smallmouth grunt, *Haemulon chrysargyreum*
Snowy grouper, *Epinephelus niveatus*
Spanish grunt, *Haemulon macrostomum*
Speckled hind, *Epinephelus drummondhayi*
Tiger grouper, *Mycteroperca tigris*
Tomtate, *Haemulon aurolineatum*
Yellow jack, *Carangoides bartholomaei*
Yellowedge grouper, *Epinephelus flavolimbatus*
Yellowfin grouper, *Mycteroperca venenosa*
Yellowmouth grouper, *Mycteroperca interstitialis*
Yellowtail snapper, *Ocyurus chrysurus*
Vermilion snapper, *Rhomboplites aurorubens*
Warsaw grouper, *Epinephelus nigritus*
White grunt, *Haemulon plumierii*
Whitebone porgy, *Calamus leucosteus*
Wreckfish, *Polyprion americanus*

Stock assessments, through the evaluation of biological and statistical information, provide an evaluation of stock health under the current management regime and other potential future harvest conditions. More specifically, the assessments provide an estimation of maximum sustainable yield (MSY) and a determination of stock status (whether overfishing is occurring and whether the stock is overfished). Following the assessment, the Council's Scientific and Statistical Committee (SSC) reviews the stock assessment information and advises the Council on whether the stock assessment was performed utilizing the best available data and whether the outcome of the assessment is suitable for management purposes.

The Magnuson-Stevens Act instructs the Regional Fishery Management Councils and NOAA Fisheries Service to prevent overfishing while achieving optimum yield (OY) from each fishery. When it is determined a stock is undergoing overfishing, measures must be implemented to end overfishing. In cases where stocks are overfished, the Councils and NOAA Fisheries Service must implement rebuilding plans.

The most recent assessment for the red grouper stock in the South Atlantic indicates that the stock is experiencing overfishing and is overfished (SEDAR 19 2010). The most recent assessment for the black grouper stock in the Gulf of Mexico/South Atlantic indicates that the stock is not experiencing overfishing and is not overfished (SEDAR 19 2010).

Overfishing means that fish are being removed more quickly than the stock can replace them such that the MSY cannot be achieved. (Figure 1-2).

Figure 1-2. Biomass and Spawning Stock Biomass (pounds).

The assessment indicates that in order to rebuild the red snapper stock, the total catch (landings and discards) will need to be reduced **76%** from current levels in order to end overfishing.

1.2 Purpose of the Proposed Action

The *purpose* of Snapper Grouper Amendment 24 is threefold: (1) to implement harvest targets and limits for black grouper and red grouper to ensure that overfishing does not occur; (2) to implement a plan to rebuild the stock so it may ultimately produce optimum yield (OY); and (3) to minimize to the extent practicable adverse social and economic effects expected from the first two items.

1.3 Need for the Proposed Action

The *need* of the action is to allow the red snapper stock to increase in biomass in order to maximize its reproductive potential so that the population may produce the optimum yield (OY). OY, the ultimate goal of any FMP, is the portion of the fish stock that provides the greatest economic, social, and ecological benefit to the nation.

The effects of fishing pressure have been well-documented (e.g., PDT 1990). As fishing pressure intensifies, individuals with a genetic makeup for achieving large sizes may be selectively removed from the population because of gear selectivity or economic value, leaving behind fishes with a genetic disposition for smaller size and slower growth. The overall effect of this heavy, sustained fishing pressure on a fish population includes: (1) a change in the growth rate; (2) a reduction in size at age; (3) a change in the percentage of males for species that change sex or are sexually dimorphic; (4) a decline in the size and age at maturity and first reproduction; (5) a decrease in the size and age structure of the population; (6) a decrease in population fecundity; and (7) a decline in the number of spawning events. Continued overfishing may ultimately disrupt the natural community structure of the reef ecosystems that support red snapper and co-occurring species.

In a fishery where OY is not being achieved on a consistent basis, the full extent of social and economic benefits is not realized. For example, in the red snapperfishery, low stock levels translate into a loss of catch possibilities for commercial and recreational fishermen. Revenues are reduced when fishermen have to fish longer and harder, which may eventually cause participants to exit the fishery. Ending overfishing and rebuilding overfished stocks would allow fishermen to catch more fish with less effort, resulting in higher economic returns in the long-term, as long as effort in the fishery is limited.

1.4 Background

1.4.1 Process for Defining Limits and Targets

The Council is utilizing several tools to end overfishing and rebuild the red snapper stock (Table 1-2). These include utilizing two determinations from the Council's Scientific and Statistical Committee (SSC). These determinations are the overfishing limit (OFL) and acceptable biological catch (ABC). The OFL is an estimate of the catch level above which overfishing is occurring and comes from a stock assessment. The ABC is defined as the level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty, and should be specified based on the ABC control rule. Using the ABC as a start, the Council is proposing an annual catch limit (ACL) for the red snapper stock in the South Atlantic. The ACL is catch limit, expressed in pounds or numbers of fish, that ends or prevents overfishing and serves as the basis for invoking accountability measures (AMs). AMs are designed to initiate an action once the ACL is reached during the course of a fishing season to reduce the risk overfishing will occur. The Council is proposing the implementation of AMs in Amendment 17A. While AMs act to *prevent overfishing* in a fishery, the Council must specify regulations in order to *end overfishing* (through the implementation of management measures).The generalized process to end overfishing and rebuild the stock is summarized in Figure 1-3.

Table 1-2. A summary of the tools being used to prevent overfishing and rebuild the red snapper stock.

Tool	Acronym	Who sets?	Definition
Overfishing Limit	OFL	SSC	An estimate of the catch level above which overfishing is occurring and is expressed in terms of numbers or weight of fish.
Acceptable Biological Catch	ABC	Council, with advice of SSC	A level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty and should be specified based on the ABC control rule.
Annual Catch Limit	ACL	Council	The level of annual catch of a stock or stock complex that ends or prevents overfishing and serves as the basis for invoking AMs. ACL cannot exceed the ABC, but may be divided into sector-ACLs.
Annual Catch Target	ACT	Council	The amount of annual catch of a stock or stock complex that is the management target of the fishery and accounts for management uncertainty in controlling the actual catch at or below the ACL.
Accountability Measures	AM	Council	Management controls to prevent ACLs, including sector-ACLs, from being exceeded and to correct or mitigate overages of the ACL if they occur.
Allocations	n/a	Council	Distribution of the catch among user groups or individuals.
Management measures	n/a	Council	Actions that affect a resource and its exploitation with a view to achieve certain objectives such as maximizing the production of that resource. Examples include catch quotas, bag limits, size limits, seasonal closures, and area closures.

Source: National Standard 1 Guidelines (Appendix K) and NMFS Glossary (Appendix B).

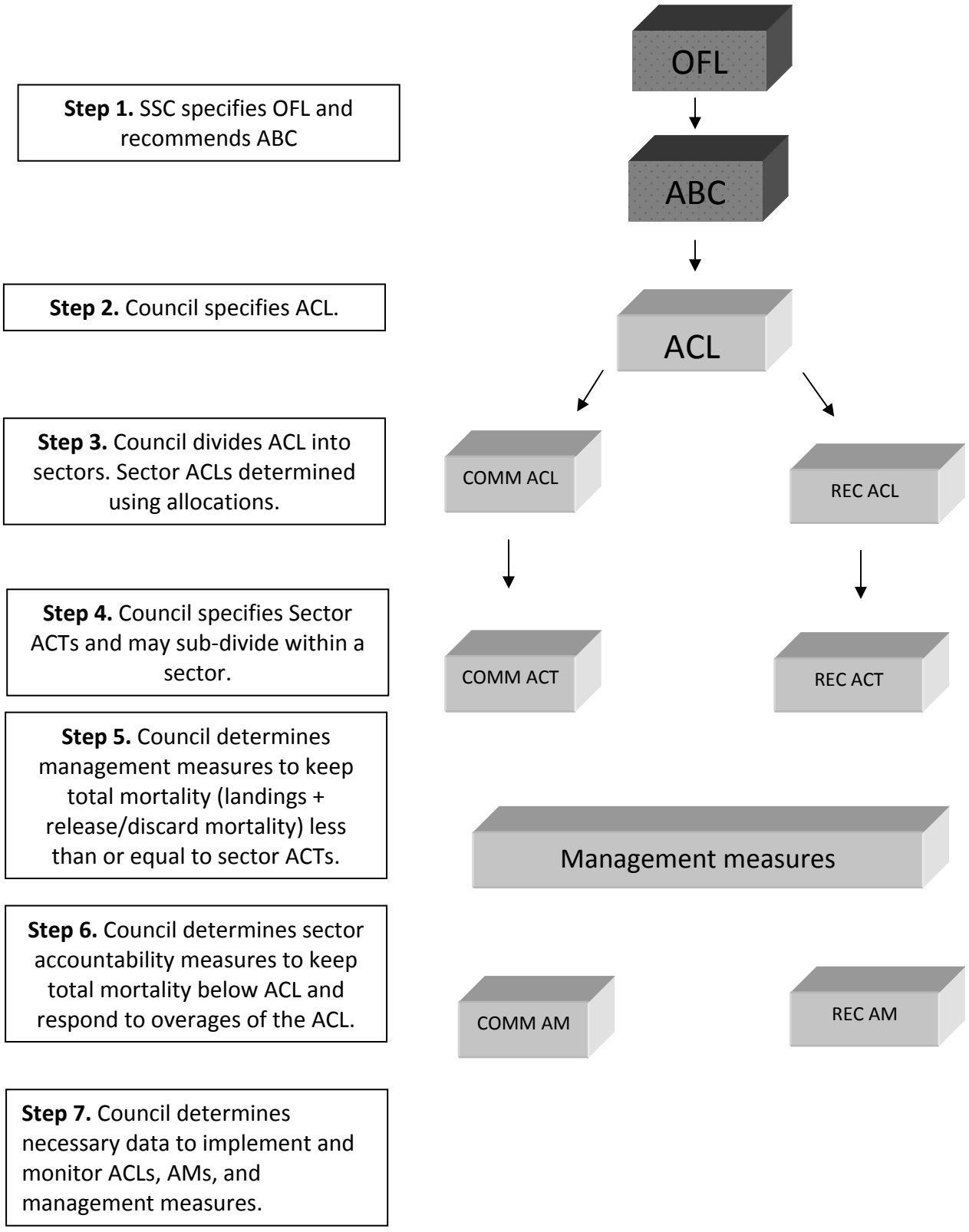

Figure 1-3. The process employed in Amendment 24 to the Snapper Grouper FMP to specify tools to end overfishing.

1.4.2 SSC Recommendation for OFL and ABC

Black grouper

The black grouper stock is considered a single stock that extends over both the Gulf of Mexico Fishery Management Council's and the South Atlantic Fishery Management Council's jurisdiction (SEDAR 19 2010). The stock status determination (not overfishing and not overfished) applies to the single stock; however the Councils' respective SSCs supplied OFL and ABC advice separately (Table 1-3). The OFL determination by the SSCs was identical; these are equal to the value at F_{MSY}. F_{MSY} was not able to be calculated so a proxy of $F30\%_{SPR}$ was used. However, the Gulf of Mexico and the South Atlantic SSC provided risk of overfishing at 27.5% and 33%, respectively. The South Atlantic SSC felt that a lower risk of overfishing should be used to determine the ABC as they felt that there was an insufficient characterization of uncertainty, especially through the use of constant catchability and a dome-shape selectivity. Further details of the SSC's concerns and recommendations may be found in **Appendix E**.

Table 1-3. Overfishing Level (OFL) and Acceptable Biological Catch (ABC) recommendations from the SSCs for black grouper.

Species	Council's SSC	OFL	ABC	Overfishing Risk (P*)
Black Grouper	South Atlantic	818,959	610,482 (2011)	0.275
	Gulf of Mexico	818,959	649,761 (2011) 654,942 (2012) 676,574 (2013) 689,025 (2014) 694,755 (2015)	0.33

Red grouper

The Scientific and Statistical Committee (SSC) recommended an overfishing limit (OFL) equal to the yield at maximum fishing mortality threshold (Table 1-4). Since the stock was found to be overfished, the ABC was determined by applying the ABC Control Rule for rebuilding stocks. Under this control rule, the probability of rebuilding success equals 100% minus the risk of overfishing (also referred to as the P*). The acceptable risk of overfishing for red grouper, as determined by the control rule, is 30%; thus, the acceptable probability of rebuilding success is at least 70%. The probability rate was used to determine the ABC throughout the rebuilding timeframe (Table 1-5).

Table 1-4. Overfishing Level (OFL) and Acceptable Biological Catch (ABC) recommendations from the SSC for red grouper.

Species	OFL	ABC	Overfishing Risk (P*)	Probability of Rebuilding Success

Red Grouper	669,000	665,000	30%	70%

Table 1-5. Projection results if the fishing mortality rate is fixed at F = Rebuild. The maximum red grouper kill under this projection is 665,000 lbs whole weight.

Year	F(per year)	Probability of Rebuilt Stock	Maximum Allowable Kill		
			Landings	Discards	Total
2009	0.298	0	1,098,000	61,000	1,159,000
2010	0.298	0	985,000	70,000	1,055,000
2011 (Year 1)	0.181	0.01	622,000	43,000	665,000
2012	0.181	0.06	693,000	44,000	737,000
2013	0.181	0.15	762,000	44,000	806,000
2014	0.181	0.26	822,000	44,000	866,000
2015	0.181	0.36	873,000	45,000	918,000
2016	0.181	0.46	915,000	45,000	960,000
2017	0.181	0.54	951,000	45,000	996,000
2018	0.181	0.61	980,000	45,000	1,025,000
2019	0.181	0.66	1,004,000	46,000	1,050,000
2020	0.181	0.7	1,023,000	46,000	1,069,000

1.4.3 Development of Alternatives

1.4.4 Deadlines

Three statutory requirements are driving timelines for Snapper Grouper FMP Amendment 24. First, the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires the Council prepare a plan amendment or proposed regulations to end overfishing within one year of being notified that a stock is experiencing overfishing.

The Council received notification, in a letter dated July 8, 2008, that the South Atlantic red snapper stock is undergoing overfishing and is overfished. A plan could not be prepared before the deadline due to the significance of the actions and the extensive analyses required. As a result, the Council requested NOAA Fisheries Service, in March 2009, to establish interim measures to reduce overfishing and fishing pressure on the red snapper stock. Interim measures became effective on January 4, 2010. The interim rule was effective until June 2, 2010, but was extended for an additional 186 days since the Council is proposing long-term management measures in Snapper Grouper FMP Amendment 17A to end overfishing of red snapper and rebuild the stock. Regulations in implemented by the interim rule will expire on December 5, 2010.

Second, the Magnuson-Stevens Act requires the Council implement a rebuilding plan for overfished stocks and identify a time period for rebuilding the stock or stock complex based on factors specified in Magnuson-Stevens Act section 304(e)(4). The time period for rebuilding the

fishery, as outlined in the Act, must be as short as possible and shall not exceed 10 years except in specific cases. The Act further clarifies that the needs of fishing communities must be considered when designating the time period. More specific guidance on the rebuilding time is provided by the Magnuson-Steven Act's National Standard 1 Guidelines at 50 CFR § 600.310(j)(3)(i)(D) (see text box and **Appendix K**).

Guidance for Rebuilding Timeframes

The ''minimum time for rebuilding a stock'' (T_{MIN}) means the amount of time the stock or stock complex is expected to take to rebuild to its maximum sustainable yield biomass level (B_{MSY}) in the absence of any fishing mortality. If T_{MIN} for the stock or stock complex is 10 years or less, then the maximum time allowable for rebuilding (T_{MAX}) that stock to its B_{MSY} is 10 years. If T_{MIN} for the stock or stock complex exceeds 10 years, then the maximum time allowable for rebuilding a stock or stock complex to its B_{MSY} is T_{MIN} plus the length of time associated with one generation time for that stock or stock complex. ''Generation time'' is the average length of time between when an individual is born and the birth of its offspring. The generation time for red snapper is 25 years.

Finally, revisions to the Magnuson-Stevens Act in 2006 require that by 2010, Fishery Management Plans (FMPs) for fisheries determined by the Secretary to be subject to overfishing must establish a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective Council's Scientifical and Statistical Committee SSC or other established peer review processes.

1.5 History of Management

Need to update with black grouper and red grouper regulatory history.

The snapper grouper fishery is highly regulated; red snapper has been regulated since 1983. A detailed history of management for all species in the snapper grouper fishery management unit may be found in **Appendix T**. Below is an annotated list of fishery management plan/amendments that contained actions specifically related to red snapper.

Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region 1983

The original Fishery Management Plan (FMP) included provisions to prevent growth overfishing in thirteen species in the snapper grouper complex and established a procedure for preventing overfishing in other species; established minimum size limits for red snapper, yellowtail snapper, red grouper, Nassau grouper, and black sea bass, a 4" trawl mesh size to achieve a 12" total length minimum size limit for vermilion snapper; and included additional harvest and gear limitations.

Amendment 4 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region 1991

Amendment 4 prohibited the use of various gear, including fish traps, the use of bottom longlines for wreckfish, and powerheads in special management zones (SMZs) off South Carolina; established bag limits and minimum size limits for several species (20 inch total length minimum size limit and 2 fish bag limit for red snapper); established income requirements to qualify for permits; and required that all snapper grouper species possessed in South Atlantic Federal waters must have heads and fins intact through landing.

Amendment 11 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region 1998

Amendment 11 amended the FMP to make definitions of maximum sustainable yield (MSY), optimum yield, overfishing, and overfished consistent with National Standard Guidelines. Amendment 11 also identified and defined fishing communities, addressed bycatch management measures, and defined the red snapper F_{MSY} proxy as $F_{30\%SPR}$.

Interim Rule for Red Snapper

The Council received notification, in a letter dated July 8, 2008, that the South Atlantic red snapper stock is undergoing overfishing and is overfished. A plan could not be prepared before the deadline due to the significance of the actions and the extensive analyses required. As a result, the Council requested NOAA Fisheries Service, in March 2009, to establish interim measures to reduce overfishing and fishing pressure on the red snapper stock. Interim measures became effective on January 4, 2010. The interim rule was effective until June 2, 2010, but was extended for an additional 186 days since the Council is proposing long-term management

measures in Snapper Grouper FMP Amendment 17A to end overfishing of red snapper and rebuild the stock. Regulations in implemented by the interim rule will expire on December 5, 2010.

1.6 Background

Objectives of the Snapper Grouper FMP, as modified by Amendment 8 (SAFMC 1997), are shown below. In addition, two new objectives as proposed in Amendment 17A are also provided.

1. Prevent overfishing.
2. Collect necessary data.
3. Promote orderly utilization of the resource.
4. Provide for a flexible management system.
5. Minimize habitat damage.
6. Promote public compliance and enforcement.
7. Mechanism to vest participants.
8. Promote stability and facilitate long run planning.
9. Create market-driven harvest pace and increase product continuity.
10. Minimize gear and area conflicts among fishermen.
11. Decrease incentives for overcapitalization.
12. Prevent continual dissipation of returns from fishing through open access.
13. Evaluate and minimize localized depletion.
14. End overfishing of snapper grouper stocks undergoing overfishing.
15. Rebuild stocks declared overfished.

2 Actions and Alternatives

Alternatives considered by the Council in this amendment and a comparison of their environmental consequences is outlined in **Section 2**. The alternatives are analyzed in detail in **Section 4**. These alternatives were identified and developed through multiple processes, including the scoping process, public hearings and/or comments, interdisciplinary plan team meetings, and meetings of the Council, the Council's Snapper Grouper Committee, Snapper Grouper Advisory Panel, and Scientific and Statistical Committee . Species affected by the proposed actions and alternatives below include red snapper and co-occurring species. Alternatives the Council considered but eliminated from detailed study during the development of this amendment are described in **Appendix A**.

All alternatives analyzed in this environmental impact statement (EIS) would achieve the requirements of National Environmental Policy Act (NEPA) outlined in Section 101 and 102 of the Act. Alternatives for the specification of management reference points, the red snapper rebuilding plan, management measures intended to end overfishing of red snapper, and alternatives for a red snapper monitoring program were developed to ensure the long-term sustainability of the red snapper stock for future generations. Actions to end overfishing of red snapper would require fishery participants to significantly reduce harvest of red snapper, thereby, giving the fishermen ownership in contributing to the preservation and enhancement of the environment. Alternatives for actions affecting red snapper were developed by the Council and are analyzed by an interdisciplinary planning team tasked with drafting the subject EIS. The Amendment 17A EIS provides relevant background information and in-depth analyses of each action alternative considered by the Council. Thus, the subject EIS complies with Section 102 of NEPA by providing the Secretary of Commerce all the information needed to make a prudent decision regarding approval of the amendment and subsequent implementation through the rulemaking process.

2.1 Black Grouper

2.1.1 Optimum Yield

Table 3. OY alternatives for black grouper.

Alternatives	OY equation	F_{OY} equals	OY value
Alternative 1 (no action)	OY equals the yield produced by F_{OY}. $F_{45\%SPR}$ is used as the F_{OY} proxy.	0.12*	not specified
Alternative 2	OY equals the yield produced by F_{OY}. Note: If a stock is overfished, F_{OY} equals the fishing mortality rate specified by the rebuilding plan designed to rebuild the stock to SSB_{MSY} within the approved schedule. After the stock is rebuilt, F_{OY} = a fraction of F_{MSY}. Black grouper is not overfished.	(65%)(F_{MSY})	461,000 lbs whole weight
Alternative 3		(75%)(F_{MSY})	530,000 lbs whole weight
Alternative 4		(85%)(F_{MSY})	596,000 lbs whole weight

[1]Potts and Brennan (2001)
[2]Potts and Brennan (2001) report that the F to obtain 40% SPR is 0.12.

The Team would like the Council to discuss whether there should be an Alternative where OY = ABC.

2.1.2 Acceptable Biological Catch Control Rule

Alternative 1. (No Action). Do not establish an ABC Control Rule for black grouper.

Alternative 2. Establish an ABC Control Rule where ABC equals OFL. The ABC value would equal 818,959 lbs whole weight.

Alternative 3. Establish an ABC Control Rule where ABC equals a percentage of OFL.

Alternative 3a. ABC=65%OFL. The ABC value would equal 532,323 lbs whole weight.

Alternative 3b. ABC=75%OFL. The ABC value would equal 614,429 lbs whole weight.

Alternative 3c. ABC=85%OFL. The ABC value would equal 696,115 lbs whole weight.

Alternative 4. Establish an ABC Control Rule where ABC equals a percentage of the yield at MFMT.

Alternative 4a. ABC=yield at 65%MFMT. The ABC value would equal 461,000 lbs whole weight.

Alternative 4b. ABC=yield at 75%MFMT. The ABC value would equal 530,000 lbs whole weight.

Alternative 4c. ABC=yield at 85%MFMT. The ABC value would equal 596,000 lbs whole weight.

Alternative 5 (Preferred). Establish ABCs based on the GMFMC SSC's ABC control rule. The ABC for 2011 uses a risk of overfishing of 33% (P* = 0.33). The ABC values are shown in the table below.

	GMFMC SSC
OFL	818,959
ABC	649,761 (2011) 654,942 (2012) 676,574 (2013) 689,025 (2014) 694,755 (2015)
Risk of overfishing (P*)	0.33

Alternative 6. Establish ABCs based on the SAFMC SSC's ABC control rule. The ABC value would equal 610,482 lbs whole weight in 2011.

	SAFMC SSC
OFL	818,959
ABC	610,482 (2011)
Risk of overfishing (P*)	0.275

Alternative 7. Establish an ABC Control Rule where ABC is a percentage of OFL. The percentage is based upon the level of risk of overfishing (P*).

Alternative 7a. ABC=X% of OFL. The X% is based upon P* equals .20.

Alternative 7b. ABC=X% of OFL. The X% is based upon P* equals .30.

Alternative 7c. ABC=X% of OFL. The X% is based upon P* equals .40.

Alternative 7d. ABC=X% of OFL. The X% is based upon P* equals .50.

2.1.3 Jurisdictional Allocations

These options have been added by the GMFMC and SAFMC staffs for the Council's consideration.

Alternative 1 (No action). Do not establish jurisdictional allocation of the black grouper acceptable biological catch (ABC) between the Gulf and South Atlantic Councils.

Alternative 2. Withdraw black grouper from the Gulf of Mexico Reef Fish Fishery Management Plan and request that the Secretary of Commerce designate the South Atlantic Council to manage black grouper throughout their range.

Alternative 3. Divide the acceptable biological catch (ABC) into commercial and recreational sector components based on criteria to be agreed upon by both Councils as outlined in one of the following options below: The South Atlantic Council will establish ACLs and AMs as well as other management criteria for the recreational sector throughout the range of the stock and the Gulf Council will establish ACLs and AMs as well as other management criteria for the commercial sector throughout the range of the stock.

Option a. South Atlantic (recreational sector) = 38% of the ABC and Gulf (commercial sector) = 62% of the ABC (Established by using combined Council catch history for each sector from 1986-2008).

Option b. South Atlantic (recreational sector) = 43% of the ABC and Gulf (commercial sector) = 57% of the ABC (Established by using combined Council catch history for each sector from 2001-2008).

Option c. South Atlantic (recreational sector) = 45% of the ABC and Gulf (commercial sector) = 55% of the ABC (Established by using combined Council catch history for each sector from 1991-2008).

Alternative 4. Establish a jurisdictional allocation based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils for black grouper acceptable biological catch (ABC) based on one of the following methods:

Option a. South Atlantic = 46% of ABC and Gulf = 54% of ABC (Established by using catch history from 1991-2008).

Option b. South Atlantic = 47% of ABC and Gulf = 53% of ABC (Established by using 50% of catch history from 1986-2008 + 50% of catch history from 2006-2008).

Option c. South Atlantic = 48% of ABC and Gulf = 52% of ABC (Established by using 50% of catch history from 1991-2008 + 50% of catch history from 2006-2008).

Option d. South Atlantic = 50% of ABC and Gulf = 50% of ABC (Divide the ABC evenly between the two Councils).

Discussion:

At the June Council meeting a motion was made for Gulf and South Atlantic staff to work together to develop alternative methods for allocating the black grouper catch between the two Council's jurisdictional areas. The stock assessment for black grouper treated the Gulf and South Atlantic management unit as a single stock rather than providing separate assessments. The Gulf Council received a letter dated June 10, 2010 from the South Atlantic Council accepting the Gulf Council's acceptable biological catch (ABC) control rule and the ABC recommendation developed by the Gulf Scientific and Statistical Committee (SSC).

The Gulf SSC recommends that a five-year time stream from 2011-2015, to include landings and dead discards in whole weight as the ABC for black grouper, for a P* of 0.33 (Source: OFL projections Table A3.3.4.17 of the final SEDAR 19 stock assessment report and ABC projections, R. Muller, FL FWC, FWRI, person communication).

	OFL		
Year	**Landings**	**Discards**	**Total**
2011	695,007	123,952	818,959
2012	652,810	127,396	780,206
2013	627,552	130,213	757,765
2014	619,665	130,237	749,902
2015	615,801	130,207	746,008

	ABC		
Year	**Landings**	**Discards**	**Total**
2011	523,000	126,761	649,761
2012	522,543	132,399	654,942
2013	545,595	130,978	676,574
2014	558,711	130,314	689,025
2015	564,737	130,018	694,755

Currently, the ABC applies across Council jurisdictions; therefore, the Councils would have to agree to a jurisdictional allocation between the Gulf and South Atlantic. Since black grouper are primarily landed off the state of Florida especially off southern Florida and in the Florida Keys (Monroe County), jurisdictional allocation of this stock presents some issues. These issues primarily revolve around dividing the recreational landings in Monroe County, because the current Gulf and South Atlantic Council jurisdictional boundary line is the Florida Keys.

After discussions with the SEDAR 19 analysts regarding recreational landings (MRFSS-charterboat, private, and shore mode) the recommendation was made to remove all Florida Keys landings from the Gulf Council landings including discards and place them into the South Atlantic landings. Legal sized black grouper caught in the Florida Keys, are more likely to have been caught from South Atlantic jurisdictional waters; however, based on the current system of MRFSS landings for Monroe County they were previously grouped into the Gulf landings. Black grouper are probably caught in the back reef area of the Florida Keys (Gulf Council

jurisdiction), but are probably not legal size (B. Muller, FL FWC, FWRI, personal communication). The headboat fishery already accounts for Florida Keys (Monroe County) by including those landings in the South Atlantic jurisdiction (SEDAR 19 2010). The commercial data set used to derive the jurisdictional allocations are from the Florida trip ticket program so that "area fished" could be stratified, which as particularly important for the Florida Keys. Due to using this commercial data set so that Florida Keys (Monroe County) landings could be split between Council jurisdictions resulted in higher landings than were used in the stock assessment. This is because additional adjustments were not completed (SEDAR 19 2010).

Alternative 1 is the no action alternative and would not establish jurisdictional allocation of black grouper between the Gulf and South Atlantic Councils.

Alternative 2 would withdraw black grouper from the Gulf of Mexico Reef Fish Fishery Management Plan and requesting that the Secretary of Commerce designate the South Atlantic Council to manage black grouper throughout its range. Black grouper are primarily landed off Florida, with low landings off other Gulf and South Atlantic states (SEDAR 19 2010). Division of the ABC for black grouper between Councils was not suggested by the stock assessment analysts. Having one Council manage the stock throughout their range may provide better monitoring and conservation of the resource. This may be particularly important considering the issue with division of the recreational landings in the Florida Keys (Monroe County).

Alternative 3 would divide the ABC into commercial and recreational sector components based on criteria to be agreed upon by both Councils. The South Atlantic Council will establish ACLs and AMs as well as other management criteria for the recreational sector throughout the range of the stock and Gulf Council will establish ACLs and AMs as well as other management criteria for the commercial sector throughout the range of the stock. Recreational landings are predominately from in the South Atlantic Council jurisdiction whereas; the commercial landings are predominately from the Gulf Council jurisdiction (Figure 1). However, in recent years (2005-2008) commercial landings between the Gulf and South Atlantic Councils were similar. Recreational landings in the South Atlantic have increased gradually over the last four years (2005-2008). **Options a-c** would establish a jurisdictional allocation between the South Atlantic and Gulf by using the combined Councils landings for each sector based on recreational landings being predominately from the South Atlantic jurisdiction and commercial landings predominately from the Gulf (Figure 1).

Option a would establish the South Atlantic (recreational sector) = 38% of the ABC and Gulf (commercial sector) = 62% of the ABC. These percentages were derived from using combined Council catch history for each sector from 1986-2008. This is the entire time period landings data are available for all sectors.

Option b would establish the South Atlantic (recreational sector) = 43% of the ABC and Gulf (commercial sector) = 57% of the ABC. These percentages were derived from using combined Council catch history for each sector from 2001-2008. The time series was started in 2001 since that was the first full year that different minimum size limits were adopted in the Gulf of Mexico EEZ for both the commercial (24 inches total length) and recreational (22 inches total length)

sectors. The South Atlantic Fishery Management Council increased the minimum size limit from 20 inches total length to 24 inches total length in 1999 for both sectors. Using historical catch from 1999-2008 would establish the South Atlantic (recreational sector) = 41% of the ABC and Gulf (commercial sector) = 59% of the ABC similar to the percentages listed under **Option b**.

Option c would establish the South Atlantic (recreational sector) = 45% of the ABC and Gulf (commercial sector) = 55% of the ABC. These percentages were derived from using combined Council catch history for each sector from 1991-2008. The time series was started in 1991 since recreational data collection and fish species identification were notably improved.

Alternative 4 would establish a jurisdictional allocation of the ABC based on the Florida Keys (Monroe County) jurisdictional boundary between the Gulf and South Atlantic Councils. Recreational MRFSS data (charterboat, private, and shore mode) landings in the Florida Keys were placed under the South Atlantic jurisdiction area parallel to methods used for Florida Keys headboat landings. Commercial landings were separated by "area fished" partitioning the landings by statistical grid and thereby Council jurisdiction.

Option a would establish a jurisdictional allocation of ABC for the South Atlantic = 46% of ABC and Gulf = 54% of ABC. These percentages were derived from using catch history from 1991-2008. Recreational data collection and fish species identification were notably improved in 1991 so the time series was started in that year.

Option b would establish a jurisdictional allocation of ABC for the South Atlantic = 47% of ABC and Gulf = 53% of ABC. These percentages were derived from using the formula presented in the letter from the South Atlantic Council to the Gulf Council as the following: use 50% of catch history from 1986-2008 + 50% of catch history from 2006-2008.

Option c would establish a jurisdictional allocation of ABC for the South Atlantic = 48% of ABC and Gulf = 52% of ABC. These percentages were derived from using the same formula presented in the letter, but starting the catch history in 1991 when recreational data collection and fish species identification were notably improved (use 50% of catch history from 1991-2008 + 50% of catch history from 2006-2008).

Option d would establish a jurisdictional allocation of ABC for the South Atlantic = 50% of ABC and Gulf = 50% of ABC, dividing the ABC evenly between the two Councils. In recent years, commercial landings of black grouper have been similar in each Council's jurisdiction and using catch history results in percentages that are close to a 50:50 split of the ABC. For example, using catch history in 2001-2008 resulted in a jurisdictional allocation of ABC for the South Atlantic = 49% and Gulf = 51% of the ABC. This time series was started in 2001 when the first full year in the Gulf of Mexico EEZ that different minimum size limits were adopted for both the commercial (24 inches total length) and recreational (22 inches total length) sectors. The South Atlantic Fishery Management Council increased the minimum size limit from 20 inches total length to 24 inches total length in 1999 for both sectors. Using catch history in

1999-2008 resulted in a jurisdictional allocation of ABC for the South Atlantic = 46% of the ABC and Gulf = 54% of the ABC, the same percentages that are listed under **Option a**.

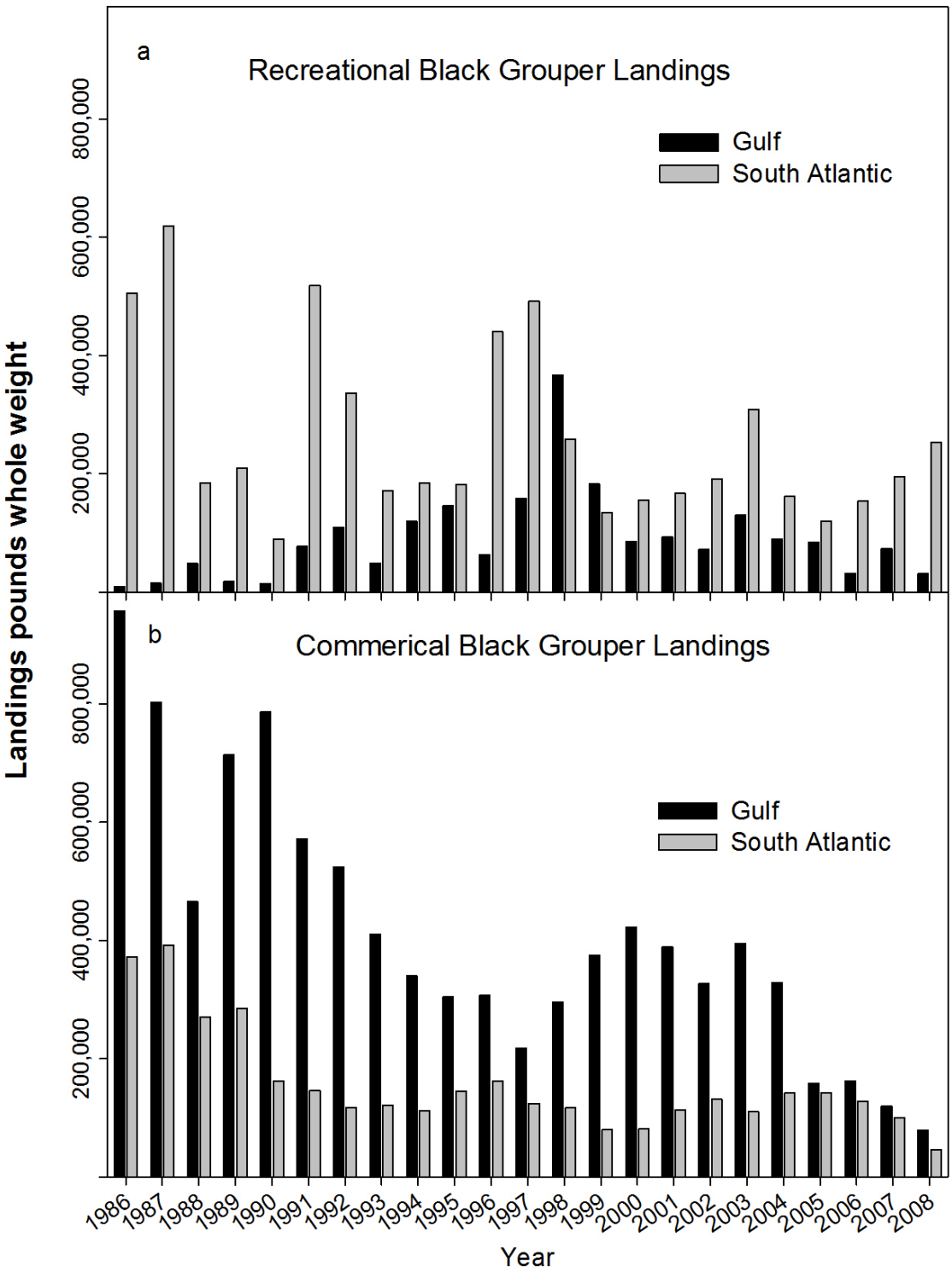

Figure 1. Landings of black grouper in whole weight (WW) in the Gulf and South Atlantic jurisdictions A) recreational landings (MRFSS and headboat data combined) and B) commercial black grouper landings. Sources: MRFSS data from T. Sminkey, NOAA Fisheries, personal

communication and headboat data from SEDAR 19 Final Data Workshop Report. Commercial data from Florida's trip ticket program, B. Muller, FL FWC, FWRI, personal communication.

2.1.4 Sector Allocations

The IPT has restructured the alternatives and have added alternatives (Options 2a-d and 3a-d) for the Council's consideration.

Alternative 1 (No action). Do not establish a sector allocation of the black grouper acceptable biological catch (ABC).

Alternative 2 (Preferred). Divide the acceptable biological catch (ABC) into commercial and recreational sector components based on criteria as outlined in one of the following options below.

Option a. Commercial = X% of ABC and recreational = X% of ABC (Established by using catch history from 1986-2008). This alternative would establish a commercial annual catch limit of X pounds whole weight and a recreational annual catch limit of X pounds whole weight. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option b. Commercial = X% of ABC and recreational = X% of ABC (Established by using catch history from 1986-1998). This alternative would establish a commercial annual catch limit of X pounds whole weight and a recreational annual catch limit of X pounds whole weight. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option c. Commercial = X% of ABC and recreational = X% of ABC (Established by using catch history from 1999-2008). This alternative would establish a commercial annual catch limit of X pounds whole weight and a recreational annual catch limit of X pounds whole weight. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option d. Commercial = X% of ABC and recreational = X% of ABC (Established by using catch history from 2006-2008). This alternative would establish a commercial annual catch limit of X pounds whole weight and a recreational annual catch limit of X pounds whole weight. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option e (Preferred). Commercial = 47% of ABC and recreational = 53% of ABC (Established by using 50% of catch history from 1991-2008 + 50% of catch history from 2006-2008). *Use 3 years rolling forward for future amendments. (As per Council motion from September, 2008).* This alternative would establish a commercial annual catch limit of X pounds whole weight and a recreational annual catch limit of X pounds whole

weight. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3. Divide the acceptable biological catch (ABC) into commercial, recreational, and for-hire sector components based on criteria as outlined in one of the following options below.

Option a. Commercial = X% of ABC, for-hire = X%, and recreational = X% of ABC (Established by using catch history from 1986-2008). This alternative would establish a commercial annual catch limit of X pounds whole weight, a for-hire annual catch limit of X pounds whole weight, and a recreational annual catch limit of X pounds whole weight. The commercial, for-hire, and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option b. Commercial = X% of ABC, for-hire = X%, and recreational = X% of ABC (Established by using catch history from 1986-1998). This alternative would establish a commercial annual catch limit of X pounds whole weight, a for-hire annual catch limit of X pounds whole weight, and a recreational annual catch limit of X pounds whole weight. The commercial, for-hire, and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option c. Commercial = X% of ABC, for-hire = X%, and recreational = X% of ABC (Established by using catch history from 1999-2008). This alternative would establish a commercial annual catch limit of X pounds whole weight, a for-hire annual catch limit of X pounds whole weight, and a recreational annual catch limit of X pounds whole weight. The commercial, for-hire, and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option d. Commercial = X% of ABC, for-hire = X%, and recreational = X% of ABC (Established by using catch history from 2006-2008). This alternative would establish a commercial annual catch limit of X pounds whole weight, a for-hire annual catch limit of X pounds whole weight, and a recreational annual catch limit of X pounds whole weight. The commercial, for-hire, and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option e. Commercial = X% of ABC, for-hire = X%, and recreational = X% of ABC (Established by using 50% of catch history from 1991-2008 + 50% of catch history from 2006-2008). *Use 3 years rolling forward for future amendments. (As per Council motion from September, 2008)*. This alternative would establish a commercial annual catch limit of X pounds whole weight, a for-hire annual catch limit of X pounds whole weight, and a recreational annual catch limit of X pounds whole weight. The commercial, for-hire, and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

2.1.5 Annual Catch Limits

Are these alternatives necessary as ACL specified in earlier action?

Commercial

Alternative 1 (No action). Do not specify a commercial sector ACL for black grouper.

Alternative 2. ACL equals ABC.

Alternative 3. ACL equals 90% of the ABC.

Alternative 4. ACL equals 80% of the ABC.

Recreational

Alternative 1 (No action). Do not specify a recreational sector ACL for black grouper.

Alternative 2. The recreational sector ACL equals 85% of the private recreational sector ABC.

Alternative 3. The recreational sector ACL equals 75% of the private recreational sector ABC.

Alternative 4. The recreational sector ACL equals sector ACL[(1-PSE) or 0.5, whichever is greater].

2.1.6 Accountability Measures/Management Measures

Alternative 1 (No Action). Retain the existing regulations for black grouper (Table X).

Table 2-7. Existing regulations and those proposed in Amendment 17B for black grouper.

Current Regulations		
	Commercial	Recreational
Bag limit		Three grouper aggregate bag limit per person per day. Exclude the captain and crew on for-hire vessels from possessing a bag limit for groupers
In-season closures	Gag commercial ACL of 352,940 lbs gutted weight. After the commercial ACL is met, all purchase and sale of the following species is prohibited and	

	harvest and/or possession is limited to the bag limit: gag; black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby; and coney.	
Minimum size limit	20 inch	
Seasonal closure	No fishing for and/or possession of the following species is allowed January through April: black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby, and coney.	
Regulations proposed by Amendment 17B		
	Commercial	Recreational
	In addition to the gag sector-ACLs, establish an ACL for gag, black grouper, and red grouper of 662,403 lbs gutted weight (commercial) and 648,663 lbs gutted weight (recreational). The table below shows how the aggregate ACL was calculated. Prohibit the commercial possession of shallow water groupers when the gag or the gag, black grouper, and red grouper when the ACL is projected to be met.	Establish a recreational ACL for gag, black grouper, and red grouper of 648,663 lbs gutted weight. If at least one of the species (gag, red grouper, or black grouper) *is overfished* and the sector ACL is projected to be met, prohibit the harvest and retention of the species or species group. If the ACL is exceeded, independent of stock status, the Regional Administrator shall publish a notice to reduce the sector ACL in the following year by the amount of the overage. For black grouper, black sea bass, gag, red grouper, and vermilion snapper, compare the recreational ACL with recreational landings over a range of years. For 2010, use only 2010 landings. For 2011, use the average landings of 2010 and 2011. For 2012 and beyond, use the most recent three-year running average.

Commercial

Alternative 2 (Preferred). After the commercial ACL is met, all purchase and sale of black grouper is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 3 (Preferred). If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

Recreational

Alternative 4 (Preferred). For in-season and post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the average landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running average.

The IPT recommends a restructure of Alternatives 5 and 6 where Alternative 6 is broken into options.

Alternative 5 (Preferred). The Regional Administrator shall publish a notice to close the recreational fishery when the ACL is projected to be met.

Alternative 6 (Preferred). Take corrective action if the recreational ACL has been exceeded.

> **Option a (Preferred).** If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.
>
> **Option b.** If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing year.

~~**Alternative 5.** If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing year.~~

~~**Alternative 6 (Preferred).** The Regional Administrator shall publish a notice to close the recreational fishery when the ACL is projected to be met. If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.~~

	Commercial (lbs gw)	Recreational (lbs gw)	Total (lbs gw)
Gag ACL *(Amend 16)*	352,940	340,060	693,000
Projected black grouper landings (2010)[1]	86,886	31,863	118,749
Projected red grouper landings (2010)[2]	221,557	276,740	**498,297**
Gag, black, red aggregate ACL *(proposed in Amend 17B)*	662,403	648,663	1,311,006

[1]The commercial projected landings for 2010 was computed by using the annual average from 04-06. The landings from Jan through April were zero to account for the 4 month closure implemented on July 29, 2009. The landings from December were zero to account for the projected shallow water grouper closure when the gag commercial ACL would be met.
[2]The recreational projected landings for 2010 was computed by using the annual average from 04-06. The landings from Jan through April were zero to account for the 4 month closure implemented on July 29, 2009. In addition, harvest was reduced by 2.5% to account for the change in aggregate bag limit from 5 to 3.

2.2 Red Grouper

2.2.1 Maximum Sustainable Yield

Table 2-1. MSY alternatives for red grouper.

Alternatives	Equation	F_{MSY}	MSY Values (lbs whole weight)
Alternative 1 (No Action)	MSY equals the yield produced by F_{MSY}. $F_{30\%SPR}$ is used as the F_{MSY} proxy.	$F_{30\%SPR}$= 0.28[1]	not specified
Alternative 2 (Preferred)	MSY equals the yield produced by F_{MSY} or the F_{MSY} proxy. MSY and F_{MSY} are recommended by the most recent SEDAR/SSC.	0.221[2]	1,110,000[3]

[1]Potts and Brennan (2001)
[2,3]SEDAR 19 (2010)

Table 2-2b. Summary of effects of MSY Proxy alternatives for red grouper.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action) MSY proxy = $F_{30\%SPR}$		
Alternative 2. MSY equals the yield produced by F_{MSY} or the F_{MSY} proxy. MSY and F_{MSY} are recommended by the most recent SEDAR/SSC.		

(-) overall negative impacts, (+) overall positive impacts, (- +) neutral impacts

2.2.2 Rebuilding Schedule

Alternative 1 (No Action). There currently is not a rebuilding plan for red grouper. Snapper Grouper Amendment 4 (regulations effective January 1992) implemented a 15-year rebuilding plan beginning in 1991 which expired in 2006.

Alternative 2. Define a rebuilding schedule as the shortest possible period to rebuild in the absence of fishing mortality (T_{MIN}). This would equal 3 years with the rebuilding time period ending in 2013. 2011 is Year 1.

Alternative 3. Define a rebuilding schedule as the mid-point between the shortest possible and maximum recommended period to rebuild. This would equal 6.5 years with the rebuilding time period ending in 2016. 2011 is Year 1.

Alternative 4. Define a rebuilding schedule as the maximum period allowed to rebuild (T_{MAX}). This would equal 10 years with the rebuilding time period ending in 2020. 2011 is Year 1.

Table 2-3. Summary of effects of rebuilding schedule alternatives for red grouper.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action). Do not implement a rebuilding plan.	(- +)	
Alternative 2. 3 year rebuilding period	(+)	
Alternative 3. 6.5 year rebuilding period	(+)	
Alternative 4 (Preferred). 10 year rebuilding period	(+)	

(-) overall negative impacts, (+) overall positive impacts, (- +) neutral impacts

2.2.3 Rebuilding Strategy (Including Optimum Yield and Annual Catch Limits)

Alternatives	Rebuilding strategy (F_{OY} Equal To)	ACL in Year 1 of Rebuilding (2011)[1] (lbs whole weight) *Landings and Discards*	ACL in Year 1 of Rebuilding (2011)[1] (lbs whole weight) *Just Landings*	OY Values at Equilibrium (lbs whole weight)
Alternative 1 (No Action)	$F_{45\%SPR}$	Not specified	Not specified	Need projection
Alternative 2	$F_{REBUILD}$	665,000	622,000	1,126,000
Alternative 3	$85\%F_{MSY}$	668,000	643,000	1,103,000
Alternative 4	$75\%F_{MSY}$	613,000	573,000	1,089,000
Alternative 5	$65\%F_{MSY}$	535,000	501,000	1,064,000
[1]For alternative 2-5, the ACL specified for 2011 would remain in effect beyond 2011 until modified.				

Alternative 1 (No Action). Maintain a yield-based rebuilding strategy for red grouper where $F_{OY} = F_{45\%SPR}$. Under this strategy, the fishery would have a XX% chance of rebuilding to SSB_{MSY} by 20XX and a XX% chance of rebuilding to SSB_{MSY} by 20XX based on a $F_{40\%SPR}$ proxy for F_{MSY}.

Need to request this projection from the Science Center.

- The Optimum Yield at equilibrium would be X lbs whole weight.
- The Overfishing Level is 669,000 lbs whole weight.
- The Acceptable Biological Catch recommendation from the Scientific and Statistical Committee for 2011 is 665,000 lbs whole weight.
- The Annual Catch Limit would not be specified.

Alternative 2. Define a rebuilding strategy for red grouper that sets F_{OY} equal to $F_{REBUILD}$. $F_{REBUILD}$ is a fishing mortality rate that would have a 70% probability of rebuilding success to SSB_{MSY} in T_{MAX} (Ten years for red grouper). Under this strategy, the fishery would have at least a 50% chance of rebuilding to SSB_{MSY} by 2017 and 70% chance of rebuilding to SSB_{MSY} by 2020.

- The Optimum Yield at equilibrium would be 1,126,000 lbs whole weight.
- The Overfishing Level is 669,000 lbs whole weight.
- The Acceptable Biological Catch recommendation from the Scientific and Statistical Committee for 2011 is 665,000 lbs whole weight.
- The Annual Catch Limit would be 665,000 lbs whole weight with dead discards and 622,000 lbs whole weight without dead discards.

Table X. Projection results if the fishing mortality rate is fixed at F = Rebuild.
The maximum red grouper kill under this projection is 665,000 lbs whole weight.

Year	F(per year)	Probability of Rebuilt Stock	Maximum Allowable Kill		
			Landings	Discards	Total
2009	0.298	0	1,098,000	61,000	1,159,000
2010	0.298	0	985,000	70,000	1,055,000
2011 (Year 1)	0.181	0.01	622,000	43,000	665,000
2012	0.181	0.06	693,000	44,000	737,000
2013	0.181	0.15	762,000	44,000	806,000
2014	0.181	0.26	822,000	44,000	866,000
2015	0.181	0.36	873,000	45,000	918,000
2016	0.181	0.46	915,000	45,000	960,000
2017	0.181	0.54	951,000	45,000	996,000
2018	0.181	0.61	980,000	45,000	1,025,000
2019	0.181	0.66	1,004,000	46,000	1,050,000
2020	0.181	0.7	1,023,000	46,000	1,069,000

Alternative 3. Define a rebuilding strategy for red grouper that sets F_{OY} equal to 85% F_{MSY}. Under this strategy, the fishery would have at least a 50% chance of rebuilding to SSB_{MSY} by 2018 and 64% chance of rebuilding to SSB_{MSY} by 2020.

- The Optimum Yield at equilibrium would be 1,103,000 lbs whole weight.
- The Overfishing Level is 669,000 lbs whole weight.
- The Acceptable Biological Catch recommendation from the Scientific and Statistical Committee for 2011 is 665,000 lbs whole weight.
- The Annual Catch Limit would be 668,000 lbs whole weight with dead discards and 643,000 lbs whole weight without dead discards.

Table X. Projection results if the fishing mortality rate is fixed at F = 85%F_{MSY}.
The maximum red grouper kill under this projection is 668,000 lbs whole weight.

Year	F(per year)	Probability of Rebuilt Stock	Maximum Allowable Kill		
			Landings	Discards	Total
2009	0.298	0	1,098,000	61,000	1,159,000
2010	0.298	0	985,000	70,000	1,055,000
2011 (Year 1)	0.188	0.01	643,000	45,000	688,000
2012	0.188	0.06	714,000	45,000	759,000
2013	0.188	0.14	781,000	46,000	827,000
2014	0.188	0.23	839,000	46,000	885,000
2015	0.188	0.33	888,000	46,000	934,000
2016	0.188	0.42	930,000	47,000	977,000
2017	0.188	0.49	964,000	47,000	1,011,000
2018	0.188	0.55	991,000	47,000	1,038,000
2019	0.188	0.6	1,014,000	47,000	1,061,000
2020	0.188	0.64	1,032,000	47,000	1,079,000

Alternative 4. Define a rebuilding strategy for red grouper that sets F_{OY} equal to 75% F_{MSY}. Under this strategy, the fishery would have at least a 50% chance of rebuilding to SSB_{MSY} by 2016 and 81% chance of rebuilding to SSB_{MSY} by 2020.

- The Optimum Yield at equilibrium would be 1,089,000 lbs whole weight.
- The Overfishing Level is 669,000 lbs whole weight.
- The Acceptable Biological Catch recommendation from the Scientific and Statistical Committee for 2011 is 665,000 lbs whole weight.
- The Annual Catch Limit would be 613,000 lbs whole weight with dead discards and 573,000 lbs whole weight without dead discards.

Table X. Projection results if the fishing mortality rate is fixed at F = 75%F_{MSY}.
The maximum red grouper kill under this projection is 613,000 lbs whole weight.

Year	F(per year)	Probability of Rebuilt Stock	Maximum Allowable Kill		
			Landings	Discards	Total
2009	0.298	0	1,098,000	61,000	1,159,000
2010	0.298	0	985,000	70,000	1,055,000
2011 (Year 1)	0.166	0.01	573,000	40,000	613,000
2012	0.166	0.07	647,000	40,000	687,000
2013	0.166	0.18	718,000	41,000	759,000
2014	0.166	0.31	780,000	41,000	821,000
2015	0.166	0.44	834,000	41,000	875,000
2016	0.166	0.55	880,000	42,000	922,000
2017	0.166	0.64	919,000	42,000	961,000
2018	0.166	0.72	951,000	42,000	993,000
2019	0.166	0.77	977,000	42,000	1,019,000
2020	0.166	0.81	999,000	42,000	1,041,000

Alternative 5. Define a rebuilding strategy for red grouper that sets F_{OY} equal to 65% F_{MSY}. Under this strategy, the fishery would have at least a 50% chance of rebuilding to SSB_{MSY} by 2016 and 92% chance of rebuilding to SSB_{MSY} by 2020.

- The Optimum Yield at equilibrium would be 1,064,000 lbs whole weight.
- The Overfishing Level is 669,000 lbs whole weight.
- The Acceptable Biological Catch recommendation from the Scientific and Statistical Committee for 2011 is 665,000 lbs whole weight.
- The Annual Catch Limit would be 535,000 lbs whole weight with dead discards and 501,000 lbs whole weight without dead discards.

Table X. Projection results if the fishing mortality rate is fixed at F = 65%F_{MSY}.
The maximum red grouper kill under this projection is 535,000 lbs whole weight.

Year	F(per year)	Probability of Rebuilt Stock	Maximum Allowable Kill		
			Landings	Discards	Total
2009	0.298	0	1,098,00	61,000	1,159,000
2010	0.298	0	985,00	70,000	1,055,000
2011 (Year 1)	0.144	0.01	501,000	34,000	535,000
2012	0.144	0.08	575,000	35,000	610,000
2013	0.144	0.23	648,000	35,000	683,000
2014	0.144	0.4	713,000	36,000	749,000
2015	0.144	0.56	770,000	36,000	806,000
2016	0.144	0.69	820,000	36,000	856,000
2017	0.144	0.78	863,000	37,000	900,000
2018	0.144	0.85	898,000	37,000	935,000
2019	0.144	0.89	928,000	37,000	965,000
2020	0.144	0.92	953,000	37,000	990,000

Table 2-6. Comparison of effects of rebuilding strategy alternatives for red grouper.

Alternatives	Biological Effects	Socioeconomic/Administrative Effects
Alternative 1 (No Action)		
Alternative 2. $F_{REBUILD}$	(+) The stock would have a 70% chance of rebuilding by 2020.	
Alternative 3. 85%F_{MSY}	(+) The stock would have a 64% chance of rebuilding by 2020.	
Alternative 4. 75%F_{MSY}	(+) The stock would have a 81% chance of rebuilding by 2020.	
Alternative 5. 65%F_{MSY}	(+) The stock would have a 92% chance of rebuilding by 2020, with the greatest biological benefit.	

(-) overall negative impacts, (+) overall positive impacts, (- +) neutral impacts

2.2.4 Allocations and Sector Annual Catch Limits

The IPT has restructured the alternatives and have added alternatives (Options 2a-d and 3a-d) for the Council's consideration.

Alternative 1 (No action). Do not establish a sector allocation of the red grouper acceptable biological catch (ABC).

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Alternative 2 (Preferred). Divide the acceptable biological catch (ABC) into commercial and recreational sector components based on criteria as outlined in one of the following options below.

Option a. Commercial = X% of ABC and recreational = X% of ABC (Established by using catch history from 1986-2008). This alternative would establish a commercial annual catch limit of X pounds whole weight and a recreational annual catch limit of X pounds whole weight. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option b. Commercial = X% of ABC and recreational = X% of ABC (Established by using catch history from 1986-1998). This alternative would establish a commercial annual catch limit of X pounds whole weight and a recreational annual catch limit of X pounds whole weight. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option c. Commercial = X% of ABC and recreational = X% of ABC (Established by using catch history from 1999-2008). This alternative would establish a commercial annual catch limit of X pounds whole weight and a recreational annual catch limit of X pounds whole weight. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option d. Commercial = X% of ABC and recreational = X% of ABC (Established by using catch history from 2006-2008). This alternative would establish a commercial annual catch limit of X pounds whole weight and a recreational annual catch limit of X pounds whole weight. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option e (Preferred). Commercial = 47% of ABC and recreational = 53% of ABC (Established by using 50% of catch history from 1991-2008 + 50% of catch history from 2006-2008). *Use 3 years rolling forward for future amendments. (As per Council motion from September, 2008).* This alternative would establish a commercial annual catch limit of X pounds whole weight and a recreational annual catch limit of X pounds whole weight. The commercial and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3. Divide the acceptable biological catch (ABC) into commercial, recreational, and for-hire sector components based on criteria as outlined in one of the following options below.

Option a. Commercial = X% of ABC, for-hire = X%, and recreational = X% of ABC (Established by using catch history from 1986-2008). This alternative would establish a commercial annual catch limit of X pounds whole weight, a for-hire annual catch limit of X pounds whole weight, and a recreational annual catch limit of X pounds whole weight. The commercial, for-hire, and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option b. Commercial = X% of ABC, for-hire = X%, and recreational = X% of ABC (Established by using catch history from 1986-1998). This alternative would establish a commercial annual catch limit of X pounds whole weight, a for-hire annual catch limit of X pounds whole weight, and a recreational annual catch limit of X pounds whole weight. The commercial, for-hire, and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option c. Commercial = X% of ABC, for-hire = X%, and recreational = X% of ABC (Established by using catch history from 1999-2008). This alternative would establish a commercial annual catch limit of X pounds whole weight, a for-hire annual catch limit of X pounds whole weight, and a recreational annual catch limit of X pounds whole weight. The commercial, for-hire, and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option d. Commercial = X% of ABC, for-hire = X%, and recreational = X% of ABC (Established by using catch history from 2006-2008). This alternative would establish a commercial annual catch limit of X pounds whole weight, a for-hire annual catch limit of X pounds whole weight, and a recreational annual catch limit of X pounds whole weight. The commercial, for-hire, and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

Option e. Commercial = X% of ABC, for-hire = X%, and recreational = X% of ABC (Established by using 50% of catch history from 1991-2008 + 50% of catch history from 2006-2008). *Use 3 years rolling forward for future amendments. (As per Council motion from September, 2008)*. This alternative would establish a commercial annual catch limit of X pounds whole weight, a for-hire annual catch limit of X pounds whole weight, and a recreational annual catch limit of X pounds whole weight. The commercial, for-hire, and recreational ACLs specified for 2011 would remain in effect beyond 2011 until modified.

~~**Alternative 1 (No action).** Do not specify allocations for red grouper.~~

~~**Alternative 2 (Preferred).** Divide allocations among two sectors, commercial and recreational.~~

~~Use the following equation:~~
~~Allocation by sector = (0.5 * catch history) + (0.5 * current trend) whereby, catch history =1986 onward, current trend = 2006-2008 for this amendment, and 3 years rolling forward for future amendments. (As per Council motion from September, 2008).~~

~~The allocation would be 47% commercial and 53% recreational. The commercial ACL in 2011 would be XXXXX lbs gutted weight each year. The recreational ACL would be XXXXX lbs gutted weight each year. The commercial quota and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.~~

~~*Based on landings in red grouper assessment.*~~

~~**Alternative 3.** Divide allocations among three sectors, commercial, recreational, and for-hire.~~

~~Use the following equation:~~
~~Allocation by sector = (0.5 * catch history) + (0.5 * current trend) whereby, catch history =1986 onward, current trend = 2006-2008 for this amendment, and 3 years rolling forward for future amendments. (As per Council motion from September, 2008).~~

~~The allocation would be 47%% commercial, XX% recreational, and XX% for-hire. The commercial ACL in 2011 would be XXXXX lbs gutted weight each year. The recreational ACL would be XXXXX lbs gutted weight each year. The commercial quota and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.~~

~~*Will have to request MRFSS landings from assessment be broken down into rec and for-hire. It is not possible to get red grouper landings from Monroe County from MRFSS Web site. So landings in assessment are higher than Web site because of this factor.*~~

2.2.5 Accountability Measures/Management Measures

Alternative 1 (No Action). Retain the existing regulations for red grouper (Table X).

Table 2-7. Existing regulations and those proposed in Amendment 17B for red grouper.

Current Regulations		
	Commercial	Recreational
Bag limit		Three grouper aggregate bag limit per person per day. Exclude the captain and crew on for-hire vessels from possessing a bag limit for groupers
In-season closures	Gag commercial ACL of 352,940 lbs gutted weight. After the commercial ACL is met, all purchase and sale of the following species is prohibited and harvest and/or possession is limited to the bag limit: gag; black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby; and coney.	
Minimum size limit	20 inch	
Seasonal closure	No fishing for and/or possession of the following species is allowed January through April: black grouper; red grouper; scamp; red hind; rock hind; yellowmouth grouper; tiger grouper; yellowfin grouper; graysby, and coney.	
Regulations proposed by Amendment 17B		
	Commercial	Recreational
	In addition to the gag sector-ACLs, establish an ACL for gag, black grouper, and red grouper of 662,403 lbs gutted weight (commercial) and 648,663 lbs gutted weight (recreational). The table below shows how the aggregate ACL was calculated. Prohibit the commercial possession of shallow water groupers when the gag or the gag, black grouper, and red grouper when the ACL is projected to be met.	Establish a recreational ACL for gag, black grouper, and red grouper of 648,663 lbs gutted weight. If at least one of the species (gag, red grouper, or black grouper) *is overfished* and the sector ACL is projected to be met, prohibit the harvest and retention of the species or species group. If the ACL is exceeded, independent of stock status, the Regional Administrator shall publish a notice to reduce the sector ACL in the following year by the amount of the overage. For black grouper, black sea bass, gag, red grouper, and vermilion snapper, compare the recreational ACL with recreational landings over a range of years. For 2010, use only 2010 landings. For 2011, use the average landings of 2010 and 2011. For 2012 and beyond, use the most recent three-year running average.

Commercial

Alternative 2 (Preferred). After the commercial ACL is met, all purchase and sale of red grouper is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 3 (Preferred). If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

Recreational

Alternative 4 (Preferred). For in-season and post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the average landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running average.

The IPT recommends a restructure of Alternatives 5 and 6 where Alternative 6 is broken into options.

Alternative 5 (Preferred). The Regional Administrator shall publish a notice to close the recreational fishery when the ACL is projected to be met.

Alternative 6 (Preferred). Take corrective action if the recreational ACL has been exceeded.

> **Option a (Preferred).** If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.
>
> **Option b.** If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing year.

~~**Alternative 5.** If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing year.~~

~~**Alternative 6 (Preferred).** The Regional Administrator shall publish a notice to close the recreational fishery when the ACL is projected to be met. If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.~~

Discussion

The required reduction in red grouper removals to achieve ACL is depends on the selected rebuilding strategy. The current range for red grouper ACLs alternatives in the rebuilding strategy action ranges from 501,000 to 622,000 lbs whole weight (just landings) and 535,000 to 665,000 lbs whole weight (landings and discards). This is a range in harvest reduction (prior to Amendment 16 regulations) of 30% to 50% from projected 2010 landings levels.

The expected red grouper landings following the actions in Amendment 16 (4 month closure and change in aggregate bag limit from 5 to 3) is 498,317 lbs whole weight. This value is a

component of the commercial and recreational ACLs for gag, black grouper, and red grouper proposed in Amendment 17B. As the red grouper ACL portion of the combined ACL for gag, red grouper, and black grouper is less (498,317 lbs whole weight) than the range ACLs specified in the different rebuilding strategies, it appears that sufficient action may have been taken to end overfishing in Amendment 16.

Amendment 16 and 17B analyzed the effects to red grouper from the actions in Amendment 16 (4 month closure and change in aggregate bag limit from 5 to 3). The expected landings following the actions in Amendment 16 was determined by removing January through April and December landings from recent landings (2004-2006) and applying a 2.5% reduction from the bag limit change. This would result in a 21% reduction from 2004-2006 red grouper landings.

	Commercial (lbs gw)	Recreational (lbs gw)	Total (lbs gw)
Gag ACL *(Amend 16)*	352,940	340,060	693,000
Projected black grouper landings (2010)[1]	86,886	31,863	118,749
Projected red grouper landings (2010)[2]	221,557	276,740	**498,297**
Gag, black, red aggregate ACL *(proposed in Amend 17B)*	662,403	648,663	1,311,006

[1]The commercial projected landings for 2010 was computed by using the annual average from 04-06. The landings from Jan through April were zero to account for the 4 month closure implemented on July 29, 2009. The landings from December were zero to account for the projected shallow water grouper closure when the gag commercial ACL would be met.
[2]The recreational projected landings for 2010 was computed by using the annual average from 04-06. The landings from Jan through April were zero to account for the 4 month closure implemented on July 29, 2009. In addition, harvest was reduced by 2.5% to account for the from the change in aggregate bag limit from 5 to 3.

3 Affected Environment

4 Environmental Effects

5 Cumulative Effects

5.1 Biological

As directed by the National Environmental Policy Act (NEPA), federal agencies are mandated to assess not only the indirect and direct impacts, but the cumulative impacts of proposed actions as well. NEPA defines a cumulative impact as *"the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time"* (40 C.F.R. 1508.7). Cumulative effects can either be additive or synergistic. A synergistic effect is when the combined effects are greater than the sum of the individual effects.

Various approaches for assessing cumulative effects have been identified, including checklists, matrices, indices, and detailed models (MacDonald 2000). The Council on Environmental Quality (CEQ) offers guidance on conducting a Cumulative Effects Analysis (CEA) in a report titled "Considering Cumulative Effects under the National Environmental Policy Act". The report outlines 11 items for consideration in drafting a CEA for a proposed action.

1. Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.
2. Establish the geographic scope of the analysis.
3. Establish the timeframe for the analysis.
4. Identify the other actions affecting the resources, ecosystems, and human communities of concern.
5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stress.
6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.
7. Define a baseline condition for the resources, ecosystems, and human communities.
8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.
9. Determine the magnitude and significance of cumulative effects.
10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.
11. Monitor the cumulative effects of the selected alternative and adapt management.

This CEA for the biophysical environment will follow a modified version of the 11 steps. Cumulative effects for the socio-economic environment will be analyzed separately.

5.1 Biological

SCOPING FOR CUMULATIVE EFFECTS

1. Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.

The Council on Environmental Quality (CEQ) cumulative effects guidance states that this step is done through three activities. The three activities and the location in the document are as follows:

I. The direct and indirect effects of the proposed actions **(Section 4.0)**;
II. Which resources, ecosystems, and human communities are affected **(Section 3.0)**; and
III. Which effects are important from a cumulative effects perspective **(information revealed in this Cumulative Effects Analysis (CEA)**?

2. Establish the geographic scope of the analysis.

The immediate impact area would be the federal 200-mile limit of the Atlantic off the coasts of North Carolina, South Carolina, Georgia, and east Florida to Key West, which is also the South Atlantic Fishery Management Council's area of jurisdiction. In light of the available information, the extent of the boundaries would depend upon the degree of fish immigration/emigration and larval transport, whichever has the greatest geographical range. Therefore, the proper geographical boundary to consider effects on the biophysical environment is larger than the entire South Atlantic exclusive economic zone. The ranges of affected species are described in **Section 3.2.1**. The most measurable and substantial effects would be limited to the South Atlantic region.

3. Establish the timeframe for the analysis.

Establishing a timeframe for the CEA is important when the past, present, and reasonably foreseeable future actions are discussed. It would be advantageous to go back to a time when there was a natural, or some modified (but ecologically sustainable) condition. However, data collection for many fisheries began when species were already fully exploited. Therefore, the timeframe for analyses should be initiated when data collection began for the various fisheries. In determining how far into the future to analyze cumulative effects, the length of the effects will depend on the species and the alternatives chosen. Long-term evaluation is needed to determine if management measures have the intended effect of improving stock status. Therefore, analyses of effects should extend beyond the time when these overfished stocks are rebuilt. The Council has chosen a 35-year rebuilding schedule with management measures that would reduce harvest of red snapper in order to rebuild the stock within the preferred timeframe. Monitoring should continue indefinitely for all species to ensure that management measures are adequate for preventing overfishing in the future. A complete description of monitoring methods that would be employed under this amendment appears in **Sections 4.5** of this document.

4. Identify the other actions affecting the resources, ecosystems, and human communities of concern (the cumulative effects to the human communities are discussed in Section 4).

Listed are other past, present, and reasonably foreseeable actions occurring in the South Atlantic region. These actions, when added to the proposed management measures, may result in cumulative effects on the biophysical environment.

I. Fishery-related actions affecting speckled hind, warsaw grouper, golden tilefish, snowy grouper, and red snapper.

A. Past

The reader is referred to **Section 1.3 History of Management** for past regulatory activity for the fish species. These include bag and size limits, spawning season closures, commercial quotas, gear prohibitions and limitations, area closures, and a commercial limited access system.

Amendment 13C to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region became effective October 23, 2006. The amendment addresses overfishing for snowy grouper, golden tilefish, black sea bass and vermilion snapper. The amendment also allows for a moderate increase in the harvest of red porgy as stocks continue to rebuild. Amendment 13C 2006 is hereby incorporated by reference. Analysis found in **Appendix E** show minimal reductions (less than 2%) in commercial red snapper removals resulting from Amendment 13C. Therefore, ancillary effort reductions in the red snapper fishery due to management measures in Amendment 13C would not result in any significant reduction in harvest of red snapper that could be counted toward the overall harvest reductions needed to end overfishing of the specie.

Amendment 14 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region was implemented on February 12, 2009. Implementing regulations for Amendment 14 established eight Type 2 Marine Protected Areas (MPAs) (see Figure 5-1) within which, all fishing for snapper grouper species is prohibited as is the use of shark bottom longline gear. Within the MPAs trolling for pelagic species is permitted. The MPAs range in area from 50 to 506 square nautical miles and are located off of North Carolina, South Carolina, Georgia, and Florida. The MPAs are expected to enhance the optimum size, age, and genetic structure of slow-growing, long-lived, deepwater snapper grouper species. A Type 2 MPA is an area within which fishing for or retention of snapper grouper species is prohibited but other types of legal fishing, such as trolling, are allowed. The prohibition on possession does not apply to a person aboard a vessel that is in transit with fishing gear appropriately stowed. MPAs are being used as a management tool to promote the optimum size, age, and genetic structure of slow growing, long-lived deepwater snapper grouper species (speckled hind, snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish). Because of the small sizes of the MPAs, it is unlikely that any significant reductions in overall mortality of species also affected by Amendment 17A would occur. Therefore, biological effects of the MPAs would not significantly add to or reduce the anticipated biological benefits of management actions in Amendment 17A.

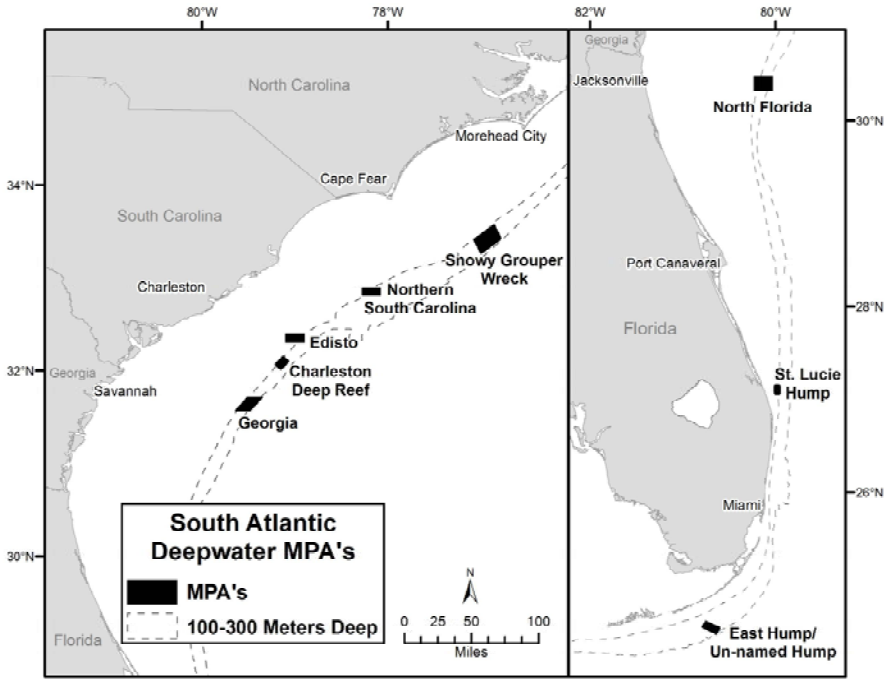

Figure 5-1. Marine protected areas implemented under Snapper Grouper Amendment 14 (SAFMC 2007).

B. Present

In addition to snapper grouper fishery management issues being addressed in this amendment, several other snapper grouper amendments have been developed concurrently and are in the process of approval and implementation. Current closures, including quota closures, seasonal closures, and area closures are outlined in **Appendix I.** of this document.

Most recently, Amendment 16 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2008c) was partially approved by the Secretary of Commerce. Amendment 16 includes provisions to extend the shallow water grouper spawning season closure, create a five month seasonal closure for vermilion snapper, require the use of dehooking gear if needed, reduce the aggregate bag limit from five to three grouper, and reduce the bag limit for black grouper and gag to one gag or black grouper combined within the aggregate bag limit. The expected effects of these measures include significant reductions in landings and overall mortality of several shallow water snapper grouper species including, gag, black grouper, red grouper, and vermilion snapper. Specifically, the use of dehooking tools may reduce the release mortality of red snapper that are incidentally caught while fishing for other snapper grouper species. Model output in **Appendix E** shows that Amendment 16 could contribute up to a 16% reduction in commercial red snapper harvest, which has been included in the

baseline conditions upon which the needed red snapper reductions have been derived.

On September 1, 2009, Amendment 15B to the FMP for the Snapper Grouper Fishery of the South Atlantic Region was approved by the Secretary. Management measures in Amendment 15B that affect red snapper in Amendment 17A include prohibition of the sale of bag limit caught snapper grouper species for fishermen not holding a Federal commercial permit for South Atlantic snapper grouper, an action to adopt, when implemented, the Atlantic Coastal Cooperative Statistics Program (ACCSP) release, discard and protected species module to assess and monitor bycatch, allocations for snowy grouper, and management reference points for golden tilefish.

Since some recreational fishermen may intentionally catch more fish than they can consume with the intent to sell, prohibiting the sale of those fish by recreational fishermen could decrease fishing effort; and therefore, may have small biological benefits. Adopting a bycatch monitoring method would not yield immediate biological benefits, but may help to inform future fishery management decisions with increased certainty using data collected from the ACCSP. Biological benefits from Amendment 15B are not expected to result in a significant cumulative biological effect when added to anticipated biological impacts under Amendment 17A.

The Comprehensive Ecosystem-Based Amendment 1 (CE-BA 1) was implemented on July 22, 2010. CE-BA 1 consists of regulatory actions that focus on deepwater coral ecosystem conservation and non-regulatory actions that update existing essential fish habitat information. Management actions proposed in the CE-BA 1 include the establishment of deepwater Coral Habitat of Particular Concern(CHAPCs) to protect what is currently thought to be the largest distribution (greater than 23,000 square miles) of pristine deepwater coral ecosystems in the world. Actions in the amendment would prohibit the use of bottom damaging fishing gear and allow for the creation of allowable fishing zones within the CHAPCs in the historical fishing grounds of the golden crab and deepwater shrimp fisheries. The CE-BA 1 would also provide spatial information on designated essential fish habitat (EFH) in the Council's Habitat Plan (SAFMC 1998a). Actions in CE-BA 1 would: 1) Amend the Fishery Management Plan (FMP) for Coral, Coral Reefs, Live/Hard Bottom Habitats of the South Atlantic Region (Coral FMP) to establish Deepwater Coral Habitat Areas of Particular Concern (CHAPCs) and prohibit the use of bottom damaging fishing gear; 2) create a ―Shrimp Fishery Access Area within the proposed Stetson Reefs, Savannah and East Florida Lithoherms, and Miami Terrace (Stetson-Miami Terrace) CHAPC boundaries; 3) create allowable Golden Crab Fishing Areas within the proposed Stetson Reefs, Savannah and East Florida Lithoherms, and Miami Terrace (Stetson-Miami Terrace) CHAPC and Pourtales Terrace CHAPC boundaries; 4) amend the Golden Crab FMP to require vessel monitoring; and 5) amend the following FMPs to present spatial information of

Council-designated Essential Fish Habitat and Essential Fish Habitat-Habitat Areas of Particular Concern: Coral FMP; FMP for the Golden Crab Fishery of the South Atlantic Region (Golden Crab FMP), FMP for the Shrimp Fishery of the South Atlantic Region (Shrimp FMP), FMP Coastal Migratory Pelagics Resources in the Atlantic and Gulf of Mexico (Coastal Migratory Pelagics FMP), FMP for Spiny Lobster in the Gulf of Mexico and South Atlantic (Spiny Lobster FMP), FMP for the Dolphin Wahoo Fishery of the Atlantic (Dolphin Wahoo FMP), and FMP for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP).

Amendment 17B to the FMP for the Snapper Grouper Fishery of the South Atlantic Region has been approved by the Council and has been submitted for Secretarial review. It includes a deepwater snapper grouper closure seaward of 240 ft in addition to establishing annual catch limits (ACLs) and accountability measures (AMs) for species experiencing overfishing. The closures proposed in Amendment 17A, if implemented through rulemaking, would enhance the expected biological benefits of the spawning season closure for shallow water grouper in Amendment 16, and the proposed deepwater snapper grouper closure in Amendment 17B.

The Council received notification, in a letter dated July 8, 2008, that the South Atlantic red snapper stock is undergoing overfishing and is overfished. While the Council developed an amendment, they requested NOAA Fisheries Service, in March 2009, to establish interim measures to reduce overfishing and fishing pressure on the red snapper stock. Interim measures became effective on January 4, 2010. The interim rule was effective until June 2, 2010, but was extended for an additional 186 days since the Council is proposing long-term management measures in Snapper Grouper FMP Amendment 17A to end overfishing of red snapper and rebuild the stock. Regulations implemented by the interim rule will expire on December 5, 2010.

The map below represents the closed areas, MPAs, and CHAPCs, established and proposed in various amendments already implemented or currently under development.

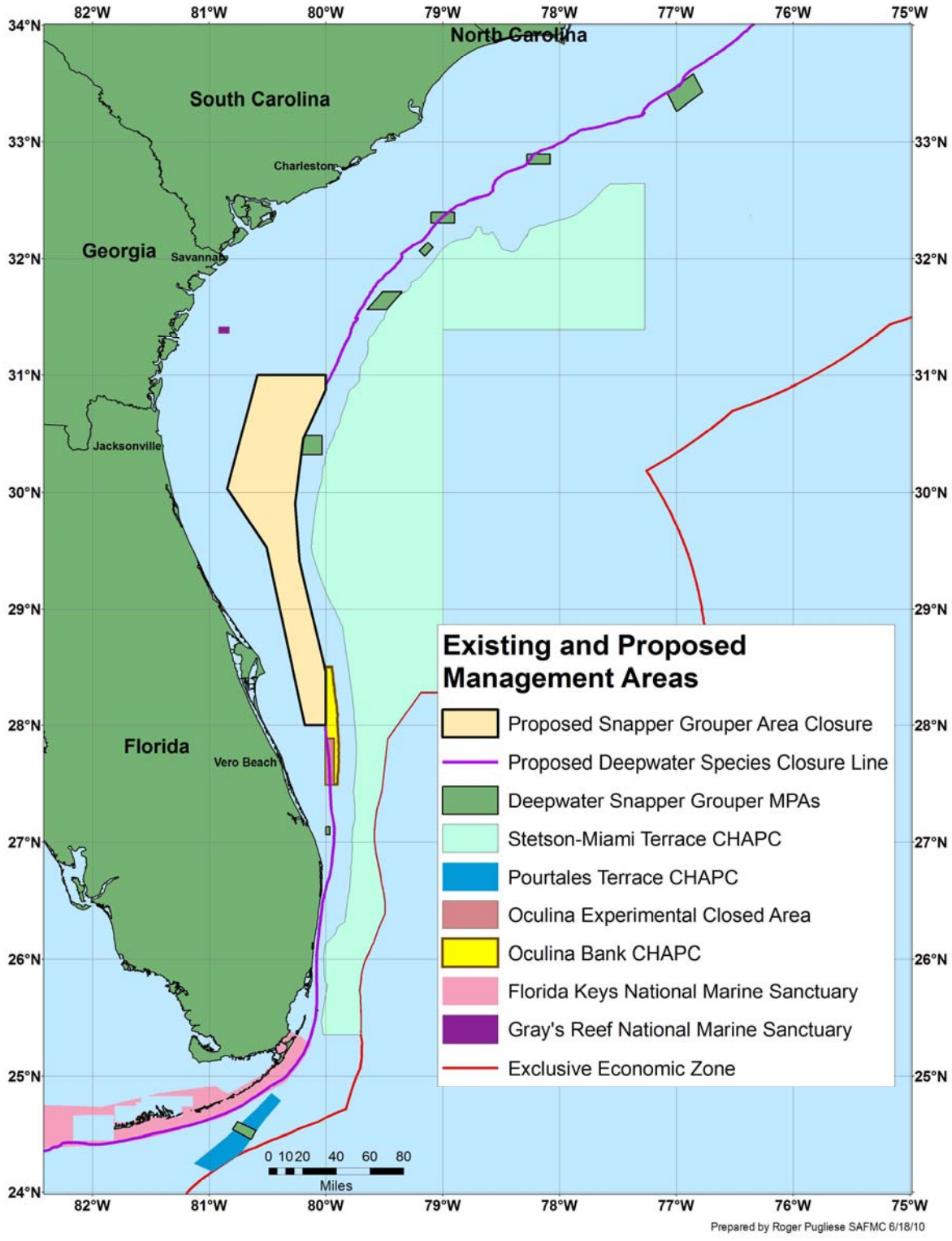

Figure 5-2. South Atlantic closed areas, CHAPCs, National Marine Sanctuaries, and MPAs currently in effect and proposed.

C. Reasonably Foreseeable Future

Amendment 18 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region is currently under development. Measures in Amendment 18 would extend the Snapper Grouper FMP northward, limit effort in the black sea bass and golden tilefish fisheries, change the golden tilefish fishing year, improve the accuracy and timing of fisheries statistics, and designate essential fish habitat in the proposed snapper grouper northern area. The actions currently contained in Amendment 18, which affect red snapper, are intended to prevent overcapitalization while allowing fishery participants to achieve optimum yield benefits for those species. The actions to limit participation in the black sea bass and golden tilefish fisheries in Amendment 18 could hedge against any foreseeable effort shifts to those fisheries that might result from an area closure in Amendment 17A.

The Comprehensive Annual Catch Limit (ACL) Amendment would consider ACLs and Annual Catch Targets (ACTs) for other Federally managed South Atlantic species not experiencing overfishing in other FMPs including Snapper Grouper. Other actions contained within the ACL Amendment may include: (1) choosing ecosystem component species; (2) allocations; (3) management measures to limit recreational and commercial sectors to their ACLs and ACTs; (4) AMs; and (5) any necessary modifications to the range of regulations. It is unlikely any of the management measures for the species being addressed in the Comprehensive ACL Amendment would directly affect red snapper in Amendment 17A. However, several species are co-occurring, and are included in species groupings e.g., the shallow water snapper grouper complex and the deepwater snapper grouper complex. Therefore, if regulations are implemented in the future that may biologically benefit one species in a species complex, it is likely others in the same complex may also realize biological benefits.

At their March 2010 meeting, the Council requested the development of an FMP amendment to establish a catch share program for several snapper grouper species (Amendment 21 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region). The establishment of a catch share program may eliminate derby-style fisheries that have formed for some snapper grouper species, but could also eliminate some small vessel operators from the fishery depending upon the initial share allocation criteria chosen by the Council. Additionally, the Council has requested an amendment to explore alternate management methods specifically for red snapper for long-term implementation (Amendment 22 to the FMP for the Snapper Grouper Fishery of the South Atlantic Region), which could include management options such as a tagging program or some form of a catch share program.

Finally, the space industry in Florida centered on Cape Canaveral is experiencing severe difficulties due to the ramping down and cancellation of the Space Shuttle Program. This program's loss coupled with additional fishery closures will negatively impact this region. However, declining economic conditions due to decline in the space industry may lessen the pace of waterfront development and associated adverse social and economic pressures on fishery infrastructure.

II. Non-Council and other non-fishery related actions, including natural events affecting red snapper.

A. Past
B. Present
C. Reasonably foreseeable future

In terms of natural disturbances, it is difficult to determine the effect of non-Council and non-fishery related actions on stocks of snapper grouper species. Annual variability in natural conditions such as water temperature, currents, food availability, predator abundance, etc. can affect the abundance of young fish, which survive the egg and larval stages each year to become juveniles (i.e., recruitment). This natural variability in year class strength is difficult to predict as it is a function of many interactive and synergistic factors that cannot all be measured (Rothschild 1986). Furthermore, natural factors such as storms, red tide, cold water upwelling, etc. can affect the survival of juvenile and adult fishes; however, it is very difficult to quantify the magnitude of mortality these factors may have on a stock. Alteration of preferred habitats for snapper grouper species could affect survival of fish at any stage in their life cycles. However, estimates of the abundance of fish, which utilize any number of preferred habitats, as well as, determining the impact habitat alteration may have on snapper grouper species, is problematic.

The snapper grouper ecosystem includes many species, which occupy the same habitat at the same time. For example, red snapper co-occur with vermilion snapper, tomtate, scup, red porgy, white grunt, black sea bass, red grouper, scamp, gag, and others. Therefore, red snapper are likely to be caught and suffer some mortality when regulated since they will be incidentally caught when fishermen target other co-occurring species. Red snapper recruitment has been measured from the 1950's to the present time and shows a decline from the earliest years to a low in the mid-1900s. Since then there have been several moderately good year classes in 1998, 1999, and 2000, and then another decline through 2003, with an apparent strong year class occurring in 2006. These moderately good year classes have grown and entered the fishery over the past couple years and are likely responsible for the higher catches being reported by recreational and commercial fishermen. Other natural events such as spawning seasons, and aggregations of fish in spawning condition can make some species especially vulnerable to targeted fishing pressure. Such natural behaviors are discussed in further detail in **Section 3.2** of this document, and is hereby incorporated by reference.

AFFECTED ENVIRONMENT

5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stress.

In terms of the biophysical environment, the resources/ecosystems identified in earlier steps of the CEA are the fish populations directly or indirectly affected by the regulations. This step should identify the trends, existing conditions, and the ability to withstand stresses of the environmental components.

The trends in condition of gag, vermilion snapper, black sea bass, snowy grouper, golden tilefish, and red snapper are documented through the Southeast Data, Assessment and Review (SEDAR) process. Warsaw grouper, and speckled hind have not been recently assessed. Assessments for red grouper and black grouper were completed in 2010. However, given the best available science, each of these stocks, with the exception of black grouper, has been determined to be undergoing overfishing, meaning that fishing related mortality is greater than the maximum fishing mortality threshold. The status of each of these stocks is described in detail in **Section 3.3** of this document.

6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.

This step is important in outlining the current and probable stress factors on snapper grouper species identified in the previous steps. The goal is to determine whether these species are approaching conditions where additional stresses could have an important cumulative effect beyond any current plan, regulatory, or sustainability threshold (CEQ 1997). Sustainability thresholds can be identified for some resources, which are levels of impact beyond which the resources cannot be sustained in a stable state. Other thresholds are established through numerical standards, qualitative standards, or management goals. The CEA should address whether thresholds could be exceeded because of the contribution of the proposed action to other cumulative activities affecting resources.

Fish populations

Numeric values of overfishing and overfished thresholds are being updated in this amendment for red snapper. These values includes maximum sustainable yield (MSY), the fishing mortality rate that produces MSY (F_{MSY}), the biomass or biomass proxy that supports MSY (B_{MSY}), the minimum stock size threshold below which a stock is considered to be overfished (MSST), the maximum fishing mortality threshold above which a stock is considered to be undergoing overfishing (MFMT), and optimum yield (OY).

The definitions of overfishing and overfished for red snapper can be found in the most recent stock assessment (SEDAR 15 2008). Detailed discussions of the science and processes used to determine the stock status is contained in the previously mentioned information sources and are hereby incorporated by reference.

Climate change

Global climate changes could have significant effects on South Atlantic fisheries. However, the extent of these effects is not known at this time. Possible impacts include temperature changes in coastal and marine ecosystems that can influence organism metabolism and alter ecological processes such as productivity and species interactions; changes in precipitation patterns and a rise in sea level which could change the water balance of coastal ecosystems; altering patterns of wind and water circulation in the ocean environment; and influencing the productivity of critical coastal ecosystems such as wetlands, estuaries, and coral reefs (Kennedy et al. 2002).

Actions from this amendment could decrease the carbon footprint from fishing if some fishermen stop or reduce their number and duration of trips due to the proposed area closure. It is unclear how climate change would affect snapper grouper species in the South Atlantic. Climate change can affect factors such as migration, range, larval and juvenile survival, prey availability, and susceptibility to predators. In addition, the distribution of native and exotic species may change with increased water temperature, as may the prevalence of disease in keystone animals such as corals and the occurrence and intensity of toxic algae blooms. Climate change may significantly impact snapper grouper species in the future, but the level of impacts cannot be quantified at this time, nor is the time frame known in which these impacts will occur. Actions in this amendment are expected to reduce harvest of red snapper and may also decrease fishing mortality of other co-occurring species; thus these actions may partially mitigate the negative impacts of global climate change on snapper grouper species.

7. Define a baseline condition for the resources, ecosystems, and human communities.

The purpose of defining a baseline condition for the resource and ecosystems in the area of the proposed action is to establish a point of reference for evaluating the extent and significance of expected cumulative effects. The SEDAR assessments show trends in biomass, fishing mortality, fish weight, and fish length going back to the earliest periods of data collection. For some species such as gag and snowy grouper, assessments reflect initial periods when the stocks were above B_{MSY} and fishing mortality was fairly low. However, some species such as red snapper. vermilion snapper, and black sea bass were heavily exploited or possibly overfished when data were first collected. As a result, the assessment must make an assumption of the biomass at the start of the assessment period thus modeling the baseline reference points for the species. For red snapper, estimates of annual biomass have been well below the biomass at maximum sustainable yield (B_{MSY}) since the mid-1960s, with possibly some small amount of recovery since implementation of current size limits in 1992 (Figure 5-2).

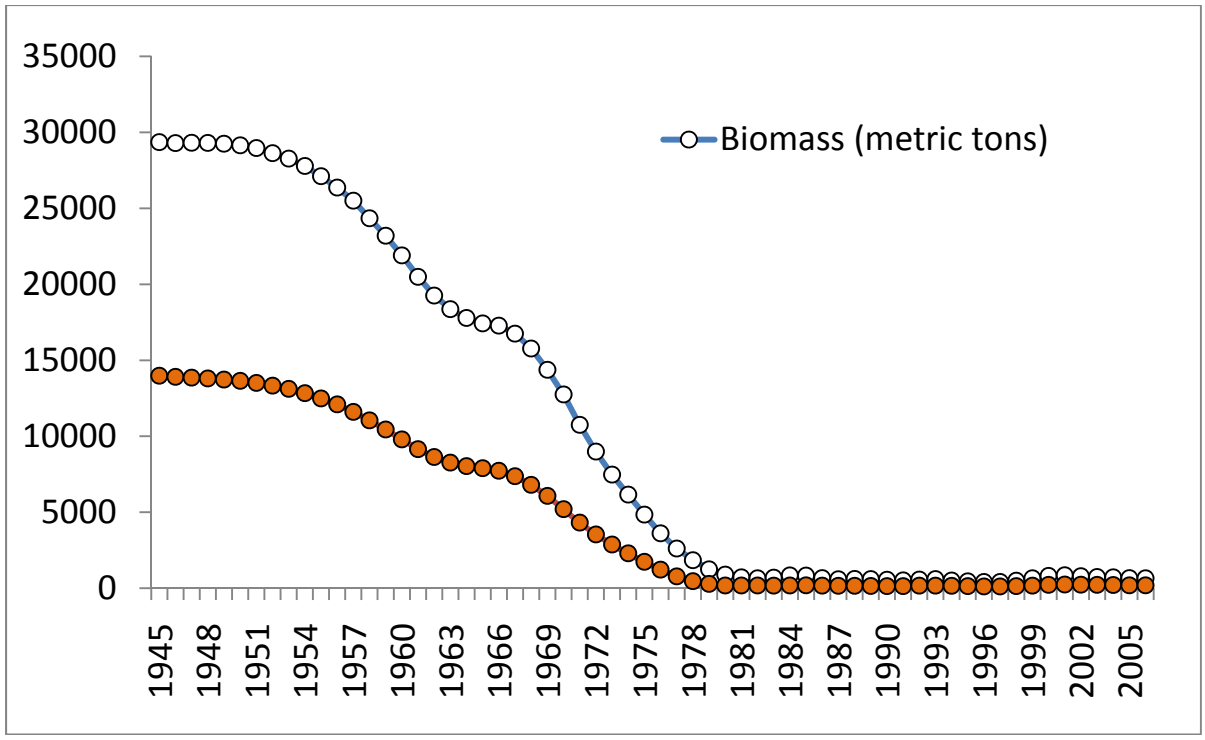

Figure 5-2. Biomass and Spawning Stock Biomass (pounds).

For a detailed discussion of the baseline conditions of each of the species addressed in this amendment the reader is referred to those stock assessment and stock information sources referenced in **Item Number 6** of this CEA.

DETERMINING THE ENVIRONMENTAL CONSEQUENCES OF CUMULATIVE EFFECTS

8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.

Table 5-1. The cause and effect relationship of fishing and regulatory actions within the time period of the Cumulative Effects Analysis (CEA).

Time period/dates	Cause	Observed and/or Expected Effects
1960s-1983	Growth overfishing of many reef fish species.	Declines in mean size and weight of many species including black sea bass.
August 1983	4" trawl mesh size to achieve a 12" TL commercial vermilion snapper minimum size limit (SAFMC 1983).	Protected youngest spawning age classes.
Pre-January 12, 1989	Habitat destruction, growth overfishing of vermilion snapper.	Damage to snapper grouper habitat, decreased yield per recruit of vermilion snapper.
January 1989	Trawl prohibition to harvest fish (SAFMC 1988).	Increase yield per recruit of vermilion snapper; eliminate trawl damage to live bottom habitat.
Pre-January 1, 1992	Overfishing of many reef species including vermilion snapper, and gag.	Spawning stock ratio of these species is estimated to be less than 30% indicating that they are overfished.
January 1992	Prohibited gear: fish traps south of Cape Canaveral, FL; entanglement nets; longline gear inside of 50 fathoms; powerheads and bangsticks in designated SMZs off SC. Size/Bag limits: 10" TL vermilion snapper (recreational only); 12" TL vermilion snapper (commercial only); 10 vermilion snapper/person/day; aggregate grouper bag limit of 5/person/day; and 20" TL gag, red, black, scamp, yellowfin, and yellowmouth grouper size limit (SAFMC 1991).	Protected smaller spawning age classes of vermilion snapper.
Pre-June 27, 1994	Damage to *Oculina* habitat.	Noticeable decrease in numbers and species diversity in areas of *Oculina* off FL
July 1994	Prohibition of fishing for and retention of snapper grouper species (HAPC renamed OECA; SAFMC 1993)	Initiated the recovery of snapper grouper species in OECA.
1992-1999	Declining trends in biomass and overfishing continue for a number of	Spawning potential ratio for vermilion snapper and gag is less than 30% indicating that they are overfished.

Time period/dates	Cause	Observed and/or Expected Effects
	snapper grouper species including vermilion snapper and gag.	
February 24, 1999	Gag and black: 24" total length (recreational and commercial); 2 gag or black grouper bag limit within 5 grouper aggregate; March-April commercial closure. Vermilion snapper: 11" total length (recreational). Aggregate bag limit of no more than 20 fish/person/day for all snapper grouper species without a bag limit (1998c).	F for gag vermilion snapper remains declines but is still above F_{MSY}.
October 23, 2006	Snapper grouper FMP Amendment 13C (SAFMC 2006)	Commercial vermilion snapper quota set at 1.1 million lbs gutted weight; recreational vermilion snapper size limit increased to 12" TL to prevent vermilion snapper overfishing
Effective February 12, 2009	Snapper grouper FMP Amendment 14 (SAFMC 2007)	Use marine protected areas (MPAs) as a management tool to promote the optimum size, age, and genetic structure of slow growing, long-lived deepwater snapper grouper species (e.g., speckled hind, snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish). Gag and vermilion snapper occur in some of these areas.
Effective March 20, 2008	Snapper grouper FMP Amendment 15A (SAFMC 2008a)	Establish rebuilding plans and SFA parameters for snowy grouper, black sea bass, and red porgy.
Effective Dates Dec 16, 2009, to Feb 16, 2010.	Snapper grouper FMP Amendment 15B (SAFMC 2008b)	End double counting in the commercial and recreational reporting systems by prohibiting the sale of bag-limit caught snapper grouper, and minimize impacts on sea turtles and smalltooth sawfish.
Effective Date July 29, 2009	Snapper grouper FMP Amendment 16 (SAFMC 2008c)	Protect spawning aggregations and snapper grouper in spawning condition by increasing the length of the spawning season closure, decrease discard mortality by requiring the use of dehooking tools, reduce overall harvest of gag and vermilion snapper to end overfishing.
Effective Date January 4, 2010	Red Snapper Interim Rule	Prohibit commercial and recreational harvest of red snapper from January 4, 2010, to June

Time period/dates	Cause	Observed and/or Expected Effects
		2, 2010 with a possible 186-day extension. Regulations were extended until December 5, 2010. Reduce overfishing of red snapper while long-term measures to end overfishing are addressed in Amendment 17A.
Target 2010	Snapper Grouper FMP Amendment 17A	SFA parameters for red snapper; ACLs and ACTs; management measures to limit recreational and commercial sectors to their ACTs; accountability measures. Establish rebuilding plan for red snapper.
Target 2010	Snapper Grouper Amendment 17B	ACLs and ACTs; management measures to limit recreational and commercial sectors to their ACTs; AMs, for species undergoing overfishing.
Target 2010	Snapper Grouper FMP Amendment 18	Extend the snapper grouper FMU northward, review and update wreckfish ITQ system, prevent overexploitation in the black sea bass and golden tilefish fisheries, improve data collection timeliness and data quality.
Effective July 22, 2010	Snapper Grouper FMP Amendment 19 (Comprehensive Ecosystem-Based Amendment 1)	Amend the FMP to present spatial information of Council-designated Essential Fish Habitat and Essential Fish Habitat-Habitat Areas of Particular Concern.
Target 2011	Comprehensive ACL Amendment.	ACLs, ACTs, and AMs for species not experiencing overfishing; accountability measures; an action to remove species from the fishery management unit as appropriate; and management measures to limit recreational and commercial sectors to their ACTs.
Target 2011	Amendment 20 (Wreckfish)	Review the current ITQ program and update the ITQ program as necessary to comply with MSA LAPP requirements.

9. Determine the magnitude and significance of cumulative effects.

Proposed management actions, as summarized in **Section 2** of this document, would establish annual catch limits (ACLs) and accountability measures (AMs) and establish management measures to end red snapper overfishing and are expected to have a beneficial, cumulative effect on the biophysical environment. These management actions are expected to protect and increase stock biomass, which may affect other stocks. Detailed discussions of the magnitude and significance of the preferred alternatives appear in **Section 4** of this consolidated document. Below is a short summary of the biological significance and magnitude of each of the preferred alternatives chosen, and a brief discussion of their combined effect on the snapper grouper fishery management unit (FMU) and the ecosystem.

The red snapper rebuilding plan and management measures in this amendment would result in a slow rebuilding of the stock over the course of many years. One ancillary benefit of restricting red snapper harvest are reductions in fishing related mortality of other species associated with red snapper. It is not possible to eliminate incidental mortality of red snapper, since it is part of a multi-species complex, without prohibiting fishermen from targeting all associated species wherever red snapper occur. Therefore, biological benefits are expected for all species associated with red snapper, especially in the specific areas of regulatory implementation.

When viewed in totality, the actions in this amendment would benefit shallow water species currently undergoing overfishing as well as the ecosystem in which they reside. Since the snapper grouper FMU and species complexes therein include a host of co-occurring species, proposed management measures may also benefit those associated species in addition to red snapper. Predator prey relationships would likely approach balanced conditions over time, and the protections put in place under this amendment may enhance the natural sex ratio and protect easily targeted fish that may aggregate to spawn. Although it is difficult to quantify the cumulative effects of the proposed actions, it is expected that the effects will be positive and synergistic.

10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.

The cumulative effects on the biophysical environment are expected to be positive. Avoidance, minimization, and mitigation are not applicable.

11. Monitor the cumulative effects of the selected alternative and adopt management.

The effects of the proposed action are, and will continue to be, monitored through collection of data by NOAA Fisheries Service, states, stock assessments and stock assessment updates, life history studies, and other scientific observations. **Section 4.5** of this document contains a full discussion and analysis of monitoring program alternatives for red snapper.

5.2 Socioeconomic

6 Other Things to Consider

6.1 Unavoidable Adverse Effects

Actions in Amendment 17A that may have unavoidable and adverse effects include updating management reference points, establishing a rebuilding plan for red snapper, closing an area to all snapper grouper fishing, and requiring the use of circle hooks north of 28 degrees latitude. These unavoidable and adverse effects are socioeconomic in nature.

According to the National Environmental Policy Act definitions of direct and indirect effects, defining a maximum sustainable yield (MSY) proxy for red snapper would not directly affect the biological or ecological environment, including Endangered Species Act-listed species, because these parameters are not used in determining immediate harvest objectives. The MSY proxy is a reference point used by fishery managers to assess fishery performance over the long term. As a result, redefined management reference points could require regulatory changes in the future as managers monitor long-term performance of the stock with respect to the MSY proxy. Therefore, this parameter definitions will indirectly affect red snapper and its ecosystem of which they are a part, by influencing decisions about how to maximize and optimize the long-term yield of fisheries under equilibrium conditions and triggering action when stock biomass decreases below the threshold level.

Since red snapper are overfished and undergoing overfishing, Amendment 17A specifies a rebuilding plan according to which the stock will be returned to a rebuilt condition. The rebuilding schedule portion of the rebuilding plan defines the time within which the stock should be rebuilt. The Council has chosen the longest timeframe for rebuilding red snapper in order to mitigate, to maximum extent practicable, adverse socioeconomic impacts that would result from more restrictive management measures that would be required to rebuild the stock within a shorter time frame. Though immediate unavoidable adverse impacts on the socioeconomic environment will still accrue under the chosen rebuilding schedule, those impacts would not be as great as they would have been if the Council had chosen a shorter rebuilding schedule.

The rebuilding strategy portion of the rebuilding plan would set the rebuilding strategy as well as the optimum yield (OY) equal to the yield at $98\%F_{MSY}$ ($98\%F_{30\%}$). The annual catch limit (ACL) under **Sub-Alternative 9A** would be zero and under **Sub-Alternative 9B** the ACL would equal 144,000 lbs whole weight and would remain in effect until modified (Figure 4-5d). OY at equilibrium would be 2,425,000 lbs whole weight. Under the proposed rebuilding strategy, a 76% reduction in total kill would be required. At this rate of recovery, the stock has a 53% chance of rebuilding to SSB_{MSY} by 2044. However, the stock could rebuild sooner since the Council is considering management actions to prohibit all harvest of red snapper during initial rebuilding and actions are being considered to reduce incidental catch in **Section 4.3**. This is an intermediate option for stock recovery in terms of time for recovery and removal rate, and is not likely to produce an unavoidable adverse effects on the biological environment.

Proposed management measures for red snapper would adversely affect the commercial and recreational sectors of the snapper grouper fishery. Although the average overall expected reductions in net operating revenues are expected to be 4.8 percent for the entire commercial snapper grouper fishery, the effects of Amendment 17A would be highly focused on fishermen in northeast Florida and Georgia because that region represents the center of the red snapper fishery. Fishermen there would incur the largest losses in absolute and relative terms. The predicted reductions in net operating revenues for fishermen in northeast Florida and Georgia are expected to be 30% with the spearfishing and black sea bass pot exemptions.

For the recreational sector, the various alternatives would entail consequent effects on the industries supporting the fishing industry and on the regional economies, in addition to overall short-term headboat/charter boat revenue losses (17.8 million dollars) (**Section 4.3.2**). Gentner and Steinback (2008) estimated the economic impacts of the recreational sector's expenditures on the regional economies of the South Atlantic states, showing the level of employment, among others, generated by angler expenditures. They estimated that in 2006, angler expenditure on saltwater trips supported 16,212 jobs in Florida (east coast), 2,435 jobs in Georgia, 2,435 in South Carolina, and 11,316 jobs in North Carolina. Dumas et al. (2009) estimated the economic impacts of the for-hire industry in North Carolina, showing that for-hire fishing expenditures supported about 10,200 jobs in North Carolina. Thus, any reductions in angler trips and expenditures would have repercussions on the region's employment and other socioeconomic environment.

Requiring circle hooks for vessels associated with South Atlantic Unlimited Snapper Grouper Permits or South Atlantic 225 lb Trip Limit Permits for snapper grouper would not be expected to yield any unavoidable adverse effects on the biological environment; in fact the action is intended to positively affect the biological environment. In general, requiring the use of circle hooks may not substantially increase the cost of fishing to either the commercial or the recreational sectors, though the potential reduction in the harvest of some important species is noted in **Section 4.4.1**.

Unavoidable adverse affects of implementing a monitoring program for red snapper would be associated with the use of administrative resources to implement and maintain the subject monitoring program. Under both alternatives being considered by the Council, a substantial amount of funding, time, and personnel would be required to either supplement the existing Marine Resources Monitoring Assessment and Prediction program, or establish a new fishery-dependent monitoring program. Furthermore, these costs would be recurring (likely annually) for the duration of the red snapper rebuilding schedule. Each year funding would need to be secured and personnel would need to be dedicated to collecting and analyzing the data gathered.

6.2 Effects of the Fishery on Essential Fish Habitat

The biological impacts of the proposed actions are described in Section 4.0, including impacts on habitat. No actions proposed in this amendment are anticipated to have any adverse impact on essential fish habitat (EFH) or EFH-Habitat of Particular Concern (EFH-HAPC) for managed species including species in the snapper grouper complex. Any additional impacts of fishing on EFH identified during the public hearing process will be considered, therefore the Council has determined no new measures to address impacts on EFH are necessary at this time. The Council's adopted habitat policies, which may directly affect the area of concern, are available for download through the Habitat/Ecosystem section of the Council's website: http://map.mapwise.com/safmc/Default.aspx?tabid=56.

NOTE: The Final EFH Rule, published on January 17, 2002, (67 FR 2343) replaced the interim Final Rule of December 19, 1997 on which the original EFH and EFH-HAPC designations were made. The Final Rule directs the Councils to periodically update EFH and EFH-HAPC information and designations within fishery management plans. As was done with the original Habitat Plan, a series of technical workshops were conducted by Council habitat staff and a draft plan that includes new information has been completed pursuant to the Final EFH Rule.

6.3 Damage to Ocean and Coastal Habitats

The alternatives and proposed actions are not expected to have any adverse effect on the ocean and coastal habitat.

Management measures implemented in the original Snapper Grouper Fishery Management Plan through Amendment 7 combined have significantly reduced the impact of the snapper grouper fishery on essential fish habitat (EFH). The Council has reduced the impact of the fishery and protected EFH by prohibiting the use of poisons and explosives; prohibiting use of fish traps and entanglement nets in the exclusive economic zone; banning use of bottom trawls on live/hard bottom habitat north of Cape Canaveral, Florida; restricting use of bottom longline to depths greater than 50 fathoms north of St. Lucie Inlet; and prohibiting use of black sea bass pots south of Cape Canaveral, Florida. These gear restrictions have significantly reduced the impact of the fishery on coral and live/hard bottom habitat in the South Atlantic Region.

Additional management measures in Amendment 8 (SAFMC 1997), including specifying allowable bait nets and capping effort, have protected habitat by making existing regulations more enforceable. Establishing a controlled effort program limited overall fishing effort and to the extent there is damage to the habitat from the fishery (e.g. black sea bass pots, anchors from fishing vessels, impacts of weights used on fishing lines and bottom longlines), limited such impacts.

In addition, measures in Amendment 9 (SAFMC 1998b), that include further restricting longlines to retention of only deepwater species and requiring that black sea bass pot have escape panels with degradable fasteners, reduce the catch of undersized fish and bycatch and ensure that the pot, if lost, will not continues to "ghost" fish. Amendment 13C (SAFMC 2006) increased mesh size in the back panel of pots, which has reduced bycatch and retention of undersized fish. Amendment 15B (SAFMC 2008b) implemented sea turtle bycatch release equipment requirements, and sea turtle and smalltooth sawfish handling protocols and/or guidelines in the permitted commercial and for-hire snapper grouper fishery.

Amendment 16 (SAFMC 2008c), implemented an action to reduce bycatch by requiring fishermen use dehooking devices. Limiting the overall fishing mortality reduces the likelihood of over-harvesting of species with the resulting loss in genetic diversity, ecosystem diversity, and sustainability.

Measures adopted in the Coral and Shrimp FMPs have further restricted access by fishermen that had potential adverse impacts on essential snapper grouper habitat. These measures include the designation of the *Oculina* Bank HAPC and the rock shrimp closed area (see the Shrimp and Coral FMP/Amendment documents for additional information).

The Council's Comprehensive Habitat Amendment (SAFMC 1998b) contains measures that expanded the *Oculina* Bank Habitat of Particular Concern (HAPC) and added two additional satellite HAPCs. Amendment 14 (SAFMC 2007), established marine protected areas where fishing for or retention of snapper grouper species would be prohibited.

6.4 Relationship of Short-Term Uses and Long-Term Productivity

The relationship between short-term uses and long-term productivity will be affected by this amendment. The proposed actions could significantly restrict the harvest of red snapper, and co-occurring snapper grouper species in the short-term for both the commercial and recreational sectors of the fishery. However, reductions in harvest are expected to benefit the long-term productivity of these species.

6.5 Irreversible and Irretrievable Commitments of Resources

Irreversible commitments are defined as commitments that cannot be reversed, except perhaps in the extreme long-term, whereas irretrievable commitments are lost for a period of time. There are no irreversible commitments for this amendment. While the proposed actions would result in irretrievable losses in consumer surplus and angler expenditures, failing to take action would compromise the long-term sustainability of the South Atlantic red snapper stock.

Since the Snapper Grouper Fishery Management Plan and its implementing regulations are always subject to future changes, proceeding with the development of Amendment 17A does not represent an irreversible or irretrievable commitment of resources. NOAA Fisheries Service always has discretion to amend its regulations and may do so at any time, subject to the Administrative Procedures Act.

6.6 Unavailable or Incomplete Information

The Council on Environmental Quality, in its implementing regulations for the National Environmental Policy Act, addressed incomplete or unavailable information at 40 CFR 1502.22 (a) and (b). That regulations has been considered. There are two tests to be applied: 1) Does the incomplete or unavailable information involve "reasonable foreseeable adverse effects…;" and 2) is the information about these effects "essential to a reasoned choice among alternatives…".

A stock assessment has been conducted for red snapper using the best available data available. Status determinations for red snapper were derived from the Southeast Data Assessment and Review (SEDAR) process, which involves a series of three workshops designed to ensure each stock assessment reflects the best available scientific information. The findings and conclusions of each SEDAR workshop are documented in a series of reports, which are ultimately reviewed and discussed by the Council and their Scientific and Statistical Committee (SSC). SEDAR participants, the Council advisory committees, the Council, and NOAA Fisheries Service staff reviewed and considered any concerns about the adequacy of the data. **Appendix Q** lists data needs that resulted from the most recent snapper grouper assessments. The Council's SSC determined that the red snapper assessment is based on the best available data, and additional data are not available at this time because the SEDAR assessment scheduled for 2010 will not be completed until December 2010. This assessment will include the effect of a recent wave of recruits entering the fishery on overall abundance and subsequent harvest reductions needed to rebuild the stock.

The Council's Snapper Grouper Committee acknowledged, while stock assessment findings can be associated with different degrees of uncertainty, there is no reason to assume such uncertainty leads to unrealistically optimistic conclusions about stock status. Rather, the stocks could be in worse shape than indicated by the stock assessment. Uncertainty due to unavailable or incomplete information should not be used as a reason to avoid taking action. Therefore, there are reasonable foreseeable significant adverse effects of not taking action to end overfishing. Failure to take action could result in a worsening of stock status, persistent foregone economic benefits, and more severe corrective actions to end overfishing in the future.

Where information is unavailable or incomplete, such as is the case with estimates of dead discards that could occur when a species is incidentally caught during a seasonal closure or after a quota is met, management measures have been designed to adopt a conservative approach to increase the probability overfishing does not occur. None of the impacts of decisions made despite the above mentioned unavailable and incomplete information would be catastrophic in nature as described in Section 1502.22(4) of implementing regulations for the National

Environmental Policy Act (NEPA). It should also be noted that a benchmark assessment for red snapper is scheduled to be completed in December 2010. This assessment may provide some analysis that was not available during the development of Amendment 17A. Any changes to red snapper management that may result from the outcome of the 2010 assessment would be analyzed in a separate NEPA document.

7 List of Preparers

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NMFS = National Marine Fisheries Service, SAFMC = South Atlantic Fishery Management Council, SF = Sustainable Fisheries Division, PR = Protected Resources Division, SERO = Southeast Regional Office, HC = Habitat Conservation Division, GC = General Counsel

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8 List of Agencies, Organizations, and Persons To Whom Copies of the Statement are Sent

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Amendment 24:

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SAFMC Snapper Grouper Advisory Panel
SAFMC Marine Protected Areas Advisory Panel
SAFMC Scientific and Statistical Committee
SAFMC Education and Outreach Advisory Panel
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Georgia Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida Fish and Wildlife Conservation Commission
Georgia Department of Natural Resources
South Carolina Department of Natural Resources
North Carolina Division of Marine Fisheries
North Carolina Sea Grant
South Carolina Sea Grant
Georgia Sea Grant
Florida Sea Grant
Atlantic States Marine Fisheries Commission
Gulf and South Atlantic Fisheries Development Foundation
Gulf of Mexico Fishery Management Council
National Marine Fisheries Service
- Washington Office
- Office of Ecology and Conservation
- Southeast Regional Office
- Southeast Fisheries Science Center

9 References

10 Index