2nd BRIEFING BOOK DRAFT

SNAPPER GROUPER AMENDMENT 17

November 2008

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ABBREVIATIONS AND ACRONYMS

ABC	Acceptable biological catch
ACCSP	Atlantic Coastal Cooperative Statistics Program
ACL	Annual Catch Limits
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}
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
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
OY	Optimum Yield
PQBM	Post Quota Bycatch Mortality
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
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 17 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 DRAFT SOCIAL IMPACT ASSESSMENT/FISHERY IMPACT STATEMENT

Proposed actions:	Extend range of snapper grouper FMP. SFA parameters and measures to end overfishing of red snapper. ACLs, ACTs, and AMs for 10 species undergoing overfishing. Specify allocations for four species. Modify management measures to limit total mortality equal to or less than ACT. Specify a rebuilding plan for red snapper. Improve the data reporting process and law enforcement capabilities. Implement an ABC Control Rule.
Lead agency:	FMP Amendment – South Atlantic Fishery Management Council EIS - NOAA Fisheries Service
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ABSTRACT

The need for action through Amendment 17 establish annual catch limits (ACLs), annual catch targets (ACTs) and accountability measures (AMs) for species experiencing overfishing and to end overfishing and rebuild the red snapper stock. Species in the fishery management unit are assessed on a routine basis and stock status may change as new information becomes available. In addition, changes in management regulations, fishing techniques, and social/economic structure can result in shifts in the percentage of harvest between user groups over time. More specifically, these actions proposed in Amendment 17 would:

- Extend the range of the snapper grouper fishery management plan north;
- Reconsider OY for 10 species undergoing overfishing;
- Specify Annual Catch Limits (ACL), Annual Catch Targets (ACT), and Accountability Measures (AM) for 10 species undergoing overfishing;
- Specify allocations for four species undergoing overfishing;
- Modify management measures to limit total mortality to the ACT;
- Specify a rebuilding plan for red snapper;
- Improve the accuracy, timing, and quantity of fisheries statistics,
- Improve law enforcement capabilities and;
- Establish an ABC Control Rule.

This Draft Environmental Impact Statement (DEIS) has been prepared to analyze the effects of implementing regulations as listed above. Comments on this DEIS will be accepted for 45 days from publication of the Notice of Availability (NOA) in the Federal Register.

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SUMMARY

Purpose and Need

The purpose of this amendment is to either alter current management measures or implement new management measures that would reduce current harvest levels to yields associated with the optimum yield (OY) to end overfishing and rebuild snapper in the South Atlantic. This amendment would establish annual catch limits (ACLs) and accountability measures (AMs) as required by the reauthorized Magnuson-Stevens Fishery Conservation and Management Act. The amendment includes alternatives that specify interim allocations between the commercial and recreational sectors for the ten species experiencing overfishing. This amendment also would implement new status determination criteria for red snapper, including Maximum Sustainable Yield (MSY), Optimum Yield (OY), and Minimum Stock Size Threshold (MSST), which reflect current scientific information as provided by the assessments and approved by the Scientific and Statistical Committee (SSC). In addition, Amendment 17 includes alternatives that would extend the management area for some snapper grouper species.

Actions proposed in Amendment 17 would:

- Extend the range of the snapper grouper fishery management plan north.
- Reconsider OY for 10 species undergoing overfishing;
- Specify Annual Catch Limits (ACL), Annual Catch Targets (ACT), and Accountability Measures (AM) for 10 species undergoing overfishing;
- Specify allocations for four species undergoing overfishing;
- Modify management measures to limit total mortality to the ACT.
- Specify a rebuilding plan for red snapper.
- Improve the accuracy, timing, and quantity of fisheries statistics.
- Establish an ABC Control Rule.

Alternatives Being Considered

The Council's current alternatives are listed below. Alternatives to the proposed actions the Council considered in developing this amendment but decided not to pursue are described in **Appendix A**.

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 for the Snapper Grouper Fishery (SAFMC 1983) (Figure 1-1). The fishery management plan (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) and affect the management of 73 species (Table 1-1). The purpose of the FMP, as amended, is to manage the snapper grouper fishery for optimum yield (OY) and to allocate harvest among user groups while preventing overfishing and conserving marine resources.

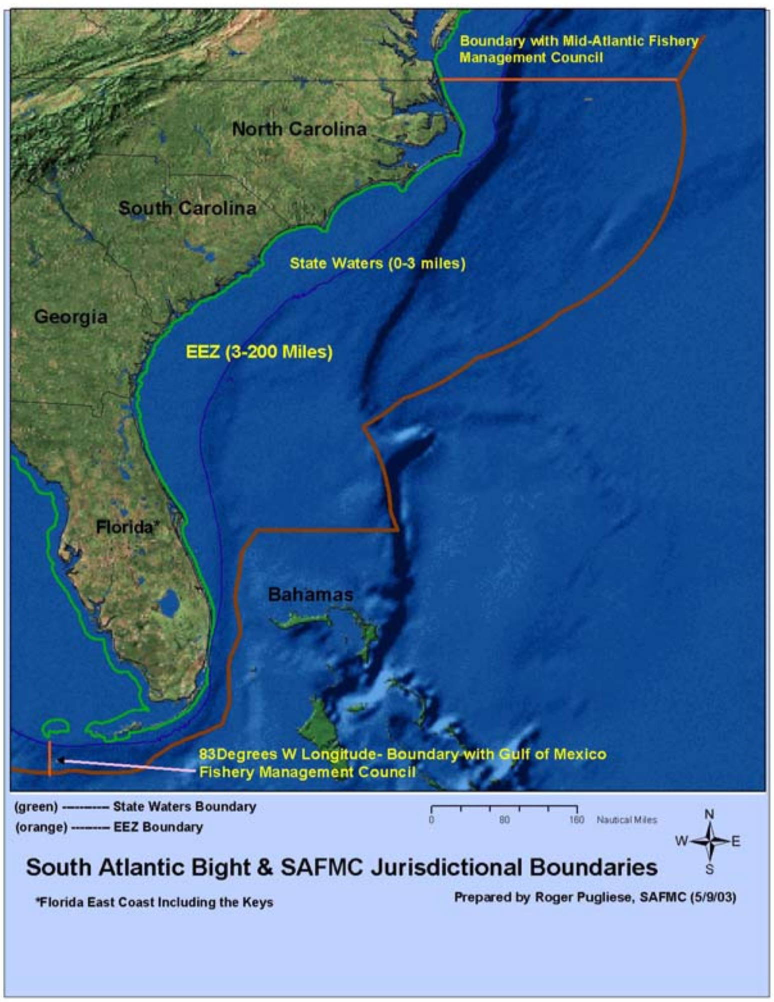


Figure 1-1. Jurisdictional boundaries of the South Atlantic Fishery Management Council.

Table 1-1. Species in the Snapper Grouper Fishery Management Unit (FMU).

Almaco jack, *Seriola rivoliana*
Atlantic spadefish, *Chaetodipterus faber*
Banded rudderfish, *Seriola zonata*
Bank sea bass, *Centropristis ocyurus*
Bar jack, *Caranx 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, *Caranx 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 plumieri*
Whitebone porgy, *Calamus leucosteus*
Wreckfish, *Polyprion americanus*

Stock assessments, through the evaluation of biological and statistical information, provide an evaluation of stock health and directionality of overall stock health under the current management regime and other potential future harvest conditions. More specifically, the assessments provide an estimation of the maximum sustainable yield (MSY) and a determination of the 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.

A stock assessment can range from simple (evaluation of trends in catch, average fish length, and catch-per-unit-effort) to complex (statistical catch-at-age models). The type of assessment varies based on available data and available resources used to conduct an assessment. In 1998, 2001, and 2003, the Council evaluated annual reports on major snapper grouper species compiled by the NOAA/NMFS Laboratory in Beaufort, NC. These reports outlined trends in catch data and estimated spawning potential ratio (SPR) values for species in the snapper grouper fishery management unit (FMU). In addition, the Council received a report on stock status and control rule alternatives in 2001 (Powers 2001). More recent stock assessments have been performed through the Southeast Data, Assessment, and Review (SEDAR) program. Stock assessments have determined that 10 species in the snapper grouper fishery management unit (FMU) are undergoing overfishing (Table 1-2).

Table 1-2. Assessment information for 10 species in the Snapper Grouper FMU undergoing overfishing.

Species	Most Recent Stock Assessment Source & Year Completed	Data Thru	Date SSC Approved	Overfishing?	Overfished?	Next Assessment Begins
Golden tilefish[1]	SEDAR 4 (2004)	2002	FIND	Yes	No	2010
Snowy grouper[1]	SEDAR 4 (2004)	2002	FIND	Yes	Yes	2010
Speckled hind	Potts and Brennan (2001)	1999	n/a	Yes	Unknown	2010
Warsaw grouper	Huntsman *et al.* (1992)	FIND	n/a	Yes	Unknown	2012
Black grouper	Potts and Brennan (2001)	1999	FIND	Yes	Unknown	2009
Black sea bass[1]	SEDAR Update 1 (2005)	2003	5/12/05	Yes	Yes	2011
Gag	SEDAR 10 (2006)	2004	6/12/07	Yes	No	2011
Red grouper	Potts and Brennan (2001)	1999	FIND	Yes	Unknown	2009
Vermilion snapper	SEDAR Update #3 (2007)	2006	6/12/07	Yes	Unknown	Not scheduled
Red snapper	SEDAR 15 (2008)	2006	6/11/08	Yes	Yes	Not scheduled

[1]Actions were implemented to reduce fishing mortality to a level expected to end overfishing. These stocks will be declared undergoing overfishing until a stock assessment confirms otherwise.

1.2 Purpose and Need

The need for action through Amendment 17 is due to the continually changing nature of the fishery, and the need to comply with new Magnuson-Stevens Act requirements. Species in the fishery management unit (FMU) are assessed on a routine basis and stock status may change as new information becomes available. In addition, changes in management regulations, fishing techniques, social/economic structure, etc. can result in shifts in the percentage of harvest between user groups over time. As such, the Council has determined that certain aspects of the current management system remain inappropriate and should be restructured. More specifically, these proposed actions would:

- Extend the range of the snapper grouper fishery management plan north;
- Reconsider OY for 10 species undergoing overfishing;
- Specify Annual Catch Limits (ACL), Annual Catch Targets (ACT), and Accountability Measures (AM) for 10 species undergoing overfishing;
- Specify allocations for four species undergoing overfishing;
- Modify management measures to limit total mortality to the ACT;
- Specify a rebuilding plan for red snapper;
- Improve the accuracy, timing, and quantity of fisheries statistics,
- Improve law enforcement capabilities and;
- Establish an ABC Control Rule.

Extend the Range of the Management Plan Northward

The Council is concerned about a northward expansion of a fishery for snapper and grouper species resulting in large catches of tilefish and groupers. The Council's Snapper Grouper Advisory Panel (AP) presented information documenting increasing catches of blueline tilefish and snowy grouper off the coast of Virginia. In addition, Virginia reported state records of recreationally-caught blueline tilefish and snowy grouper in recent years. In response, the Virginia Marine Resources Commission has since established commercial and recreational limits on the harvest and landing of tilefish and grouper off the coast of Virginia (Table 1-3).

Table 1-3. Commercial and recreational limitations on the harvest and landings of tilefish and groupers in Virginia.

	Groupers	Tilefish
Commercial	175 pounds/vessel/day	300 pounds/vessel/day
Recreational	1 fish/person/day	7 fish/person/day
The following species are considered a grouper: black, gag, goliath, misty, Nassau, red, snowy, tiger, warsaw, yellowedge, yellowfin, and yellowmouth grouper; coney, graysby, red hind, rock hind, scamp, speckled hind, wreckfish. The following species are considered a tilefish: blueline, golden, and sand tilefish.		

The Council is considering extending the range of the snapper grouper fishery management plan for some species northward in order to conserve and manage these species. The current boundaries would not be changed for black sea bass, golden tilefish, and scup since they are currently considered separate stocks north and south of Cape Hatteras, North Carolina. These three species are covered by Mid-Atlantic Council fishery management plans. In addition, it has been suggested snapper grouper species are becoming more common in the northern part of their range in response to increases in average water temperature due to global warming (Parker and Dixon, 1998).

Optimum Yield

For species assessed through the SEDAR process, the SSC recommended at their June 2008 meeting that the yield at 75% F_{MSY} (the current default definition for F_{OY}) should be applied to current biomass to determine interim ABCs. As the Council's definition of ACL and ACT could be at or below the ABC, the Council is considering changing their definition of OY.

Annual Catch Limits, Annual Catch Targets, and Accountability Measures

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 Annual Catch Limits (ACLs) at a level that prevents overfishing and does not exceed the recommendations of the respective Council's Scientific and Statistical Committee (SSC) or other established peer review processes. These FMPs also are required to establish within this time frame measures to ensure accountability. Accountability measures (AM) are management controls that ensure that the ACLs are not exceeded; examples include corrective measures if overages occur and implementation of an in-season monitoring program. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements.

The Council is employing a step-wise decision-making process in setting ACLs, ACTs, allocations, management measures to ensure total mortality is below the ACL, and accountability measures (Figure 1-2). The SSC provided Overfishing Level (OFL) and Acceptable Biological Catch (ABC) recommendations in terms of pounds of fish at their

June 2008 meeting (Table 1-4). The SSC indicated these estimates are to be considered "interim" until more robust approaches could be used to estimate these parameters. The Council, using the SSC's specification of OFL and ABC as an upper-bound, is specifying ACL and ACT alternatives. The ACL is the annual catch limit expressed in pounds or numbers of fish, and the ACT is the target specified in pounds or numbers of fish. Catch includes fish that are retained for any purpose, as well as mortality of fish that are discarded. For fisheries where bycatch estimates are not available in a timely enough manner to manage annual catch, targets may be specified for landings, so long as an estimate of bycatch is accounted for such that total of landings and bycatch will not exceed the stock's ACL. Several of these elements have been previously established for various species in past snapper grouper amendments; however, in those amendments they are not referred to as ACLs, ACTs, and OFLs. Therefore, Amendment 17 will include a discussion of existing harvest level designations which could be used by the Council to specify ACLs, ACTs, and OFLs.

AMs are designed to provoke an action once either the ACL or ACT is reached during the course of a fishing season to reduce the risk overfishing will occur. However, depending on how timely the data are, it might not be realized that either the ACL and/or ACT has been reached until after a season has ended. Such AMs include prohibited retention of species once the sector ACT is met, shortening the length of the subsequent fishing season to account for overages of the ACL, and reducing the ACT in the subsequent fishing season to account for overages of the ACL.

Shift from Reducing Fishing Mortality to Keeping Total Mortality Below ACT

The Reauthorized Magnuson-Stevens Act requires the Councils to set management measures to ensure total mortality (fish that are retained and mortality of fish that are discarded) is less than or equal to the ACL. The South Atlantic Council proposes to do this by specifying ACTs and keeping total mortality at or below the sector-specific ACTs. Analyses presented will discuss the reductions in fishing mortality necessary to end overfishing and the management measures necessary to keep total mortality at or below the sector-specific ACTs.

Allocations

The Council is considering setting the allocation between the commercial and recreational sectors for black grouper, golden tilefish, red grouper, and red snapper. ACLs and ACTs for 10 species undergoing overfishing in pounds or numbers of fish that will prevent overfishing will be specified in Snapper Grouper Amendment 17. The specification of an allocation for a stock is needed to divide the future allowable harvest between the commercial and recreational sectors; additional allocations within a sector are possible. Without the designation of an allocation, the Council would be unable to specify the ACLs and ACTs for each sector. The Council's objective when setting allocations is to ensure the adverse socioeconomic impacts of ending overfishing and rebuilding overfished stocks are fairly and equitable distributed. The Council is considering basing allocations on the historical commercial and recreational landings.

Allocations have been specified for black sea bass and snowy grouper, while Amendment 16 (target implementation date of 2009) will specify allocations for gag and vermilion snapper (Table 1-5). The Council is not considering revising these allocations at this time. The Council believes it is unnecessary to establish allocations for speckled hind and warsaw grouper as the Council's SSC recommended an ABC of zero for both these species.

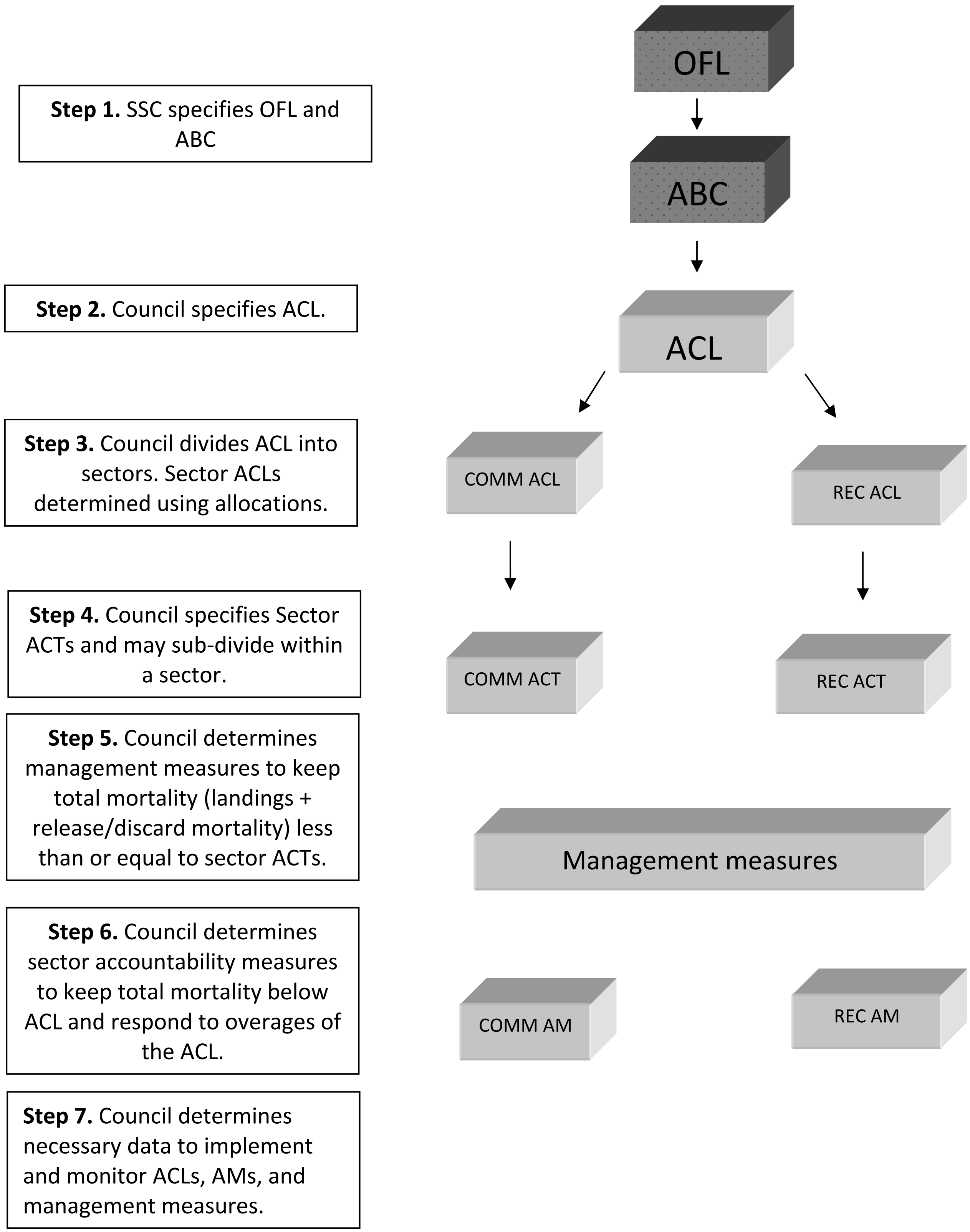


Figure 1-2. The tiering process employed in Snapper Grouper Amendment 17.

Table 1-4. Overfishing Level (OFL) and Acceptable Biological Catch (ABC) recommendations from the SSC and ACL values under each alternative. Values are in lbs whole weight.

Species	**SSC Specifications**		**Corresponding Value for 2010 Onwards Until Modified**	
	OFL	ABC	OFL	ABC
Golden tilefish	Yield at MFMT	75%(F_{MSY})	336,425	326,554
Snowy grouper	Yield at MFMT	75%(F_{MSY})	116,845	102,960
Speckled hind	unknown	0	unknown	0
Warsaw grouper	unknown	0	unknown	0
Black grouper	Average landings over last 5 years (2003-2007)	90%(OFL)	208,552	187,697
Black sea bass	Yield at MFMT	75%(F_{MSY})	912,713	847,000
Gag	Yield at MFMT	75%(F_{MSY})	1,065,540	818,920
Red grouper	Average landings over last 5 years (2003-2007)	95%(OFL)	783,214	704,893
Vermilion snapper	Yield at MFMT	75%(F_{MSY})	789,602	628,459
Red snapper	Yield at MFMT	75%(F_{MSY})	55,000	42,000
Note: The SSC recommended the following OFLs and ACLs. For speckled hind and warsaw grouper, ABC=0 and OFL=unknown. For black and red grouper, OFL=average landings over last 5 years (2003-2007). For black grouper and red grouper, ABC=90% of OFL and 95% of OFL, respectively. For the remaining species undergoing overfishing, OFL=yield at MFMT and ABC=yield at 75% of F_{MSY}.				

Table 1-5. Current allocations for four species in the Snapper Grouper FMU undergoing overfishing.

Species	**Allocations**		**Amendment**	**Effective Date**
	Commercial	**Recreational**		
Black Sea Bass	43%	57%	13C	10/23/06
Gag	51%	49%	16	Expected 2009
Snowy Grouper	95%	5%	15B	Expected 2009
Vermilion Snapper	68%	32%	16	Expected 2009

Harvest Availability of Deepwater Species

The reduction in commercial quota amounts for snowy grouper and golden tilefish in Amendment 13C (SAFMC 2006) increased the probability that the quotas would be met before the start of the fishing season in some areas of the South Atlantic. In addition, harvest restrictions in other fisheries may amplify this effect by resulting in increased fishing effort in the deepwater fishery. As a result, the Council believes that regulations should be modified for the deepwater fishery to minimize differences in regional impacts to the extent practicable without exceeding the ACT.

In terms of golden tilefish, Amendment 13C (SAFMC 2006) reduced the commercial quota to 295,000 lbs gutted weight (gw) and instituted a 4,000 lb gw trip limit, which is to be reduced to 300 lbs gw if 75% of the quota is taken on or before September 1. Although the stepped trip limit strategy was designed to prolong the duration of the golden tilefish fishery, it would not prevent an early closure if the commercial quota is met more rapidly than projected. Public testimony on Amendment 13C (SAFMC 2006) indicated some Florida-based commercial hook-and-line fishermen are concerned an early closure could prevent them from harvesting golden tilefish from September through November, which is the time they have historically participated in the fishery. The commercial quota was met and harvest was prohibited on October 23rd, October 3rd, and August 17th of 2006, 2007, and 2008, respectively.

Commercial longline fishermen are also concerned a 300 lb gw trip will not be profitable given the size of their operations. Consequently, the Council is considering in this amendment modifying the start date of the fishing year and the stepped trip limit strategy, as appropriate, to ensure the golden tilefish regulations recently proposed in Amendment 13C (SAFMC 2006) do not unnecessarily disproportionately impact select fishermen. The trip limit was reduced to 300 lbs gw on May 17th and May 28th of 2007 and 2008, respectively.

Management Measures to Limit Landings to ACTs

The Council is responsible for implementing regulations that ensure annual catches (landings plus discard mortality) are equal to or below the ACT specified for that year. The Council must compare the ACT values produced by the preferred ACT alternatives to historical landings data. The Council should consider adjusting regulations if there is a low probability that future landings will be equal to or below the ACT. These regulations will be included in Snapper Grouper Amendment 17.

ADD MORE AFTER COUNCIL CHOOSES PREFERRED ALTERNATIVES

Red Snapper Rebuilding Plan

The red snapper stock in the South Atlantic has been assessed through SEDAR. The assessment indicates that the stock is undergoing overfishing and is overfished. The SSC determined the assessment was based upon the best available science at their June 2008 meeting. The Council is required by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to implement rebuilding plans for overfished species. The intent of a rebuilding plan is to increase biomass of overfished stocks to a sustainable level (B_{MSY}) within a specified period of time. The purpose of specifying rebuilding plans is to achieve conservation goals, while minimizing to the extent practicable adverse socioeconomic impacts.

Four components have been identified as being necessary for a rebuilding plan: (1) an estimate of biomass at the maximum sustainable yield (B_{MSY}) (the rebuilding goal), (2) a rebuilding schedule, (3) a rebuilding strategy, and (4) an estimate of optimum yield (OY) expected when stock recovery has been completed (Powers 1996; Restrepo *et al*. 1998). Rebuilding schedules define the timeframe in which the biomass of the overfished stock will be rebuilt. Rebuilding strategies define catch levels and fishing mortality rates for the overfished stock throughout the rebuilding schedule to prevent overfishing and achieve the rebuilding goal. The rebuilding goal is the stock biomass that is capable of producing MSY (B_{MSY}) and may be specified in terms of overall stock biomass or in spawning stock biomass. Optimum yield (OY) is the target harvest level for a rebuilt stock. Once the stock surpasses the rebuilding target, fishery management plans can transition from rebuilding to optimal yield management.

The absence of a rebuilding plan hinders routine review and accountability and reduces the likelihood of achieving conservation objectives. A rebuilding plan provides annual allowable mortality levels and an ABC during the rebuilding period, which should not be exceeded if the stock is to rebuild to B_{MSY} by the end of the rebuilding schedule. Landings are compared to the ABC each year and adjustments can be made to keep the stock on the rebuilding trajectory. Without a rebuilding plan that specifies annual catch or mortality targets, it would be difficult to ensure that the stock is making progress towards rebuilding and to evaluate the management and regulations.

The rebuilding plan is composed of 4 elements as noted above: the rebuilding target (B_{MSY}), the rebuilding schedule, the rebuilding strategy, and the harvest level for the rebuilt stock (OY). The target is established in the Magnuson-Stevens Act and the OY is addressed in Action 2, leaving the timeframe and strategy as remaining components for consideration here.

Improvement to Fisheries Statistics

Section 303(a)(8) requires that "in the case of a fishery management plan that, after January 1, 1991, is submitted to the Secretary for review under section 304(a) (including any plan for which an amendment is submitted to the Secretary for such review) or is prepared by the Secretary, assess and specify the nature and extent of scientific data which is needed for effective implementation of the plan". In addition, the ACL Proposed Rule (73FR111:32526-32547) provides the following guidance on fisheries data: "In their FMPs, Councils should describe general data collection methods, as well as any specific data collection methods used for all stocks, stock complexes, and ecosystem component species. FMPs should: (1) List sources of fishing mortality (both landed and discarded), including commercial and recreational catch and bycatch in other fisheries; (2) Descirbe the data collection and estimation methods used to quantify total catch mortality in each fishery, including information on the management tools used (i.e., logbooks, vessel monitoring systems, observer programs, landings reports, fish tickets, processor reports, dealer reports, recreational angler surveys, or other methods); the frequency with which data are collected and updated; and the scope of sampling coverage for each fishery; and (3) Describe the methods used to compile catch data from various catch data collection methods and how those data are used to determine the relationship between total catch at a given point in time and the ACL for stocks and stock complexes that are part of a fishery."

The goal of this action is to improve the accuracy, timing, and quantity of fisheries statistics collected by the current data collection programs for fisheries managed by the Council. To accomplish this goal, the Council believes that modifications should be made to the current data collection programs (Table 1-6). Data elements improved by the action may include, but are not limited to: landings, discards, effort, biological sampling of landings and discards, fishery independent information, and economic and social characterization of the fisheries.

Table 1-6. Current data collection programs for the South Atlantic fisheries.

ADD TABLE 1-6 SHOWING CURRENT DATA COLLECTION PROGRAMS

Improvement to Law Enforcement

The goal of this action is to improve compliance with the ACTs and ensure total mortality does not exceed the ACL. This is especially important with the proposed area closure to ensure the red snapper ACL is not exceeded.

Acceptable Biological Catch Control Rule

The Magnuson-Stevens Act requires that the Council's Scientific and Statistical Committee (SSC) specify the Overfishing Level (OFL) and the Acceptable Biological Catch (ABC). The proposed rule provided guidance that the Council is to establish an ABC Control Rule, based on scientific advice from its SSC, that will describe how the ABC is to be calculated.

1.3 History of Management

The snapper grouper fishery is highly regulated; some of the species included in this amendment have been regulated since 1983. The original Snapper Grouper Fishery Management Plan (SAFMC 1983) included size limits for black sea bass (8" TL). Trawl gear, primarily targeting vermilion snapper, was prohibited starting in January 1989. Fish traps (not including black sea bass pots) and entanglement nets were prohibited starting in January 1992. Bag limits (10 vermilion snapper; 5 groupers) and size limits (10" TL recreational vermilion snapper; 12" TL commercial vermilion snapper; 12" TL recreational & commercial red porgy) were also implemented in January 1992. Quotas and trip limits for snowy grouper and golden tilefish were implemented in July 1994; tilefish were also added to the 5-grouper aggregate bag limit. A controlled access program for the commercial fishery was implemented fully beginning in 1999. In February 1999, red porgy regulations were 14" TL size limit and 5 fish bag limit and commercial closure during March and April; black sea bass size limit increased to 10" TL and a 20-fish bag limit was included. All harvest of red porgy was prohibited from September 8, 1999 until August 28, 2000. Beginning on August 29, 2000 red porgy regulations included a January through April commercial closure, 1 fish bag limit, and 50 pound commercial bycatch allowance May through December.

Most recently, Snapper Grouper Amendment 15A (SAFMC 2008a) established rebuilding plans and SFA parameters for snowy grouper, black sea bass, and red porgy.

Snapper Grouper Amendment 13C (SAFMC 2006) implemented the following regulatory actions to end or phase out overfishing of the snowy grouper, golden tilefish, vermilion snapper, and black sea bass stocks, and to increase catches of red porgy to a level consistent with the approved stock rebuilding plan in federal waters of the South Atlantic:

Snowy Grouper:	Decrease the annual commercial quota over three years (Year 1 = 2006) from 151,000 pounds gutted weight (lbs gw) to 84,000 lbs gw in year 3; decrease the commercial trip limit over three years from 275 lbs gw to 100 lbs gw in year 3; and limit possession to 1 per person per day within the 5-grouper per person per day aggregate recreational bag.
Golden Tilefish:	Reduce the annual commercial quota to 295,000 lbs gw; reduce the commercial trip limit to 4,000 lbs gw, which would decrease to 300 lbs gw if 75 percent of the quota were taken by September 1; and limit possession to 1 per person per day within the 5-grouper per person per day aggregate recreational bag limit.
Vermilion Snapper:	Establish an annual commercial quota of 1,100,000 lbs gw; and increase the recreational minimum size limit from 11-inch total length (TL) to 12-inch TL.

Black Sea Bass:	Establish and decrease an annual commercial quota, over three years from 477,000 lbs gw to 309,000 lbs gw in year 3; require the use of at least 2-inch mesh for the entire back panel of pots; remove pots from the water once the commercial quota is met; change commercial and recreational fishing years from the calendar year to June 1 through May 31; establish a recreational allocation which would decrease over three years from 633,000 lbs gw to 409,000 lbs gw in year 3; increase the recreational size limit from 10-inch TL to 12-inch TL over two years; and reduce the recreational bag limit from 20 to 15 per person per day.
Red Porgy:	Increase the commercial trip limit during May through December to 120 fish; establish a commercial quota of 127,000 lbs gw; and increase the recreational bag limit from 1 to 3 red porgy per person per day.

Specific details on these and all the other regulations implemented in the snapper grouper fishery are shown below in Table 1-7.

Table 1-7. History of management.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
FMP (1983)	08/31/83	PR: 48 FR 26843 FR: 48 FR 39463	-12" limit – red snapper, yellowtail snapper, red grouper, Nassau grouper -8" limit – black sea bass -4" trawl mesh size -Gear limitations – poisons, explosives, fish traps, trawls -Designated modified habitats or artificial reefs as Special Management Zones (SMZs)
Regulatory Amendment #1 (1986)	03/27/87	PR: 51 FR 43937 FR: 52 FR 9864	-Prohibited fishing in SMZs except with hand-held hook-and-line and spearfishing gear. -Prohibited harvest of goliath grouper in SMZs.
Amendment #1 (1988)	01/12/89	PR: 53 FR 42985 FR: 54 FR 1720	-Prohibited trawl gear to harvest fish south of Cape Hatteras, NC and north of Cape Canaveral, FL. -Directed fishery defined as vessel with trawl gear and ≥200 lbs s-g on board. -Established rebuttable assumption that vessel with s-g on board had harvested such fish in EEZ.
Regulatory Amendment #2 (1988)	03/30/89	PR: 53 FR 32412 FR: 54 FR 8342	-Established 2 artificial reefs off Ft. Pierce, FL as SMZs.
Notice of Control Date	09/24/90	55 FR 39039	-Anyone entering federal wreckfish fishery in the EEZ off S. Atlantic states after 09/24/90 was not assured of future access if limited entry program developed.
Regulatory Amendment #3 (1989)	11/02/90	PR: 55 FR 28066 FR: 55 FR 40394	-Established artificial reef at Key Biscayne, FL as SMZ. Fish trapping, bottom longlining, spear fishing, and harvesting of Goliath grouper prohibited in SMZ.
Amendment #2 (1990)	10/30/90	PR: 55 FR 31406 FR: 55 FR 46213	-Prohibited harvest/possession of goliath grouper in or from the EEZ -Defined overfishing for goliath grouper and other species

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Emergency Rule	8/3/90	55 FR 32257	-added wreckfish to the FM -fishing year beginning 4/16/90 -commercial quota of 2 million pounds -commercial trip limit of 10,000 pounds per trip
Fishery Closure Notice	8/8/90	55 FR 32635	-the fishery was closed because the commercial quota of 2 million pounds was reached
Emergency Rule Extension	11/1/90	55 FR 40181	-extended the measures implemented via emergency rule on 8/3/90
Amendment #3 (1990)	01/31/91	PR: 55 FR 39023 FR: 56 FR 2443	-Add wreckfish to the FMU; -Defined optimum yield and overfishing -Required permit to fish for, land or sell wreckfish; -Required catch and effort reports from selected, permitted vessels; -Established control date of 03/28/90; -Established a fishing year for wreckfish starting April 16; -Established a process to set annual quota, with initial quota of 2 million pounds; provisions for closure; -Established 10,000 pound trip limit; -Established a spawning season closure for wreckfish from January 15 to April 15; and -Provided for annual adjustments of wreckfish management measures;
Notice of Control Date	07/30/91	56 FR 36052	-Anyone entering federal snapper grouper fishery (other than for wreckfish) in the EEZ off S. Atlantic states after 07/30/91 was not assured of future access if limited entry program developed.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #4 (1991)	01/01/92	PR: 56 FR 29922 FR: 56 FR 56016	-Prohibited gear: fish traps except black sea bass traps north of Cape Canaveral, FL; entanglement nets; longline gear inside 50 fathoms; bottom longlines to harvest wreckfish**; powerheads and bangsticks in designated SMZs off S. Carolina. -defined overfishing/overfished and established rebuilding timeframe: red snapper and groupers ≤ 15 years (year 1 = 1991); other snappers, greater amberjack, black sea bass, red porgy ≤ 10 years (year 1 = 1991) -Required permits (commercial & for-hire) and specified data collection regulations -Established an assessment group and annual adjustment procedure (framework) -Permit, gear, and vessel id requirements specified for black sea bass traps. -No retention of snapper grouper spp. caught in other fisheries with gear prohibited in snapper grouper fishery if captured snapper grouper had no bag limit or harvest was prohibited. If had a bag limit, could retain only the bag limit. -8" limit – lane snapper -10" limit – vermilion snapper (recreational only) -12" limit – red porgy, vermilion snapper (commercial only), gray, yellowtail, mutton, schoolmaster, queen, blackfin, cubera, dog, mahogany, and silk snappers -20" limit – red snapper, gag, and red, black, scamp, yellowfin, and yellowmouth groupers. -28" FL limit – greater amberjack (recreational only) -36" FL or 28" core length – greater amberjack (commercial only) -bag limits – 10 vermilion snapper, 3 greater amberjack -aggregate snapper bag limit – 10/person/day, excluding vermilion snapper and allowing no more than 2 red snappers -aggregate grouper bag limit – 5/person/day, excluding Nassau and goliath grouper, for which no retention (recreational & commercial) is allowed -spawning season closure – commercial harvest greater amberjack > 3 fish bag prohibited in April south of Cape Canaveral, FL -spawning season closure – commercial harvest mutton snapper >snapper aggregate prohibited during May and June -charter/headboats and excursion boat possession limits extended

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #5 (1991)	04/06/92	PR: 56 FR 57302 FR: 57 FR 7886	-Wreckfish: established limited entry system with ITQs; required dealer to have permit; rescinded 10,000 lb. trip limit; required off-loading between 8 am and 5 pm; reduced occasions when 24-hour advance notice of offloading required for off-loading; established procedure for initial distribution of percentage shares of TAC
Emergency Rule	8/31/92	57 FR 39365	-Black Sea Bass (bsb): modified definition of bsb pot; allowed multi-gear trips for bsb; allowed retention of incidentally-caught fish on bsb trips
Emergency Rule Extension	11/30/92	57 FR 56522	-Black Sea Bass: modified definition of bsb pot; allowed multi-gear trips for bsb; allowed retention of incidentally-caught fish on bsb trips
Regulatory Amendment #4 (1992)	07/06/93	FR: 58 FR 36155	-Black Sea Bass: modified definition of bsb pot; allowed multi-gear trips for bsb; allowed retention of incidentally-caught fish on bsb trips
Regulatory Amendment #5 (1992)	07/31/93	PR: 58 FR 13732 FR: 58 FR 35895	-Established 8 SMZs off S. Carolina, where only hand-held, hook-and-line gear and spearfishing (excluding powerheads) was allowed.
Amendment #6 (1993)	07/27/94	PR: 59 FR 9721 FR: 59 FR 27242	-commercial quotas for snowy grouper, golden tilefish -commercial trip limits for snowy grouper, golden tilefish, speckled hind, and warsaw grouper -include golden tilefish in grouper recreational aggregate bag limits -prohibited sale of warsaw grouper and speckled hind -100% logbook coverage upon renewal of permit -creation of the *Oculina* Experimental Closed Area -data collection needs specified for evaluation of possible future IFQ system
Amendment #7 (1994)	01/23/95	PR: 59 FR 47833 FR: 59 FR 66270	-12" FL – hogfish -16" TL – mutton snapper -required dealer, charter and headboat federal permits -allowed sale under specified conditions -specified allowable gear and made allowance for experimental gear -allowed multi-gear trips in N. Carolina -added localized overfishing to list of problems and objectives -adjusted bag limit and crew specs. for charter and head boats -modified management unit for scup to apply south of Cape Hatteras, NC -modified framework procedure
Regulatory Amendment #6 (1994)	05/22/95	PR: 60 FR 8620 FR: 60 FR 19683	Established actions which applied only to EEZ off Atlantic coast of FL: Bag limits – 5 hogfish/person/day (recreational only), 2 cubera snapper/person/day > 30" TL; 12" TL – gray triggerfish
Notice of Control Date	04/23/97	62 FR 22995	-Anyone entering federal bsb pot fishery off S. Atlantic states after 04/23/97 was not assured of future access if limited entry program developed.

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #8 (1997)	12/14/98	PR: 63 FR 1813 FR: 63 FR 38298	-established program to limit initial eligibility for snapper grouper fishery: Must demonstrate landings of any species in SG FMU in 1993, 1994, 1995 or 1996; and have held valid SG permit between 02/11/96 and 02/11/97. -granted transferable permit with unlimited landings if vessel landed ≥ 1,000 lbs. of snapper grouper spp. in any of the years -granted non-transferable permit with 225 lb. trip limit to all other vessels -modified problems, objectives, OY, and overfishing definitions -expanded Council's habitat responsibility -allowed retention of snapper grouper spp. in excess of bag limit on permitted vessel with a single bait net or cast nets on board -allowed permitted vessels to possess filleted fish harvested in the Bahamas under certain conditions.
Regulatory Amendment #7 (1998)	01/29/99	PR: 63 FR 43656 FR: 63 FR 71793	-Established 10 SMZs at artificial reefs off South Carolina.
Interim Rule Request	1/16/98		-Council requested all Amendment 9 measures except black sea bass pot construction changes be implemented as an interim request under MSA
Action Suspended	5/14/98		-NMFS informed the Council that action on the interim rule request was suspended
Emergency Rule Request	9/24/98		-Council requested Amendment 9 be implemented via emergency rule
Request not Implemented	1/22/99		-NMFS informed the Council that the final rule for Amendment 9 would be effective 2/24/99; therefore they did not implement the emergency rule

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #9 (1998)	2/24/99	PR: 63 FR 63276 FR: 64 FR 3624	-Red porgy: 14" length (recreational and commercial); 5 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, in March and April. -Black sea bass: 10" length (recreational and commercial); 20 fish rec. bag limit; required escape vents and escape panels with degradable fasteners in bsb pots -Greater amberjack: 1 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, during April; quota = 1,169,931 lbs; began fishing year May 1; prohibited coring. -Vermilion snapper: 11" length (recreational) Gag: 24" length (recreational); no commercial harvest or possession > bag limit, and no purchase or sale, during March and April -Black grouper: 24" length (recreational and commercial); no harvest or possession > bag limit, and no purchase or sale, during March and April. -Gag and Black grouper: within 5 fish aggregate grouper bag limit, no more than 2 fish may be gag or black grouper (individually or in combination) -All SG without a bag limit: aggregate recreational bag limit 20 fish/person/day, excluding tomtate and blue runners -Vessels with longline gear aboard may only possess snowy, Warsaw, yellowedge, and misty grouper, and golden, blueline and sand tilefish.
Amendment #9 (1998) resubmitted	10/13/00	PR: 63 FR 63276 FR: 65 FR 55203	-Commercial trip limit for greater amberjack
Regulatory Amendment #8 (2000)	11/15/00	PR: 65 FR 41041 FR: 65 FR 61114	-Established 12 SMZs at artificial reefs off Georgia; revised boundaries of 7 existing SMZs off Georgia to meet CG permit specs; restricted fishing in new and revised SMZs
Emergency Interim Rule	09/08/99, expired 08/28/00	64 FR 48324 and 65 FR 10040	-Prohibited harvest or possession of red porgy.
Emergency Action	9/3/99	64 FR 48326	-Reopened the Snapper Grouper Amendment 8 permit application process
Amendment #10 (1998)	07/14/00	PR: 64 FR 37082 and 64 FR 59152 FR: 65 FR 37292	-Identified EFH and established HAPCs for species in the SG FMU.

Document	**All Actions Effective By:**	**Proposed Rule Final Rule**	**Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.**
Amendment #11 (1998d)	12/02/99	PR: 64 FR 27952 FR: 64 FR 59126	-MSY proxy: goliath and Nassau grouper = 40% static SPR; all other species = 30% static SPR -OY: hermaphroditic groupers = 45% static SPR; goliath and Nassau grouper = 50% static SPR; all other species = 40% static SPR -Overfished/overfishing evaluations: BSB: overfished (MSST=3.72 mp, 1995 biomass=1.33 mp); undergoing overfishing (MFMT=0.72, F1991-1995=0.95) Vermilion snapper: overfished (static SPR = 21-27%). Red porgy: overfished (static SPR = 14-19%). Red snapper: overfished (static SPR = 24-32%) Gag: overfished (static SPR = 27%) Scamp: no longer overfished (static SPR = 35%) Speckled hind: overfished (static SPR = 8-13%) Warsaw grouper: overfished (static SPR = 6-14%) Snowy grouper: overfished (static SPR = 5=15%) White grunt: no longer overfished (static SPR = 29-39%) Golden tilefish: overfished (couldn't estimate static SPR) Nassau grouper: overfished (couldn't estimate static SPR) Goliath grouper: overfished (couldn't estimate static SPR) -overfishing level: goliath and Nassau grouper = F>F40% static SPR; all other species: = F>F30% static SPR Approved definitions for overfished and overfishing. MSST = [(1-M) or 0.5 whichever is greater]*Bmsy. MFMT = Fmsy
Amendment #12 (2000)	09/22/00	PR: 65 FR 35877 FR: 65 FR 51248	-Red porgy: MSY=4.38 mp; OY=45% static SPR; MFMT=0.43; MSST=7.34 mp; rebuilding timeframe=18 years (1999=year 1); no sale during Jan-April; 1 fish bag limit; 50 lb. bycatch comm. trip limit May-December; modified management options and list of possible framework actions.
Amendment #13A (2003)	04/26/04	PR: 68 FR 66069 FR: 69 FR 15731	-Extended for an indefinite period the regulation prohibiting fishing for and possessing snapper grouper spp. within the *Oculina* Experimental Closed Area.
Notice of Control Date	10/14/05	70 FR 60058	-The Council is considering management measures to further limit participation or effort in the commercial fishery for snapper grouper species (excluding Wreckfish).

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #13C (2006)	10/23/06	PR: 71 FR 28841 FR: 71 FR 55096	- End overfishing of snowy grouper, vermilion snapper, black sea bass, and golden tilefish. Increase allowable catch of red porgy. Year 1 = 2006. 1. Snowy Grouper Commercial: Quota (gutted weight) = 151,000 lbs gw in year 1, 118,000 lbs gw in year 2, and 84,000 lbs gw in year 3 onwards. Trip limit = 275 lbs gw in year 1, 175 lbs gw in year 2, and 100 lbs gw in year 3 onwards. Recreational: Limit possession to one snowy grouper in 5 grouper per person/day aggregate bag limit. 2. Golden Tilefish Commercial: Quota of 295,000 lbs gw, 4,000 lbs gw trip limit until 75% of the quota is taken when the trip limit is reduced to 300 lbs gw. Do not adjust the trip limit downwards unless 75% is captured on or before September 1. Recreational: Limit possession to 1 golden tilefish in 5 grouper per person/day aggregate bag limit. 3. Vermilion Snapper Commercial: Quota of 1,100,000 lbs gw. Recreational: 12" size limit. 4. Black Sea Bass Commercial: Commercial quota (gutted weight) of 477,000 lbs gw in year 1, 423,000 lbs gw in year 2, and 309,000 lbs gw in year 3 onwards. Require use of at least 2" mesh for the entire back panel of black sea bass pots effective 6 months after publication of the final rule. Require black sea bass pots be removed from the water when the quota is met. Change fishing year from calendar year to June 1 – May 31. Recreational: Recreational allocation of 633,000 lbs gw in year 1, 560,000 lbs gw in year 2, and 409,000 lbs gw in year 3 onwards. Increase minimum size limit from 10" to 11" in year 1 and to 12" in year 2. Reduce recreational bag limit from 20 to 15 per person per day. Change fishing year from the calendar year to June 1 through May 31. 5. Red Porgy Commercial and recreational 1. Retain 14" TL size limit and seasonal closure (retention limited to the bag limit); 2. Specify a commercial quota of 127,000 lbs gw and prohibit sale/purchase and prohibit harvest and/or possession beyond the bag limit when quota is taken and/or during January through April; 3. Increase commercial trip limit from 50 lbs ww to 120 red porgy (210 lbs gw) during May through December; 4. Increase recreational bag limit from one to three red porgy per person per day.
Notice of Control Date	3/8/07	72 FR 60794	-The Council may consider measures to limit participation in the snapper grouper for-hire fishery

Document	All Actions Effective By:	Proposed Rule Final Rule	Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents.
Amendment #14 (2007) Sent to NMFS 7/18/07	TBD	PR: 73 FR 32281 TBD	-Establish eight deepwater Type II marine protected areas (MPAs) to protect a portion of the population and habitat of long-lived deepwater snapper grouper species.
Amendment #15A (2007)	3/14/08	73 FR 14942	- Establish rebuilding plans and SFA parameters for snowy grouper, black sea bass, and red porgy.
Amendment #15B (2008b)	TBD	TBD	- Prohibit the sale of bag-limit caught snapper grouper species. -Reduce the effects of incidental hooking on sea turtles and smalltooth sawfish. - Adjust commercial renewal periods and transferability requirements. - Implement plan to monitor and assess bycatch, - Establish reference points for golden tilefish. - Establish allocations for snowy grouper (95% com & 5% rec) and red porgy (50% com & 50% rec).
Amendment #16 (SAFMC 2008c)	TBD	TBD	-Specify SFA parameters for gag and vermilion snapper -For gag grouper: Specify interim allocations 51%com & 49%rec; rec & com spawning closure January through April; directed com quota=348,440 pounds gutted weight; reduce 5-grouper aggregate to 3-grouper and 2 gag/black to 1 gag/black and exclude captain & crew from possessing bag limit. -For vermilion snapper: Specify interim allocations 68%com & 32%rec; directed com quota split Jan-June=168,501 pounds gutted weight and 155,501 pounds July-Dec; reduce bag limit from 10 to 4 and a rec closed season October through May 15. In addition, the NMFS RA will set new regulations based on new stock assessment. -Require venting and dehooking tools.
Amendment #17 (TBD)	TBD	TBD	- Establish annual catch limits and accountability measures for snapper grouper species currently experiencing overfishing. - Specify ABC Control Rules - Establish a rebuilding plan (rebuilding timeframe and rebuilding strategy) for red snapper. - Implement management measures to end overfishing and rebuild red snapper. - Establish allocations for species experiencing overfishing. - Reconsider OY for 10 species undergoing overfishing. - Specify management reference points for red snapper. - Extend the range of some snapper grouper species through the Mid-Atlantic or New England Council's area of authority. - Promote fair and equitable regulations in the commercial fishery for snowy grouper.

1.4 Management Objectives

The following are the fishery management plan objectives for the snapper grouper fishery as specified by the Council. These were last updated in Snapper Grouper FMP Amendment 8 (June 1996).

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.

Council and SERO Staff recommend the addition of two new objectives:

1. End overfishing of stocks undergoing overfishing.
2. Rebuild stocks declared overfished.

COMMITTEE AND COUNCIL ACTION NECESSARY TO ADD THESE TWO NEW O BJECTIVES.

2 Alternatives

Section 2.1 outlines alternatives considered by the Council in this amendment and Section 2.2 compares their environmental consequences (environmental consequences of the alternatives are described in detail in Section 4.0). 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. Alternatives the Council considered but eliminated from detailed study during the development of this amendment are described in **Appendix A**.

2.1 Description of Alternatives

2.1.1 Extend FMU

Alternative 1 (no action). Do not change the current management boundaries of the Snapper Grouper FMU.

Alternative 2. Extend the management boundaries for all species in the Snapper Grouper FMU northward to include the Mid-Atlantic Council's jurisdiction (except for black sea bass, golden tilefish, and scup).

Alternative 3. Extend the management boundaries for all species in the Snapper Grouper FMU northward to include the Mid-Atlantic and New England Council's jurisdiction (except for black sea bass, golden tilefish, and scup).

2.1.1.1 Comparison of Alternatives

The alternatives are shown in Figure 2-1.

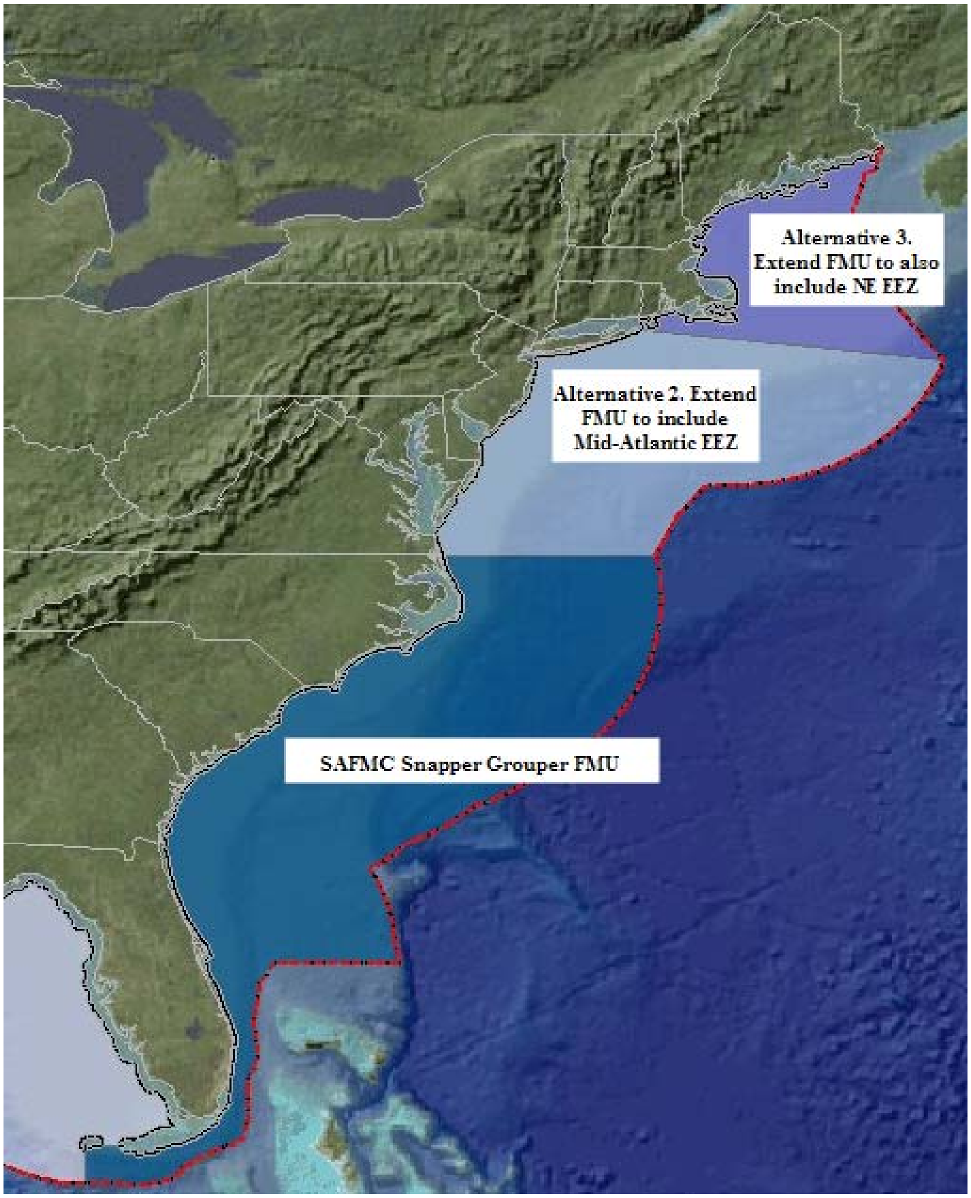


Figure 2-1. Fishery Management Unit (FMU) alternatives.

2.1.1.2 Council Conclusion

2.1.2 Specification of Optimum Yield

Note: The Council may specify more than one preferred alternative for this action as 10 species are under consideration.

Table 2-1. OY alternatives under consideration for the ten species undergoing overfishing.

Alternatives	OY equation	F_{OY} equals
Alternative 1 (no action).	For black sea bass, golden tilefish, and snowy grouper OY equals the yield produced by F_{OY}. F_{OY} equals (75%)(F_{MSY}). 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}. F_{OY} equals (75%)(F_{MSY}). For the other species, OY equals the yield produced by F_{OY}. $F_{40\%SPR}$ is used as the F_{OY} proxy.	Either (75%)(F_{MSY}) or $F_{40\%SPR}$ depending on the species.
Alternative 2.	OY equals the yield produced by $F_{OY.}$ 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}.	(55%)(F_{MSY})
Alternative 3.		(65%)(F_{MSY})
Alternative 4.	OY equals the sum of the sector ACTs.	**ZZZ** pounds (will be added after the Committee & Council specify ACTs.)

2.1.2.1 Comparison of Alternatives

2.1.2.2 Council Conclusion

2.1.3 Specification of Maximum Fishing Mortality Threshold for Red Snapper

The Maximum Fishing Mortality Threshold (MFMT) is a rate of fishing mortality above which a stock's capacity to produce MSY would be jeopardized. A stock is considered to be undergoing overfishing when the fishing mortality is greater than the MFMT.

The Council's definition of MFMT for red snapper, as established in Amendment 11 to the Snapper Grouper FMP, sets MFMT equal to F_{MSY}. Amendment 11 established a F30% static spawning potential ratio (SPR) as a proxy for F_{MSY}. However, uncertainty in the recent assessment of red snapper led the SEDAR 15 (2008) review panel to choose $F_{40\%\ SPR}$ as the F_{MSY} proxy for red snapper. Based on this recommendation, the Council is using $F_{40\%SPR}$ as a proxy for F_{MSY}. The assessment estimated $F_{40\%\ SPR}$ for red snapper to equal 0.104. This is not an action item in this amendment.

2.1.4 Annual Catch Limits

Note: The Council may specify more than one preferred alternative for this action as 10 species are under consideration.

Alternative 1 (no action). Do not specify ACLs for 10 species undergoing overfishing.

Alternative 2. ACL equals ABC.

Alternative 3. ACL equals 90% of the ABC.

Alternative 4. ACL equals 80% of the ABC.

2.1.4.1 Comparison of Alternatives

The alternatives are shown in Table 2-2. **Alternative 1 (no action)** would not comply with the new Magnuson-Stevens Act requirements. **Alternative 2** would set ACL equal to the ABC which implies that there is no additional need to be more conservative at this decision point. ABC is already a step-down from the overfishing level (OFL) to account for assessment uncertainty, and the Council intends to set the ACT below the ABC to account for implementation uncertainty. **Alternative 3** would set ACL equal to 90% of the ABC which would be more conservative than **Alternative 2**. **Alternative 4** would set ACL equal to 80% of the ABC which would be more conservative than **Alternatives 2 and 3**. Impacts of the various ACL alternatives based on 2007 landings can be gauged by comparing Table 2-3 to Table 2-2.

Table 2-2. Overfishing Level (OFL) and Acceptable Biological Catch (ABC) recommendations from the SSC and ACL values under each alternative. Values are in pounds whole weight.

Species	Total Landings (2007)	OFL (from SSC)	ABC (from SSC)	ACL		
				Alt. 2; ACL=ABC	Alt. 3; ACL=90%(ABC)	Alt. 4; ACL=80%(ABC)
Golden tilefish	337,255	336,425	326,554	326,554	293,899	261,243
Snowy grouper	156,014	116,845	102,960	102,960	92,664	82,368
Speckled hind	3,315	unknown	0	0	0	0
Warsaw grouper	20,662	unknown	0	0	0	0
Black grouper	166,042	208,552	187,697	187,697	168,927	150,158
Black sea bass	1,161,662	912,713	847,000	847,000	762,300	677,600
Gag	1,272,482	1,065,540	818,920	818,920	737,028	655,136
Red grouper	1,129,231	783,214	744,053	744,053	669,648	595,242
Vermilion snapper	1,952,403	789,602	628,459	628,459	565,613	502,767
Red snapper	446,659	55,000	42,000	42,000	37,800	33,600
Note: The SSC recommended the following OFLs and ACLs. For speckled hind and warsaw grouper, ABC=0 and OFL=unknown. For black and red grouper, OFL=average landings over last 5 years (2003-2007). For black grouper and red grouper, ABC=90% of OFL and 95% of OFL, respectively. For the remaining species undergoing overfishing, OFL=yield at MFMT and ABC=yield at 75% of Fmsy.						

Table 2-3. Landings (pounds whole weight) for 2007.
Source: Commercial landings are from ALS and include the Atlantic portion of Monroe County. Headboat landings are from the NMFS Headboat survey and include landings from the Atlantic portion of Monroe County. MRFSS data are from the Web and do not include Monroe County. For-hire includes MRFSS charter and headboat.

Species	Commercial	Recreational	Total
Golden Tilefish	332,473	4,782	337,255
Snowy Grouper	132,620	23,394	156,014
Speckled Hind	1,917	1,398	3,315
Warsaw Grouper	608	20,054	20,662
Black grouper	104,697	61,345	166,042
Black sea bass	379,512	782,150	1,161,662
Gag	712,970	559,512	1,272,482
Red grouper	506,020	623,211	1,129,231
Vermilion snapper	1,074,761	877,642	1,952,403
Red snapper	115,653	331,006	446,659

2.1.4.1 Council Conclusion

2.1.5 Allocations

Note: The Council's selection of the preferred alternative could vary for the four species experiencing overfishing. In other words, the same preferred alternative does not have to be chosen for all four species

Alternative 1 (no action). Do not define allocations for black grouper, golden tilefish, red grouper, and red snapper. Note: interim allocations have been specified for the black sea bass and snowy grouper and are proposed for gag and vermilion snapper.

Alternative 2. Define allocations based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 1986-2007.

Alternative 3. Define allocations based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 2005-2007.

Alternative 4. Define allocations based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector: Sector apportionment = (50% * average of long catch range (lbs) 1986-2007) + (50% * average of recent catch trend (lbs) 2005-2007).

2.1.5.1 Comparison of Alternatives

The alternatives are shown in Tables 2-4, 2-5, and 2-6. **Alternative 1 (no action)** would not allow the Council to develop sector ACLs and thereby comply with the new Magnuson-Stevens Act requirements by limiting total mortality at or below the ACL. **Alternative 2** would set allocations based on catch data from 1986-2007 (historical catch history), and **Alternative 3** would set allocations based on catch data from 2005-2007 (more recent catch history). Alternative 4 would set allocations based on a formula that gives equal weight to historical and more recent catch history.

Table 2-4. Percent allocations from allocation alternatives for four species undergoing overfishing. CM = Commercial, RC = Recreational, NS = Not specified.

Species	Alt. 1. No Action		Alt. 2. 1986-2007		Alt. 3. 2005-2007		Alt. 4. Equation	
	CM	RC	CM	RC	CM	RC	CM	RC
Golden tilefish	NS	NS	98%	2%	89%	11%	94%	6%
Black grouper	NS	NS	56%	44%	34%	66%	45%	55%
Red grouper	NS	NS	55%	45%	41%	59%	48%	52%
Red snapper	NS	NS	30%	70%	26%	74%	28%	72%
Note: Allocations have been specified for black sea bass (43 % commercial/57% recreational) and snowy grouper (95% commercial/5% recreational). Amendment 16 will specify allocations for gag (51% commercial/49%) and vermilion snapper (68% commercial/32% recreational).								

Table 2-5. The commercial sector ACL that results from each of the allocation alternatives. Values are in lbs whole weight.
Note: This table will be completed once the Council chooses the preferred ACL alternative.

Species	Preferred Entire ACL	Commercial Sector ACL		
		Allocation Alt. 2. 1986-2007	Allocation Alt. 3. 2005-2007	Allocation Alt. 4. Equation
Golden Tilefish				
Snowy grouper				
Speckled hind	0	0	0	0
Warsaw grouper	0	0	0	0
Black grouper				
Black sea bass				
Gag				
Red grouper				
Vermilion snapper				
Red snapper				

Table 2-6. The recreational sector ACL that results from each of the allocation alternatives. Values are in lbs whole weight.
Note: This table will be completed once the Council chooses the preferred ACL alternative.

Species	Preferred Entire ACL	Recreational Sector ACL		
		Allocation Alt. 2. 1986-2007	Allocation Alt. 3. 2005-2007	Allocation Alt. 4. Equation
Golden Tilefish				
Snowy grouper				
Speckled hind	0	0	0	0
Warsaw grouper	0	0	0	0
Black grouper				
Black sea bass				
Gag				
Red grouper				
Vermilion snapper				
Red snapper				

2.1.5.2 Council Conclusion

2.1.6 Annual Catch Targets

2.1.6.1 Commercial Sector

Note: The Council may specify more than one preferred alternative for this action as 10 species are under consideration.

Alternative 1 (no action). Do not specify commercial sector ACTs for 10 species undergoing overfishing.

Alternative 2. The commercial sector ACT equals the commercial sector ACL.

Alternative 3. The commercial sector ACT equals 90% of the commercial sector ACL.

Alternative 4. The commercial sector ACT equals 80% of the commercial sector ACL.

2.1.6.1.1 Comparison of Alternatives

The alternatives are shown in Table 2-7. **Alternative 1 (no action)** would not allow the Council to develop sector ACTs and thereby comply with the new Magnuson-Stevens Act requirements by limiting total mortality at or below the ACL. **Alternative 2** would set ACT equal to the ACL which implies that there is no additional need to be more conservative to address implementation uncertainty. **Alternative 3** would set ACT equal to 90% of the ACL which would be more conservative than **Alternative 2** and would address some of the implementation uncertainty. **Alternative 4** would set ACT equal to 80% of the ACL which would be more conservative than **Alternatives 2 and 3** and would be more appropriate to address higher levels of implementation uncertainty.

Table 2-7. The commercial sector ACT that results from each of the alternatives. Values are in lbs whole weight.
Note: This table will be completed once the Council chooses the preferred ACL alternative.

Species	Preferred Commercial ACL	Commercial Sector ACT		
		ACT Alt. 2; ACT=ACL	ACT Alt. 3; ACT=90%(ACL)	ACT Alt. 4; ACT=80%(ACL)
Golden Tilefish				
Snowy grouper				
Speckled hind	0	0	0	0
Warsaw grouper	0	0	0	0
Black grouper				
Black sea bass				
Gag				
Red grouper				
Vermilion snapper				
Red snapper				

2.1.6.1.2 Council Conclusion

2.1.6.2 Recreational Sector

Note: The Council may specify more than one preferred alternative for this action as 10 species are under consideration.

Alternative 1 (no action). Do not specify recreational sector ACTs for 10 species undergoing overfishing.

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

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

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

2.1.6.2.1 Comparison of Alternatives

The alternatives are shown in Table 2-8. **Alternative 1 (no action)** would not allow the Council to develop sector ACTs and thereby comply with the new Magnuson-Stevens Act requirements by limiting total mortality at or below the ACL. **Alternative 2** would set ACT equal to 85% of the ACL which would address some of the implementation uncertainty. **Alternative 3** would set ACT equal to 75% of the ACL which would be more conservative than **Alternative 2** and would address more of the implementation uncertainty. **Alternative 4** would set ACT based on a formula using actual data (PSE or proportional standard errors shown in Table 2-9) that measures uncertainty in estimating the recreational catch (implementation uncertainty) and would be more appropriate to address higher actual levels of implementation uncertainty.

2.1.6.2.2 Council Conclusion

Table 2-8. The recreational ACT that results from each of the alternatives. Values are in lbs whole weight.
Note: This table will be completed once the Council chooses the preferred ACL alternative.

Species	Preferred Private Recreational Sector ACL	Recreational Sector ACT		
		ACT Alt. 2; ACT=85%(ACL)	ACT Alt. 3; ACT=75%(ACL)	ACT Alt. 4; ACT equals sector ACL[(1-PSE) or 0.5, whichever is greater]
Golden Tilefish				
Snowy grouper				
Speckled hind	0		0	0
Warsaw grouper	0		0	0
Black grouper				
Black sea bass				
Gag				
Red grouper				
Vermilion snapper				
Red snapper				

Table 2-9. Proportional Standard Errors (PSEs) for the ten species in Amendment 17 from numbers estimates.
Source: Obtained from http://www.st.nmfs.noaa.gov on 09.08.08.

Species	2003	2004	2005	2006	2007	3 year average (2005-2007)	5 year average (2003-2007)
Golden tilefish	40.8	37.8	39.2	45.4	59.8	48.1	44.6
Snowy grouper	62.3	36.9	60.3	31.5	44.4	45.4	47.1
Speckled hind	n/a	46.7	63.4	33.6	59.1	52.0	50.7*
Warsaw grouper	44.9	76.5	89	38.5	62.7	63.4	62.3
Black grouper	35.3	38.5	48.0	57.9	44.0	50.0	44.7
Black sea bass	11.4	11.3	9.4	11.2	10.8	10.5	10.8
Gag	16.0	17.0	19.1	16.7	16.2	17.3	17.0
Red grouper	18.9	24.6	20.7	21.1	27.3	23.0	22.5
Vermilion snapper	16.6	14.3	10.6	14.2	10.6	11.8	13.3
Red snapper	16.5	14.1	17.9	19	19.9	18.9	17.5
*Represents average of last 4 years as there were no reported landings of speckled hind in 2003 from MRFSS.							

2.1.7 Management Measures for Deepwater Species

2.1.7.1 Regulations to Limit Landings of Speckled Hind and Warsaw Grouper to the ACTs

Alternative 1 (no action). Retain existing regulations for speckled hind and warsaw grouper.

Alternative 2. Prohibit all commercial and recreational possession and retention of speckled hind and warsaw grouper.

Alternative 3. Prohibit all commercial and recreational fishing for, possession, and retention of all deepwater species.

Alternative 4. Prohibit all fishing for, possession, and retention of all deepwater species. Allow harvest for golden tilefish in a specified area or allow golden tilefish harvest without any speckled hind and warsaw grouper mortality.

For speckled hind, the ABC = 0 pounds and the ACT = 0 pounds. For warsaw grouper, the ABC = 0 pounds and the ACT = 0 pounds. The Council's goal is to keep total mortality (landings + discard/release mortality) less than or equal to ACT. Therefore, there cannot be any fishing that results in any mortality of speckled hind and/or warsaw grouper.

Current regulation for species in the deepwater fishery are shown in Tables 2-9A and 2-9B.

Table 2-9A. Current commercial regulations for deepwater species.

	COMMERCIAL REGULATIONS					
SPECIES	SIZE LIMIT	LIMITED ACCESS	GEAR RESTRICTIONS	ANNUAL QUOTA (gutted weight)	TRIP LIMITS	AREA CLOSURES
Snowy Grouper		√	√	84,000 lbs	100 lbs	√
Golden Tilefish		√	√	295,000 lbs	4,000 lbs until 75% of quota taken; after 75%, trip limit reduced to 300 lbs. Do not adjust trip limit downwards unless percent specified is captured on or before September 1.	√
Blueline Tilefish		√	√			√
Yellowedge Grouper		√	√			√
Warsaw Grouper		√	√		1 per vessel per trip. No sale, trade, or transfer at sea	√
Speckled Hind		√	√		1 per vessel per trip. No sale, trade, or transfer at sea	√
Misty Grouper		√	√			√
Queen Snapper	12" TL	√	√			√
Silk Snapper	12" TL	√	√			√

Table 2-9B. Current recreational regulations for deepwater species.

	RECREATIONAL REGULATIONS				
SPECIES	SIZE LIMIT	GEAR RESTRICTIONS	POSSESSION LIMIT	TRIP LIMITS	AREA CLOSURES
Snowy Grouper		√	1 per person per day. Included in 5 grouper per person per day.		√
Golden Tilefish		√	1 per person per day. Included in 5 grouper per person per day.		√
Blueline Tilefish		√	Included in 5 grouper per person per day.		√
Yellowedge Grouper		√	Included in 5 grouper per person per day.		√
Warsaw Grouper		√	Included in 5 grouper per person per day.	1 per vessel per trip. No sale, trade, or transfer at sea	√
Speckled Hind		√	Included in 5 grouper per person per day.	1 per vessel per trip. No sale, trade, or transfer at sea	√
Misty Grouper		√	Included in 5 grouper per person per day.		√
Queen Snapper	12" TL	√	Included in 10 snapper per person per day.		√
Silk Snapper	12" TL	√	Included in 10 snapper per person per day.		√

2.1.7.1.1 Comparison of Alternatives

Current commercial regulations for deepwater species are shown in Table 2-10 and recreational regulations in Table 2-11. Alternative 1 (no action) would not limit total mortality at or below the commercial and recreational ACTs. Alternative 2 would prohibit all retention mortality of speckled hind and warsaw grouper but would not limit total mortality at or below the commercial and recreational ACTs because of discard/release mortality. Alternative 3 would prohibit all directed harvest mortality of speckled hind and warsaw grouper and is the most conservative alternative while allowing a mid-shelf snapper grouper fishery with some low level of discard/release mortality. However it would not limit total mortality at or below the commercial and recreational ACTs but is the closest possible while allowing the mid-shelf fishery to continue. Measures in Snapper Grouper Amendment 16 will improve survival of released fish through use of dehookers and venting. Alternative 4 would prohibit all directed harvest mortality of speckled hind and warsaw grouper and would allow a very restricted commercial fishery for golden tilefish in a manner that minimizes the potential bycatch of speckled hind and warsaw grouper. The Council is proposing additional management measures to document any bycatch and will take action through the framework if necessary.

Table 2-10. Current commercial regulations for deepwater species.

	COMMERCIAL REGULATIONS					
SPECIES	SIZE LIMIT	LIMITED ACCESS	GEAR RESTRICTIONS	ANNUAL QUOTA (gutted weight)	TRIP LIMITS	AREA CLOSURES
Snowy Grouper		√	√	84,000 lbs	100 lbs	√
Golden Tilefish		√	√	295,000 lbs	4,000 lbs until 75% of quota taken; after 75%, trip limit reduced to 300 lbs. Do not adjust trip limit downwards unless percent specified is captured on or before September 1.	√
Blueline Tilefish		√	√			√
Yellowedge Grouper		√	√			√
Warsaw Grouper		√	√		1 per vessel per trip. No sale, trade, or transfer at sea	√
Speckled Hind		√	√		1 per vessel per trip. No sale, trade, or transfer at sea	√
Misty Grouper		√	√			√
Queen Snapper	12" TL	√	√			√
Silk Snapper	12" TL	√	√			√

Table 2-11. Current recreational regulations for deepwater species.

	RECREATIONAL REGULATIONS				
SPECIES	SIZE LIMIT	GEAR RESTRICTIONS	POSSESSION LIMIT	TRIP LIMITS	AREA CLOSURES
Snowy Grouper		√	1 per person per day. Included in 5 grouper per person per day.		√
Golden Tilefish		√	1 per person per day. Included in 5 grouper per person per day.		√
Blueline Tilefish		√	Included in 5 grouper per person per day.		√
Yellowedge Grouper		√	Included in 5 grouper per person per day.		√
Warsaw Grouper		√	Included in 5 grouper per person per day.	1 per vessel per trip. No sale, trade, or transfer at sea	√
Speckled Hind		√	Included in 5 grouper per person per day.	1 per vessel per trip. No sale, trade, or transfer at sea	√
Misty Grouper		√	Included in 5 grouper per person per day.		√
Queen Snapper	12" TL	√	Included in 10 snapper per person per day.		√
Silk Snapper	12" TL	√	Included in 10 snapper per person per day.		√

2.1.7.1.2 Council Conclusion

2.1.7.2 Regulations to Limit Landings of Snowy Grouper and Golden Tilefish to the ACTs

Note: The Council may specify more than one preferred alternative for this action.

Alternative 1 (no action). Retain existing regulations for snowy grouper and golden tilefish.

~~**Alternative 2.** Implement a recreational limit of one snowy grouper per vessel per day.~~

~~**Alternative 3.** Divide the commercial quota for snowy grouper by region/state. Allocate 60.29% (50,645 pounds gutted weight) to states in the MAFMC's jurisdiction, North Carolina, and South Carolina and 39.71% to Georgia and Florida (33,355 pounds gutted weight). Each region's directed quota (after adjustment for PQBM) would be tracked by dealer reporting. After the commercial quota is met in either region, all purchase and sale is prohibited in that region and harvest and/or possession is limited to the bag limit in that region.~~

Note: states in MAFMC's jurisdiction include New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina.

Council staff recommends that Alternatives 2 and 3 be moved to the considered but rejected appendix as staff does not believe that it will be possible to target snowy grouper without bycatch of speckled hind and warsaw grouper. The SSC's ABC recommendation both these species is zero.

Alternative 4. Adjust golden tilefish management measures.

> **Sub-alternative 4A.** Change the start of the golden tilefish fishing year from January 1st to September 1st.
> **Sub-alternative 4B.** Change the start of the golden tilefish fishing year from January 1st to August 1st.
> **Sub-alternative 4C.** Change the start of the golden tilefish fishing year from January 1st to May 1st.
> **Sub-alternative 4D.** Remove the 300 lb. trip limit when 75% of the quota is taken.

Alternative 5. Distribute golden tilefish gear specific endorsements for snapper grouper permit holders that qualify under the eligibility requirements stated below. Only snapper grouper permit holders with a golden tilefish longline endorsement or a golden tilefish hook and line endorsement associated with their snapper grouper permit will be allowed to target golden tilefish. The commercial quota would be allocated as 10% to those holding golden tilefish hook and line endorsements and 90% to those holding golden tilefish longline endorsements. Also, change the fishing year start date from January 1st to August 1st. Use *logbook data to check catch history and trip ticket data to verify.*

Golden Tilefish Hook and Line Endorsement Eligibility Requirements

> **Sub-alternative 5A.** To receive a golden tilefish hook and line endorsement, the individual must have an average harvest of 1,000 pounds when the individual's best three of five years from 2001-2005 are estimated.
>
> **Sub-Alternative 5B.** To receive a golden tilefish hook and line endorsement, the individual must have an average harvest of 500 pounds when the individual's best three of five years from 2001-2005 are estimated.

Golden Tilefish Longline Endorsement Eligibility Requirements

> **Sub-Alternative 5C.** To receive a golden tilefish longline endorsement, the individual must have a total of 2,000 pounds golden tilefish caught between January 2005 and November 2007.

For snowy grouper, the ABC = 102,425 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). For golden tilefish, ABC = 326,554 pounds whole weight; the commercial ACT = XX pounds (Council to specify) and the recreational ACT = YY pounds (Council to specify). The Council's goal is to keep total mortality (landings + discard/release mortality) less than or equal to ACT.

2.1.7.2.1 Comparison of Alternatives

Current commercial regulations for deepwater species are shown in Table 2-10 and recreational regulations in Table 2-11. **Alternative 1 (no action)** would not limit total mortality at or below the commercial and recreational ACTs. **Alternative 4** would change the fishing year from beginning on January 1st to September 1st (**Sub-alternative**

4A), August 1st (**Sub-alternative 4B**), or May 1st (**Sub-alternative 4C**). **Alternative 4D** would remove the 300 pound trip limit when 75% of the quota is taken. **Alternative 4** would allow a large number of fishermen/vessels to target golden tilefish after other quotas have potentially been met and this could result in a discard/release mortality of speckled hind, warsaw grouper, and snowy grouper exceeding the ACTs. **Alternative 5** would establish a very limited commercial fishery for golden tilefish and would increase the likelihood of not exceeding the ACTs for speckled hind, warsaw grouper, and snowy grouper. The hook and line endorsement would be limited to those individuals/vessels documenting an average of 500 pounds or more when the best 3 of 5 years from 2001-2005 (**Sub-alternative 5A**) or 1,000 pounds or more over the same period (**Sub-alternative 5B**). Limiting the number of hook and line vessels to between X and Y makes it possible to more closely monitor the fishery to ensure there is no bycatch of speckled hind, warsaw grouper, and snowy grouper. The longline endorsement would be limited to those individuals/vessels documenting a total of 2,000 pounds of golden tilefish caught between January 2005 and November 2007 (**Sub-alternative 5C**). Limiting the number of longline vessels to Z makes it possible to more closely monitor the fishery to ensure there is not bycatch of speckled hind, warsaw grouper, and snowy grouper.

2.1.7.2.2 Council Conclusion

2.1.8 Management Measures for Shallow Water and Mid-Shelf Species

2.1.8.1 Regulations to Limit Landings of Red Snapper to the ACT

Note: The Council may specify more than one preferred alternative for this action.

Alternative 1 (no action). This would continue the 20 inch size limit (commercial & recreational) and the recreational 2 fish bag limit.

Alternative 2. Prohibit all commercial and recreational harvest, possession, and retention of red snapper year-round in the South Atlantic EEZ.

Alternative 3. Prohibit commercial and recreational harvest, possession, and retention of species in the snapper grouper FMU in an area that includes commercial logbook grids 2880, 2980, 2981, 3179, 3080, 3081, 3180, 3181, 3278, 3279, 3280, 3378, and 3379.

Alternative 4. Prohibit commercial and recreational harvest, possession, and retention of species in the snapper grouper FMU in an area that includes commercial logbook grids 2880, 2980, 2981, 3179, 3080, 3081, 3180, 3181, 3278, 3279, 3280, 3378, and 3379. Allow commercial black sea bass pots and commercial harvest of golden tilefish by vessels with a hook-and-line or longline endorsement.

Alternative 5. Prohibit commercial and recreational harvest, possession, and retention of species in the snapper grouper FMU in an area that includes commercial logbook grids 2880, 2980, 2981, 3179, 3080, 3081, 3180, 3181, 3278, 3279, 3280, 3378, and 3379 **between 30 and 50 m depth**. Allow commercial black sea bass pots and commercial harvest of golden tilefish by vessels with a hook-and-line or longline endorsement.

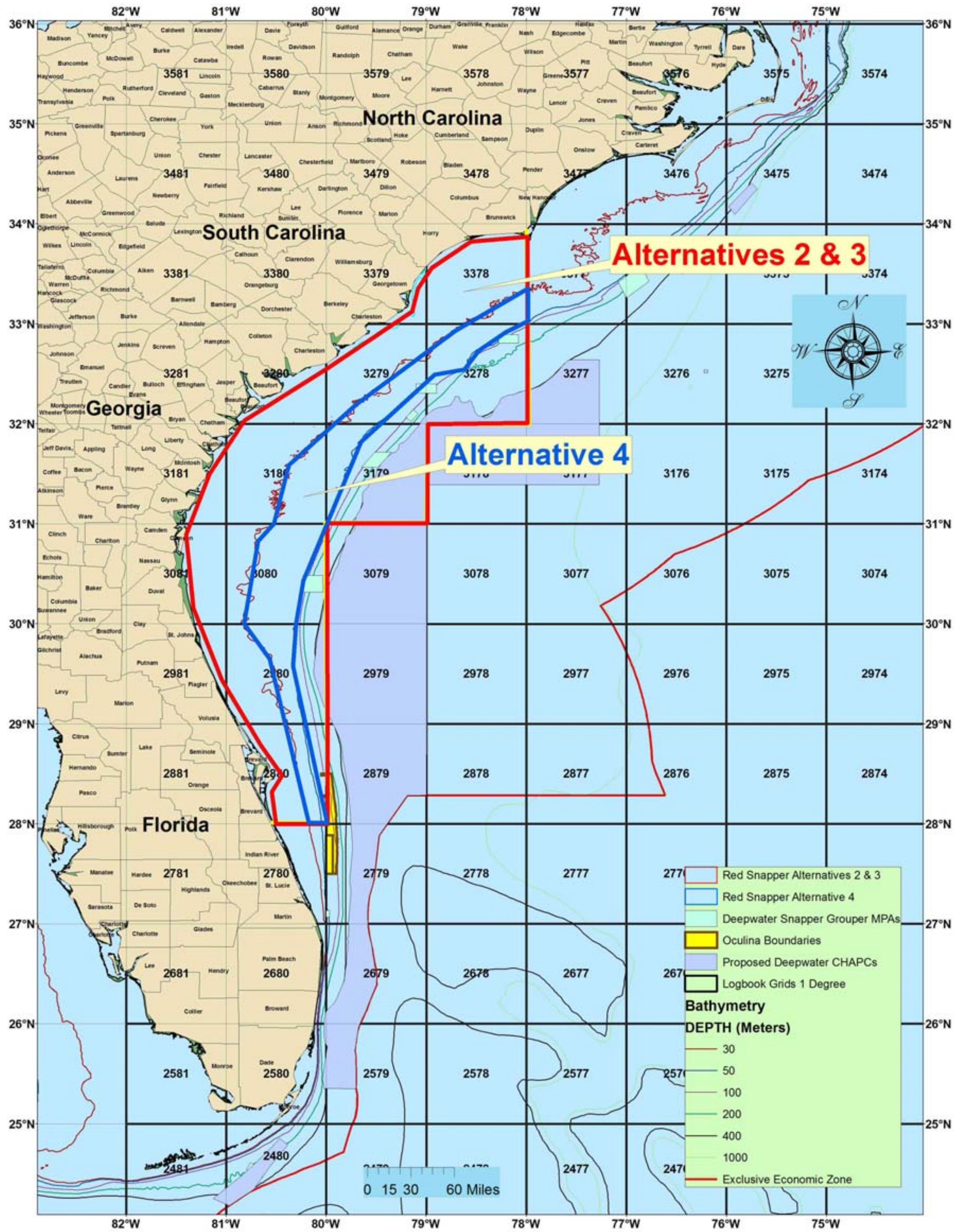
Alternative 6. Modify the bag and/or size limit.
- **Sub-alternative 6A.** Remove the existing commercial and recreational 20 inch size limit.
- **Sub-alternative 6B.** Reduce the bag limit to 1.

For red snapper, the ABC = 42,000 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). The Council's goal is to keep total mortality (landings + discard/release mortality) less than or equal to ACT.

2.1.8.1.1 Comparison of Alternatives

The area being considered for closure to keep the red snapper total mortality at or below the ACT is shown in Figure 2-2. **Alternative 1 (no action)** would not limit total mortality at or below the commercial and recreational ACTs. **Alternative 2** is the most conservative and would limit total mortality at or below the commercial and recreational red snapper ACTs (and all other ACTs as well); however, the impacts to the snapper grouper fishery from a total closure would be large. **Alternative 3** is less restrictive than **Alternative 2** in that all snapper grouper fishing would be prohibited in the area shown in Figure 2-2 rather than a total closure. **Alternative 3** would limit red snapper mortality at or below the commercial and recreational ACTs but would not have the same effect for speckled hind, warsaw grouper, and snowy grouper. Still, impacts to the shallow water and mid-shelf fisheries would be large. Under **Alternative 4**, red snapper mortality would be expected to be below the commercial and recreational ACTs because commercial black sea bass pots do not have a bycatch of red snapper or speckled hind and warsaw. Commercial golden tilefish fishing can be conducted in a manner that eliminates such bycatch, and along with the endorsement provision, the number of vessels fishing would be limited such that observers could be required to monitor the bycatch. If recreational harvest of black sea bass is allowed, there would be a bycatch of red snapper, speckled hind, and warsaw grouper. If recreational harvest of golden tilefish is allowed, there would likely be a bycatch of speckled hind and warsaw grouper and the number of vessels would be too great to have sufficient observer coverage. **Alternative 4** would minimize the social and economic impacts from the closure by allowing fishing with commercial black sea bass pots and commercial golden tilefish fishing under an endorsement system. **Alternative 5** would minimize the social and economic impacts to the greatest extent practicable by also allowing fishing between 30 and 50 meters (90 and 150 feet) depth. While minimizing the impacts, **Alternative 5** may not be sufficient to limit total red snapper mortality at or below the ACTs depending on the level of discards between 30 and 50 meters. **Alternative 6** would remove the existing bag limit (**Sub-alternative 6A**) and would reduce bycatch/discard mortality in the future when the fishery reopens. **Sub-alternative 6B** would reduce the bag limit to 1 and would reduce directed mortality in the future when the fishery reopens.

2.1.8.1.2 Council Conclusion



Prepared by Roger Pugliese SAFMC 10/20/08

Figure 2-2. Area closures as specified in Alternatives 3, 4, and 5.

2.1.8.2 Regulations to Limit Black Grouper, Black Sea Bass, Gag, Red Grouper, and Vermilion Snapper Landings to the ACTs

Alternative 1 (no action). Retain existing regulations for black grouper, black sea bass, gag, red grouper, and vermilion snapper.

Alternative 2. Prohibit all harvest, possession, and/or retention of shallow water groupers (gag, black grouper, red grouper, scamp, red hind, rock hind, yellowmouth grouper, tiger grouper, yellowfin grouper, graysby, and coney) from x-x (Council to specify months above the 4 month closure from Amendment 16).

Alternative 3. Limit commercial and recreational (Council to clarify) possession of shallow water groupers (gag, black grouper, red grouper, scamp, red hind, rock hind, yellowmouth grouper, tiger grouper, yellowfin grouper, graysby, and coney) to one fish per vessel.

Alternative 4. Reduce the 3-grouper aggregate bag limit to a 1-grouper aggregate bag limit.

For black grouper, the ABC = 187,697 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). For black sea bass, the ABC = 847,000 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). For gag grouper, the ABC = 818,920 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). For red grouper, the ABC = 704,893 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). For vermilion snapper, the ABC = 628,459 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). The Council's goal is to keep total mortality (landings + discard/release mortality) less than or equal to the sector-specific ACT for each species.

Table 2-12. Current commercial regulations for shallow water and mid-shelf species.

COMMERCIAL REGULATIONS						
Species	Size Limit	Limited Access	Gear Restrictions	Annual Quota	Seasonal Closures	Area Closures
Black Grouper	24" TL	√	√		Jan-Apr[2]	√
Black Sea Bass	10" TL	√	√	309,000 lbs[1]		√
Gag	24" TL	√	√	416,469 lbs ww 352,940 lbs gw[2]	Jan-Apr[2]	√
Red Grouper	20" TL	√	√		Jan-Apr[2]	√
Vermilion Snapper	12" TL	√	√	1,100,00 lbs 328,002 lbs		√
Red Snapper	20" TL	√	√			√

[1]Based on TAC of 718,000 lbs gutted weight (847,000 lbs whole weight).
[2]Preferred alternatives in Snapper Grouper Amendment 16.
[3]The vermilion snapper quota number may change after the new SEDAR assessment.

Table 2-13. Current recreational regulations for shallow water and mid-shelf species.

RECREATIONAL REGULATIONS						
Species	Allowable Catch	Size Limit	Gear Restrictions	Possession Limit	Seasonal Closures	Area Closures
Black Grouper		24" TL	√	No more than 1 black grouper and/or gag individually or in combination (included in 3 grouper per person per day)[1,2]	Jan-Apr[1]	√
Black Sea Bass	409,000 lbs gw[3]	12" TL	√	Daily bag limit = 15		√
Gag		24" TL	√	No more than 1 black grouper and/or gag individually or in combination (included in 3 grouper per person)[1,2]	Jan-Apr[1]	√
Red Grouper		20" TL	√	Included in 3 grouper per person per day[1,2]	Jan-Apr[1]	√
Vermilion Snapper		12" TL	√	10 (in addition to the aggregate snapper bag limit of 10)		√
Red Snapper		20" TL	√	2 per person per day (included in the 10 aggregate snapper per person limit)[1,2]		√

[1]Preferred alternatives in Snapper Grouper Amendment 16
[2]Exclude the captain and crew on for-hire vessels from possessing a bag limit for groupers.
[3]Based on TAC of 718,000 lbs gutted weight (847,000 lbs whole weight).

2.1.8.2.1 Comparison of Alternatives

The current regulations for the shallow water and mid-shelf species are shown in Tables 2-12 and 2-13. Once the Council specifies a preferred alternative for limiting total mortality to the ACT, the reductions in mortality for the other shallow water and mid-shelf species can be calculated. Harvest and mortality in the open area will be compared with the black grouper, black sea bass, gag, red grouper, and vermilion snapper ACTs to determine what regulations must change. The commercial quotas and recreational allocations will change based on the ABC, ACL, and allocation decisions.

2.1.8.2.2 Council Conclusion

2.1.9 Accountability Measures

2.1.9.1 Commercial Sector

Alternative 1 (no action). Do not implement Accountability Measures for the commercial sector for species undergoing overfishing.

Alternative 2. Implement Accountability Measures for the commercial sector for **species undergoing overfishing**. If the sector ACT is projected to be met, prohibit the harvest and retention of species or species group. If the sector ACL is exceeded, the Assistant Administrator shall publish a notice to **reduce the sector ACT** in the following year by the amount of the overage.

Alternative 3. Implement Accountability Measures for the commercial sector for **species undergoing overfishing**. If the sector ACT is projected to be met, prohibit the harvest and retention of species or species group. If the sector ACL is exceeded, the Assistant Administrator shall publish a notice to **reduce the length of the following fishing year** by the amount necessary to recover the overage from the prior fishing year.

Alternative 4. Implement Accountability Measures for the commercial sector **for species undergoing overfishing**. **If the species is overfished or not overfished and the sector ACT** is projected to be met, prohibit the harvest and retention of species or species group. **If the species is overfished and the sector ACL is exceeded**, the Assistant Administrator shall publish a notice to reduce the sector ACT in the following year by the amount of the overage. **If the species is not overfished and the sector ACL** is exceeded, the Assistant Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to recover the overage from the prior fishing year.

2.1.9.1.1 Comparison of Alternatives

2.1.9.1.2 Council Conclusion

2.1.9.2 Recreational Sector

Alternative 1 (no action). Do not implement Accountability Measures for the recreational sector for species undergoing overfishing.

Alternative 2. Implement Accountability Measures (AMs) for the recreational sector for species undergoing overfishing. **The AM would not vary depending on stock status.**

> **Sub-alternative 2A**. Do **not implement *in season* AMs if the sector ACT is projected to be met**. If the sector ACL is exceeded, the Assistant 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 sector ACT for the following fishing year.
>
> **Sub-alternative 2B. Do not implement *in season* AMs if the sector ACT is projected to be met**. If the sector ACL is exceeded, the Assistant Administrator shall publish a notice to **reduce the sector ACT** in the following year by the amount of the overage.
>
> **Sub-alternative 2C. If the sector ACT is projected to be met**, prohibit the harvest and retention of species or species group. If the sector ACL is exceeded, the Assistant Administrator shall publish a notice to **reduce the length of the following fishing year** by the amount necessary to recover the overage from the prior fishing year.
>
> **Sub-alternative 2D. If the sector ACT is projected to be met**, prohibit the harvest and retention of species or species group. If the sector ACL is exceeded, the Assistant Administrator shall publish a notice to **reduce the sector ACT** in the following year by the amount of the overage.

Alternative 3. Implement Accountability Measures for the recreational sector for species undergoing overfishing. **The AM would vary depending on stock status.**

> **Sub-alternative 3A.** Do not implement ***in season*** AMs if the sector ACT is projected to be met. **If the species is overfished and the ACL is exceeded**, the Assistant Administrator shall publish a notice to reduce the sector ACT in the following year by the amount of the overage. **If not overfished and the ACL is exceeded**, the Assistant 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 sector ACT for the following fishing year.
>
> **Sub-alternative 3B.** If the sector ACT is projected to be met, prohibit the harvest and retention of species or species group. **If the species is overfished and the ACL is exceeded**, the Assistant Administrator shall publish a notice to reduce the sector ACT in the following year by the amount of the overage. **If not overfished**

and the ACL is exceeded, the Assistant 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 sector ACT for the following fishing year.

Alternative 4. Compare ACL in Alternatives 2 and 3 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 three year running average.

2.1.9.2.1 Comparison of Alternatives

2.1.9.2.2 Council Conclusion

2.1.10 Red Snapper Rebuilding Plan

2.1.10.1 Rebuilding Schedule

Note: The SEFSC has been requested to redo projections. Values could change.

Alternative 1 (no action). There currently is not a rebuilding plan for red snapper. 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 26 years (SEDAR 15 2007). 2010 is Year 1.

Alternative 3. Define a rebuilding schedule as the mid-point between shortest possible and maximum recommended period to rebuild. This would equal 36 years. 2010 is Year 1.

Alternative 4. Define a rebuilding schedule as the maximum recommended period to rebuild if T_{MIN} > 10 years. The maximum recommended period equals T_{MIN} + one generation time. This would equal 46 years (SEDAR 15 2007 was the source of the generation time). 2010 is Year 1.

2.1.10.1.1 Comparison of Alternatives

2.1.10.1.2 Council Conclusion

2.1.10.2 Rebuilding Strategy

Note: The SEFSC has been requested to redo projections. Alternatives will be developed based on the projections.

~~**Alternative 1 (no action).** Do not define a yield-based rebuilding strategy for red snapper.~~

~~**Alternative 2.** Fixed Exploitation would be $F=F_{MSY}$ (or $F<F_{MSY}$)~~

~~**Alternative 3.** Modified Exploitation would be allow for adjustment in $F<=F_{MSY}$, which would allow for the largest landings that would rebuild the stock to B_{MSY} in the allowable timeframe.~~

~~**Alternative 4.** Fixed harvest would be maximum fixed harvest with $F<=F_{MSY}$ that would allow the stock to rebuild to B_{MSY} in the allowable timeframe.~~

Staff recommends that this action be moved to the Considered But Rejected Appendix as the maximum mortality must be less than or equal to the fishing mortality that produces the ABC and rebuilding F would result from the yield at the sum of the sector-specific ACTs.

2.1.10.2.1 Comparison of Alternatives

2.1.10.2.2 Council Conclusion

2.1.11 Improvements to Data Reporting

2.1.11.1 Commercial

Note: The Council may choose more than one alternative as their preferred.

Alternative 1 (no action). Retain existing data reporting systems for the commercial sector. NEED TO OUTLINE THEM IN A TABLE.

Alternative 2. Require selected dealers handling snapper grouper species to report electronically (computer or fax) through the SAFIS system; NMFS is authorized to require weekly or daily reporting as required.

Alternative 3. Require all dealers handling snapper grouper species to report electronically (computer or fax) through the SAFIS system; NMFS is authorized to require weekly or daily reporting as required.

Alternative 4. Require all vessels with a Federal Snapper Grouper Commercial Permit to have an electronic logbook tied to the vessel's GPS onboard the vessel.

Alternative 5. Require all vessels with a Federal Snapper Grouper Commercial Permit to have an electronic camera monitoring system onboard the vessel.

Alternative 6. Require vessels with a Federal Snapper Grouper Commercial Permit to have an electronic camera monitoring system onboard the vessel at a level that represents 10% of all trips by vessels with the permit.

Alternative 7. Require observers to be onboard vessels with a Federal Snapper Grouper Commercial Permit at level that represents 5% of all trips by vessels with the permit.

Alternative 8. Require observers on 20-100% (Council to specify) of all trips by vessels with golden tilefish endorsements.

2.1.11.1.1 Comparison of Alternatives

2.1.11.1.2 Council Conclusion

2.1.11.2 For-Hire

Note: The Council may choose more than one alternative as their preferred.

Alternative 1 (no action). Retain existing data reporting systems for the for-hire sector. NEED TO OUTLINE THEM IN A TABLE.

Alternative 2. Require selected vessels with a Federal For-Hire Permit to report electronically (computer or fax) through the SAFIS system; NMFS is authorized to require weekly or daily reporting as required.

Alternative 3. Require all vessels with a Federal For-Hire Permit to report electronically (computer or fax) through the SAFIS system; NMFS is authorized to require weekly or daily reporting as required.

Alternative 4. Require all vessels with a Federal For-Hire Permit to have an electronic logbook tied to the vessel's GPS onboard the vessel.

Alternative 5. Require all vessels with a Federal For-Hire Permit to have an electronic camera monitoring system onboard the vessel.

Alternative 6. Require vessels with a Federal For-Hire Permit to have an electronic camera monitoring system onboard the vessel at a level that represents 5% of all trips by vessels with the permit..

Alternative 7. Require observers to be onboard vessels with a Federal For-Hire Permit a level that represents 5% of all trips by vessels with the permit.

Alternative 8. Implement a voluntary logbook for discard characteristics (e.g., size and reason for discarding) for vessels with a Federal For-Hire Permit.

2.1.11.2.1 Comparison of Alternatives

2.1.11.2.2 Council Conclusion

2.1.11.3 Private Recreational

Note: The Council may choose more than one alternative as their preferred.

Alternative 1 (no action). Retain existing data reporting systems for the private recreational sector. NEED TO OUTLINE THEM IN A TABLE.

Alternative 2. Require all vessels with a state recreational fishing license to have an electronic logbook tied to the vessel's GPS onboard the vessel.

Alternative 3. Require all vessels with a state recreational fishing license to have an electronic camera monitoring system onboard the vessel.

Alternative 4. Require all vessels with a state recreational fishing license to have an electronic camera monitoring system onboard the vessel at level that represents 5% of all trips by vessels with the license.

Alternative 5. Require observers to be onboard vessels with a state recreational fishing license a level that represents 5% of all trips by vessels with the license.

Alternative 6. Implement a voluntary logbook for discard characteristics (e.g., size and reason for discarding) for vessels with a state recreational fishing license.

2.1.11.3.1 Comparison of Alternatives

2.1.11.3.2 Council Conclusion

2.1.12 Improvements to Law Enforcement Capabilities

Note: The Council may choose more than one alternative as their preferred.

Alternative 1 (no action). Retain existing law enforcement tools.
NEED TO OUTLINE THEM IN A TABLE.

Alternative 2. Require vessel monitoring systems (VMS) on commercial vessels.

> **Sub-alternative 2A.** Require all vessels with a Federal Snapper Grouper Commercial Permit to have a vessel monitoring system (VMS) onboard the vessel and operational when on a trip in the South Atlantic.
>
> **Sub-alternative 2B.** Require all vessels with a Federal Snapper Grouper Commercial Permit to have a vessel monitoring system (VMS) onboard the vessel and operational if transiting an area where fishing for any species in the snapper grouper FMU is prohibited.

Alternative 3. Require vessel monitoring systems (VMS) on for-hire vessels.

> **Sub-alternative 3A.** Require all vessels with a Federal For-Hire Permit to have a vessel monitoring system (VMS) onboard the vessel and operational when on a trip in the South Atlantic.
>
> **Sub-alternative 3B.** Require all vessels with a Federal For-Hire Permit to have a vessel monitoring system (VMS) onboard the vessel and operational if transiting an area where fishing for any species in the snapper grouper FMU is prohibited.

Alternative 4. Require vessel monitoring system (VMS) on recreational vessels.

> **Sub-alternative 4A.** Require all vessels with a state recreational fishing license to have a vessel monitoring system (VMS) onboard the vessel and operational when on a trip in the South Atlantic.
>
> **Sub-alternative 4B.** Require all vessels with a state recreational fishing license to have a vessel monitoring system (VMS) onboard the vessel and operational if transiting an area where fishing for any species in the snapper grouper FMU is prohibited.

2.1.12.1 Comparison of Alternatives

2.1.12.2 Council Conclusion

2.1.13 Acceptable Biological Catch Control Rule

~~**Alternative 1 (no action).** Do not specify ABC Control Rules for 10 species undergoing overfishing.~~

~~**Alternative 2.** Determine ABC based on a proportion of the exploitation at Fmsy.~~

~~This is similar to the approach used by the Council to develop OY alternatives. It does not address the SSCs advice that ABC should reflect assessment uncertainty.~~

~~**Sub-alternative 2A.** ABC is the yield at 65% Fmsy~~
~~**Sub-alternative 2B.** ABC is the yield at 75% Fmsy~~
~~**Sub-alternative 2C.** ABC is the yield at 85% Fmsy~~

~~**Alternative 3.** Determine ABC based on a proportion of OFL.~~

~~This is similar to Alternative 2, except the separation between OFL and ABC is based explicitly on yield rather than exploitation rate.~~

~~**Sub-alternative 2A.** ABC is 90% of OFL~~
~~**Sub-alternative 2B.** ABC is 75% OFL~~

~~**Alternative 4.** Determine ABC based on assessment uncertainty.~~

Council staff recommends the ABC Control Rule Action and Alternatives 1 through 4 be moved to the Comprehensive ACL Amendment because (1) the SSC has not had sufficient time to work on developing an ABC control rule and their discussions will continue with a special 1-day session at the December 2008 meeting; (2) the ACL proposed rule calls for the Council to develop an ABC Control Rule whereas the MSA leaves this to the SSC; (3) NMFS guidance for ACLs is still only at the proposed rule stage; (4) the Comprehensive ACL Amendment will give the SSC sufficient time to work on this important topic and should provide sufficient time for NMFS to finalize guidance through the publication of a final rule; (5) the Comprehensive ACL Amendment will be completed and implemented by January 2011 so there will not be a significant delay; and (6) this will reduce the number of actions in Snapper Grouper Amendment 17.

Because assessments vary in their complexity and available outputs, this alternative requires levels or tiers that recognize assessment differences. Levels are proposed based on assessment availability and the nature of the assessment. Data levels and associated ABC alternatives proposed here are for discussion purposes only. Considerable refinement and modification is expected following Council and SSC review.

The term 'probabilistic analysis of yield' refers to a quantitative examination of the probability that overfishing will occur at some point in the future given a particular limit (MFMT) and recommended catch level (ABC). The example analysis cited by the SSC is Shertzer et al (2008), although other viable approaches may be available or may become available over time.

The term ‘recent approved assessment’ refers to a quantitative assessment that has undergone independent peer review, has been accepted by the SSC, and not more than 10 years has passed since completion of a benchmark or update. This typically means assessments developed through SEDAR since 2003.

The term ‘reliable landings’ refers to landings statistics that have been reviewed by the SSC and deemed useful for providing insight regarding the stock and fishery and developing ABC recommendations.

Level 1.
Information available: Recent approved assessment, MSY-based reference points, and probabilistic analyses.
Example: Gag
ABC Options:
ABC = yield that provides (20%, 25%, 30%) probability of overfishing (F>Fmsy)

Level 2.
Information available: Approved assessment, MSY-based reference points but no probabilistic analyses.
Examples: Black Sea Bass, Red Porgy, Golden Tilefish, Snowy Grouper
ABC Options:
A) ABC = yield associated with F=(65%, 75%, 85%) Fmsy
B) ABC = yield associated with F(30%, 40%, 50%)SPR

Level 3.
Information available: Approved assessment, SPR-based MSY proxies
Example: Mutton Snapper, Vermilion Snapper
ABC Options:
A) ABC = yield associated with F(65%, 75%, 85%) MFMT
B) ABC = yield associated with F(30%, 40%, 50%)SPR
C) ABC = yield associated with FXX%SPR, where XX%SPR= the %SPR@MFMT + 10%. (e.g., if MFMT = F30%SPR, then ABC = yield at F40%SPR (F30% + 10%))

Level 4.
Information available: dated assessment, SPR-based MSY proxies, reliable recent landings
Example: Red Grouper, Black Grouper, Wreckfish, Scamp
ABC Options:
A) ABC = yield associated with F(65%, 75%, 85%) MFMT
B) ABC = yield associated with F(30%, 40%, 50%)SPR
C) ABC = yield associated with FXX%SPR, where XX%SPR= the %SPR@MFMT + 10%. (e.g., if MFMT = F30%SPR, then ABC = yield at F40%SPR (F30% + 10%))

Level 5.
Information available: dated assessment, SPR-based MSY proxies
Example: Warsaw grouper, speckled hind
ABC Options:
A) ABC = average landings over a selected time period
B) ABC = XX% of average landings over a selected time period
C) ABC = 0

Level 6.
Information available: reliable landings, life history characteristics
Example: Gray Triggerfish, White Grunt
ABC Options:
A) ABC = average landings over a selected time period
B) ABC = XX% of average landings over a selected time period
C) ABC = 0

Level 7.
Information available: None.
Example: ?
ABC Options:
A) ABC = average landings over a selected time period
B) ABC = XX% of average landings over a selected time period
C) ABC = 0

2.1.13.1 Comparison of Alternatives

2.1.13.2 Council Conclusion

3 Affected Environment

3.1 Habitat

3.1.1 Inshore/Estuarine Habitat

Many deepwater snapper grouper species utilize both pelagic and benthic habitats during several stages of their life histories; larval stages of these species live in the water column and feed on plankton. Most juveniles and adults are demersal and associate with hard structures on the continental shelf that have moderate to high relief (e.g., coral reef systems and artificial reef structures, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings). Juvenile stages of some snapper grouper species also utilize inshore seagrass beds, mangrove estuaries, lagoons, oyster reefs, and embayment systems. In many species, various combinations of these habitats may be utilized during diurnal feeding migrations or seasonal shifts in cross-shelf distributions. More detail on these habitat types is found in Sections 3.2.1 and 3.2.2 of the Council's Habitat Plan (SAFMC 1998e).

3.1.2 Offshore Habitat

Predominant snapper grouper offshore fishing areas are located in live bottom and shelf-edge habitats, where water temperatures range from 11° to 27° C (52^{o} to 81^{o} F) due to the proximity of the Gulf Stream, with lower shelf habitat temperatures varying from 11° to 14° C (52^{o} to 57^{o} F). Water depths range from 16 to 27 meters (54 to 90 feet) or greater for live-bottom habitats, 55 to 110 meters (180 to 360 feet) for the shelf-edge habitat, and from 110 to 183 meters (360 to 600 feet) for lower-shelf habitat areas.

The exact extent and distribution of productive snapper grouper habitat on the continental shelf north of Cape Canaveral is unknown. Current data suggest from 3 to 30 percent of the shelf is suitable habitat for these species. These live-bottom habitats may include low relief areas, supporting sparse to moderate growth of sessile invertebrates, moderate relief reefs from 0.5 to 2 meters (1.6 to 6.6 feet), or high relief ridges at or near the shelf break consisting of outcrops of rock that are heavily encrusted with sessile invertebrates such as sponges and sea fan species. Live-bottom habitat is scattered irregularly over most of the shelf north of Cape Canaveral, Florida, but is most abundant offshore from northeastern Florida. South of Cape Canaveral, the continental shelf narrows from 56 to 16 kilometers (35 to 10 miles) wide, thence reducing off the southeast coast of Florida and the Florida Keys. The lack of a large shelf area, presence of extensive, rugged living fossil coral reefs, and dominance of a tropical Caribbean fauna are distinctive benthic characteristics of this area.

Rock outcroppings occur throughout the continental shelf from Cape Hatteras, North Carolina to Key West, Florida (MacIntyre and Milliman 1970; Miller and Richards 1979; Parker *et al.* 1983), which are principally composed of limestone and carbonate sandstone (Newton *et al.* 1971), and exhibit vertical relief ranging from less than 0.5 to over 10 meters (33 feet). Ledge systems formed by rock outcrops and piles of irregularly sized boulders are also common.

Parker *et al*. (1983) estimated that 24% (9,443 km^2) of the area between the 27 and 101 meters (89 and 331 feet) isobaths from Cape Hatteras, NC to Cape Canaveral, FL is reef habitat. Although the benthic communities found in water depths between 100 and 300 meters (328 and 984 feet) from Cape Hatteras, NC to Key West, FL is relatively small compared to the whole shelf, this area, based upon landing information of fishers, constitutes prime reef fish habitat and probably significantly contributes to the total amount of reef habitat in this region.

Man-made artificial reef structures are also utilized to attract fish and increase fish harvests; however, research on man-made reefs is limited and opinions differ as to whether or not these structures promote an increase of ecological biomass or merely concentrate fishes by attracting them from nearby, natural unvegetated areas of little or no relief.

The distribution of coral and live hard bottom habitat as presented in the SEAMAP Bottom Mapping Project is a proxy for the distribution of the species within the snapper grouper complex. The method used to determine hard bottom habitat relied on the identification of reef obligate species including members of the snapper grouper complex. The Florida Fish and Wildlife Research Institute (FWRI), using the best available information on the distribution of hard bottom habitat in the south Atlantic region, prepared ArcView maps for the four-state project. These maps, which consolidate known distribution of coral, hard/live bottom, and artificial reefs as hard bottom, are included in Appendix E of the Habitat Plan (SAFMC 1998e). These maps are also available on the Internet at the Council's following Internet Mapping System website: http://ocean.floridamarine.org/efh_coral/ims/viewer.htm.

The South Carolina Department of Natural Resources, NOAA/Biogeographic Characterization Branch, and the South Atlantic Fishery Management Council cooperatively generated additional information on managed species' use of offshore fish habitat. Plots of the spatial distribution of offshore species were generated from the Marine Resources Monitoring, Assessment, and Prediction Program (MARMAP) data (Figures 35-41) in the Habitat Plan (SAFMC 1998e). The plots should be considered as point confirmation of the presence of each species within the scope of the sampling program. These plots, in combination with the hard bottom habitat distributions presented in Appendix E of the Habitat Plan (SAFMC 1998e), can be employed as proxies for offshore snapper grouper complex distributions in the south Atlantic region. Maps of the distribution of snapper grouper species by gear type based on MARMAP data can be generated through the Council's Internet Mapping System at the following web address:
http://ocean.floridamarine.org/efh_coral/ims/viewer.htm.

3.1.3 Essential Fish Habitat

Essential fish habitat (EFH) is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S. C. 1802(10)). Specific categories of EFH identified in the South Atlantic Bight, which are utilized by federally managed fish and invertebrate species, include both estuarine/inshore and marine/offshore areas. Specifically, estuarine/inshore EFH includes: Estuarine emergent and mangrove wetlands, submerged aquatic vegetation, oyster reefs and shell banks, intertidal flats, palustrine emergent and forested systems, aquatic beds, and estuarine water column. Additionally, marine/offshore EFH includes: Live/hard bottom habitats, coral and coral reefs, artificial and manmade reefs, *Sargassum* species, and marine water column.

EFH utilized by snapper grouper species in this region includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs and medium to high profile outcroppings on and around the shelf break zone from shore to at least 183 meters [600 feet (but to at least 2,000 feet for wreckfish)] where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical fish complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for survival of larvae and growth up to and including settlement. In addition, the Gulf Stream is also EFH because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine dependent and near shore snapper grouper species, EFH includes areas inshore of the 30 meters (100-foot) contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom habitats.

3.1.3.1 Habitat Areas of Particular Concern

Areas which meet the criteria for essential fish habitat-habitat areas of particular concern (EFH-HAPCs) for species in the snapper grouper management unit include medium to high profile offshore hard bottoms where spawning normally occurs; localities of known or likely periodic spawning aggregations; near shore hard bottom areas; The Point, The Ten Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump (South Carolina); mangrove habitat; seagrass habitat; oyster/shell habitat; all coastal inlets; all state-designated nursery habitats of particular importance to snapper grouper (e.g., Primary and Secondary Nursery Areas designated in North Carolina); pelagic and benthic *Sargassum*; Hoyt Hills for wreckfish; the *Oculina* Bank Habitat Area of Particular Concern; all hermatypic coral habitats and reefs; manganese outcroppings on the Blake Plateau; and Council-designated Artificial Reef Special Management Zones (SMZs).
Areas that meet the criteria for designating essential fish habitat-habitat areas of particular concern include habitats required during each life stage (including egg, larval, postlarval, juvenile, and adult stages).

In addition to protecting habitat from fishing related degradation though FMP regulations, the Council, in cooperation with NOAA Fisheries, actively comments on non-fishing projects or policies that may impact essential fish habitat. The Council adopted a habitat policy and procedure document that established a four-state Habitat Advisory Panel and adopted a comment and policy development process. With guidance from the Advisory Panel, the Council has developed and approved habitat policies on: energy exploration, development, transportation and hydropower re-licensing; beach dredging and filling and large-scale coastal engineering; protection and enhancement of submerged aquatic vegetation; and alterations to riverine, estuarine and nearshore flows (Appendix C of Habitat Plan; SAFMC 1998e).

3.2 Biological/Ecological Environment

3.2.1 Species Most Impacted By This FMP Amendment

3.2.1.1 Gag, *Mycteroperca microlepis*

Gag occur in the Western Atlantic from North Carolina to the Yucatan Peninsula, and throughout the Gulf of Mexico. Juveniles are sometimes observed as far north as Massachusetts (Heemstra and Randall 1993). Gag commonly occur at depths of 39-152 m (131-498 ft) (Heemstra and Randall 1993) and prefer inshore-reef and shelf-break habitats (Hood and Schlieder 1992). Bullock and Smith (1991) indicated gag probably do not move seasonally between reefs in the Gulf of Mexico, but show a gradual shift toward deeper water with age. McGovern *et al.* (2005) reported extensive movement of gag along the Southeast United States. In a tagging study, 23% of the 435 recaptured gag moved distances greater that 185 km (100 nautical miles). Most of these individuals were tagged off South Carolina and were recaptured off Georgia, Florida, and in the Gulf of Mexico (McGovern *et al.* 2005).

Gag are probably estuarine dependent (Keener *et al.* 1988; Ross and Moser 1995; Koenig and Coleman 1998; Strelcheck *et al.* 2003). Juveniles (age 0) occur in shallow grass beds along Florida's east coast during the late spring and summer (Bullock and Smith 1991). Sea grass is also an important nursery habitat for juvenile gag in North Carolina (Ross and Moser 1995). Post-larval gag enter South Carolina estuaries when they are 13 mm (0.5 inches) TL and 40 days old during April and May each year (Keener *et al.* 1988), and utilize oyster shell rubble as nursery habitat. Juveniles remain in estuarine waters throughout the summer and move offshore as water temperatures cool during September and October. Adults are often seen in shallow water 5-15 m (16-49 ft) above the reef (Bullock and Smith 1991) and as far as 40-70 km (22-38 nautical miles) offshore.

Huntsman *et al.* (1999) indicated gag are vulnerable to overfishing since they are long-lived, late to mature, change sex, and aggregate to spawn. The estimated natural mortality rate is 0.14 (SEDAR 10 2007). Maximum reported size for gag is 145 cm (57.5 inches) TL and 36.5 kg (81 pounds) (Heemstra and Randall 1993), and maximum reported age is 26 years (Harris and Collins 2000). Gag is a sequential hermaphrodite, changing sex from female to male with increased size and age (Coleman *et al.* 1996; McGovern *et al.* 1998; Coleman *et al.* 2000). All individuals less than 87.5 cm (34.7 inches) TL are females. At 105.0 cm (41.6 inches) TL, 50% of fishes are males. Almost all gag are males at sizes greater than 120.0 cm (47.5 inches) TL (McGovern *et al.* 1998).

Along the southeastern United States (1994-1995), size at first maturity is 50.8 cm (20.2 inches) TL, and 50% of gag females are sexually mature at 62.2 cm (24.7 inches) (McGovern *et al.* 1998). According to Harris and Collins (2000), age-at-first-maturity is 2 years, and 50% of gag are mature at 3 years. For data collected during 1978-1982 off the southeastern United States, McGovern *et al.* (1998) reported the smallest mature females were 58.0 cm (22.9 inches) TL and 3 years old. Hood and Schlieder (1992) indicated most females reach sexual maturity at ages 5-7 in the Gulf of Mexico. Off the southeastern United States, gag spawn from December through May, with a peak in March and April (McGovern *et al.* 1998). Duration of planktonic larvae is about 42 days (Keener *et al.* 1988; Koenig and Coleman 1998; Lindeman *et al.* 2000). McGovern *et al.* (1998) reported the percentage of male gag landed by commercial fishermen decreased from 20% during 1979-1981 to 6% during 1995-1996. This coincided with a decrease in the mean length of fish landed. A similar decrease in the percentage of males was reported in the Gulf of Mexico (Hood and Schleider 1992; Coleman *et al.* 1996).

Adults are sometimes solitary, and can occur in groups of 5 to 50 individuals. They feed primarily on fishes, crabs, shrimp, and cephalopods (Heemstra and Randall 1993), and often forage in small groups far from the reef ledge (Bullock and Smith 1991). Juveniles feed primarily on crustaceans, and begin to consume fishes when they reach about 25 mm (1 inch) in length (Bullock and Smith 1991; Mullaney 1994).

3.2.1.2 Red grouper, *Epinephelus morio*

Red grouper is primarily a continental species, mostly found in broad shelf areas (Jory and Iversen 1989). Red grouper occur in the Western Atlantic, from North Carolina to southeastern Brazil, including the eastern Gulf of Mexico and Bermuda, but can occasionally be found as far north as Massachusetts (Heemstra and Randall 1993).
Red grouper is uncommon around coral reefs; it generally occurs over flat rock perforated with solution holes (Bullock and Smith 1991), and is commonly found in the caverns and crevices of limestone reef in the Gulf of Mexico (Moe 1969). It also occurs over rocky reef bottoms (Moe 1969).

Adult red grouper are sedentary fish that are usually found at depths of 5-300 m (16-984 ft). Fishermen off North Carolina commonly catch red grouper at depths of 27-76 m (88-249 ft) for an average of 34 m (111 ft). Fishermen off southeastern Florida also catch red grouper in depths ranging from 27-76 m (88-249 ft) with an average depth of 45 m (148 ft) (Burgos 2001; McGovern *et al.* 2002). Moe (1969) reported that juveniles live in shallow water nearshore reefs until they are 40.0 cm (16 inches) and 5 years of age, when they become sexually mature and move offshore. Spawning occurs during February-June, with a peak in April (Burgos 2001). In the eastern Gulf of Mexico, ripe females are found December through June, with a peak during April and May (Moe 1969). Based on the presence of ripe adults (Moe 1996) and larval red grouper (Johnson and Keener 1984) spawning probably occurs offshore. Coleman *et al*. (1996) found groups of spawning red grouper at depths between 21-110 m (70-360 feet). Red grouper do not appear to form spawning aggregations or spawn at specific sites (Coleman *et al.* 1996). They are reported to spawn in depths of 30-90 m (98-295 ft) off the Southeast Atlantic coast (Burgos 2001; McGovern *et al.* 2002).

Red grouper are protogynous, changing sex from female to male with increased size and age. Off North Carolina, red grouper first become males at 50.9 cm (20.1 inches) TL and males dominate size classes greater than 70.0 cm (27.8 inches) TL. Most females transform to males between ages 7 and 14. Burgos (2001) reported that 50% of the females caught off North Carolina are undergoing sexual transition at age 8. Maximum age reported by Heemstra and Randall (1993) was 25 years. Burgos (2001) and McGovern *et al.* (2002) indicated red grouper live for at least 20 years in the Southeast Atlantic and a maximum age of 26 years has been reported for red grouper in the Gulf of Mexico (L. Lombardi, NMFS Panama City, personal communication). Natural mortality rate is estimated to be 0.20 (Potts and Brennan 2001). Maximum reported size is 125.0 cm (49.2 inches) TL (male) and 23.0 kg (51.1 pounds). For fish collected off North Carolina during the late 1990s, age at 50% maturity of females is 2.4 years and size at 50% maturity is 48.7 cm (19.3 inches) TL. Off southeastern Florida, age at 50% maturity was 2.1 years and size at 50% maturity was 52.9 cm (21.0 inches) TL (Burgos 2001; McGovern *et al.* 2002). These fish eat a wide variety of fishes, octopi, and crustaceans, including shrimp, lobsters, and stomatopods (Bullock and Smith 1991, Heemstra and Randall 1993).

3.2.1.3 Black grouper, *Mycteroperca bonaci*

The black grouper occurs in the Western Atlantic, from North Carolina to Florida, Bermuda, the Gulf of Mexico, West Indies, and from Central America to Southern Brazil (Crabtree and Bullock 1998). Adults are found over hard bottom such as coral reefs and rocky ledges. Black grouper occur at depths of 9 to 30 m (30 to 98 ft). Juveniles sometimes occur in estuarine seagrass and oyster rubble habitat in North Carolina and South Carolina (Keener *et al.* 1988; Ross and Moser 1995). In the Florida Keys, juveniles settle on patch reefs (Sluka *et al.* 1994). Commercial landings of black grouper exceed landings of any other grouper in the Florida Keys.

Natural mortality (M) is estimated to be 0.15 (Potts and Brennan 2001). Crabtree and Bullock (1998) found black grouper live for at least 33 years and attain sizes as great as 151.8 cm (60.1 inches) TL. Females range in length from 15.5 to 131.0 cm (6.1-51.9 inches) TL and males range in length from 94.7 to 151.8 cm (38.3-60.1 in) TL. Black grouper are protogynous. Approximately 50% of females are sexually mature by 82.6 cm (32.7 inches) TL and 5.2 years of age. At a length of 121.4 cm (48.1 inches) TL and an age of 15.5 years, approximately 50% of the females have become males. Black grouper probably spawn throughout the year, however, peak spawning of females occurs from January to March.

Off Belize, black grouper are believed to spawn in aggregations at the same sites used by Nassau grouper (Carter and Perrine 1994). Eklund *et al.* (2000) describe a black grouper spawning aggregation discovered during winter 1997-1998, less than 100 m outside a newly designated marine reserve. Adults feed primarily on fishes.

3.2.1.4 Speckled hind, *Epinephelus drummondhayi*

Speckled hind occur in the Western Atlantic Ocean from North Carolina and Bermuda to the Florida Keys, and in the northern and eastern Gulf of Mexico (Heemstra and Randall 1993, in Froese and Pauly 2003). The speckled hind is solitary and found in depths from 25 m (98 ft) (Heemstra and Randall 1993) to 400 m (1,312 ft) (Bullock and Smith 1991). Heemstra and Randall (1993) reported that it most commonly occurs at depths of 60-120 m (197-394 ft). Bullock and Smith (1991) indicated that most commercial catches are taken from depths of 50 m (164 ft) or more. Juveniles occur in shallower waters.

Maximum reported size is 110 cm (43.3 in) TL and 30 kg (66 lbs) Heemstra and Randall 1993, in Froese and Pauly 2003). The maximum size and age of individuals examined by Matheson and Huntsman (1984) in the South Atlantic Bight was 110 cm (43.3 in) and 15 years, respectively. Heemstra and Randall (1993) reported a maximum age of 25 years. Estimated size at maturity is 81.1 cm (32 in), and M is estimated at from 0.14 (Froese and Pauly 2003) to 0.15 (Potts *et al.* 1998a).

The speckled hind is thought to form spawning aggregations (G. Gilmore, Dynamac Corporation, personal communication). Spawning reportedly occurs from July to September (Heemstra and Randall 1993). Prey items include fishes, crustaceans, and squids (Bullock and Smith 1991; Heemstra and Randall 1993).

3.2.1.5 Warsaw grouper, *Epinephelus guttatus*

Warsaw grouper occur in the Western Atlantic from Massachusetts to southeastern Brazil (Robins and Ray 1986 in Froese and Pauly 2003), and in the Gulf of Mexico (Smith 1971). The Warsaw grouper is a solitary species (Heemstra and Randall 1993), usually found on rocky ledges and seamounts (Robins and Ray 1986), at depths from 55 to 525 m (180-1,722 ft) (Heemstra and Randall 1993). Juveniles are sometimes observed in inshore waters (Robins and Ray 1986), on jetties and shallow reefs (Heemstra and Randall 1993).

Maximum reported size is 230 cm (91 in) TL (Heemstra and Randall 1993) and 263 kg (580 lbs) (Robins and Ray 1986). The oldest specimen was 41 years old (Manooch and Mason 1987). M was estimated by the SEDAR group during November 2003 to range from 0.05 to 0.12 (SEDAR 4 2004). The warsaw grouper spawns during August, September, and October in the Gulf of Mexico (Peter Hood, NOAA Fisheries, personal communication), and during April and May off Cuba (Naranjo 1956). Adults feed on benthic invertebrates and on fishes (Heemstra and Randall 1993).

3.2.1.6 Snowy Grouper, *Epinephelus niveatus*

Snowy grouper occur in the Eastern Pacific and the Western Atlantic from Massachusetts to southeastern Brazil, including the northern Gulf of Mexico (Robins and Ray 1986). It is found at depths of 30-525 m (98-1,722 ft). Adults occur offshore over rocky bottom habitat.

Juveniles are often observed inshore and occasionally in estuaries (Heemstra and Randall 1993).

The snowy grouper is a protogynous species. The smallest, youngest male examined by Wyanski *et al.* (2000) was 72.7 cm (28.8 in) TL and age 8. The median size and age of snowy grouper was 91.9 cm (34.5 in) and age 16. The largest specimen observed was 122 cm (48 in) TL and 30 kg (66 lbs), and 27 years old (Heemstra and Randall 1993). The maximum age reported by Wyanski *et al.* (2000) is 29 years for fish collected off of North Carolina and South Carolina. Radiocarbon techniques indicate that snow grouper may live for as long as 40 years (Harris, South Carolina Department of Natural Resources, personal communication). Wyanski *et al.* (2000) reported that 50% of the females are mature at 54.1 cm (21.3 in) TL and 5 years of age. The smallest mature female was 46.9 cm (18.5 in) TL, and the largest immature female was 57.5 cm (22.6 in) TL.

Females in spawning condition have been captured off western Florida during May, June, and August (Bullock and Smith 1991). In the Florida Keys, ripe individuals have been observed from April to July (Moore and Labinsky 1984). Spawning seasons reported by other researchers are as follows: South Atlantic (north of Cape Canaveral), April through September (Wyanski *et al.* 2000) and April through July (Parker and Mays 1998); and South Atlantic (south of Cape Canaveral), May through July (Manooch 1984). Wyanski *et al.* (2000) reported that snowy grouper spawn at depths from 176 to 232 m (577 to 761 ft) off South Carolina. Adults feed on fishes, gastropods, cephalopods, and crustaceans (Heemstra and Randall 1993).

3.2.1.7 Golden Tilefish, *Lophalilus chamaeleonticeps*

Golden tilefish are distributed throughout the Western Atlantic, occurring as far north as Nova Scotia, to southern Florida, and in the eastern Gulf of Mexico (Robins and Ray 1986) (Table 3-1). According to Dooley (1978), golden tilefish occurs at depths of 80-540 meters (263-1,772 feet). Robins and Ray (1986) report a depth range of 82-275 meters (270-900 feet) for golden tilefish. It is most commonly found at about 200 meters (656 feet), usually over mud or sand bottom but, occasionally, over rough bottom (Dooley 1978).

Maximum reported size is 125 centimeters (50”) total length and 30 kilograms (66 lbs) (Dooley 1978; Robins and Ray 1986). Maximum reported age is 40 years (Harris *et al.* 2001). Radiocarbon aging indicate golden tilefish may live for at least 50 years (Harris, South Carolina Department of Natural Resources, personal communication). A recent SEDAR assessment estimate natural mortality (M) at 0.08 (SEDAR 4 2004). Golden tilefish spawn off the southeast coast of the U.S. from March through late July, with a peak in April (Table 3-1; Harris *et al*. 2001). Grimes *et al.* (1988) indicate peak spawning occurs from May through September in waters north of Cape Canaveral. Golden tilefish primarily prey upon shrimp and crabs, but also eat fishes, squid, bivalves, and holothurians (Dooley 1978).

3.2.1.8 Black Sea Bass, *Centropristis striata*

Black sea bass occur in the Western Atlantic, from Maine to southeastern Florida, and in the eastern Gulf of Mexico (McGovern *et al.* 2002) (Table 3-1). Separate populations were reported to exist to the north and south of Cape Hatteras, North Carolina (Wenner *et al.* 1986). However, genetic similarities suggest this is one stock (McGovern *et al.* 2002). This species is common around rock jetties and on rocky bottoms in shallow water (Robins and Ray 1986) at depths from 2-120 meters (7-394 feet). Most adults occur at depths from 20-60 meters (66-197 feet) (Vaughan *et al.* 1995).

Maximum reported size is 66.0 centimeters (26.1") total length and 3.6 kilograms (7.9 lbs) (McGovern *et al.* 2002). Maximum reported age is 10 years (McGovern *et al.* 2002); however, ages as great as 20 years have been recorded in the Mid Atlantic region (Lavenda 1949; Froese and Pauly 2003). Natural mortality is estimated to be 0.30 (SEDAR 2 2003b). The minimum size and age of maturity for females reported off the southeastern U.S. coast is 10.0 centimeters (3.6") standard length and age 0. All females are mature by 18.0 centimeters (7.1") standard length and age 3 (McGovern *et al.* 2002; Table 3-1). Wenner *et al.* (1986) report peak spawning occurs from March through May in the South Atlantic Bight. McGovern *et al.* (2002) indicate black sea bass females are in spawning condition during March-July, with a peak during March through May (McGovern *et al.* 2002). Some spawning also occurs during September and November. Spawning takes place in the evening. Black sea bass change sex from female to male (protogyny). Females dominate the first 5 year classes and individuals over the age of 5 are more commonly males. The size at maturity and the size at transition of black sea bass was smaller in the 1990s than during the early 1980s off the southeast U.S. Black sea bass appear to compensate for the loss of larger males by changing sex at smaller sizes and younger ages (McGovern *et al.* 2002).

The diet of black sea bass is generally composed of shrimp, crab, and fish (Sedberry 1988). Smaller black sea bass eat small crustaceans and larger individuals feed on decapods and fishes.

3.2.1.9 Vermilion Snapper, *Rhomboplites aurorubens*

Vermilion snapper occur in the Western Atlantic, from North Carolina to Rio de Janeiro. It is most abundant off the southeastern United States and in the Gulf of Campeche (Hood and Johnson 1999). The vermilion snapper is demersal, commonly found over rock, gravel, or sand bottoms near the edge of the continental and island shelves (Froese and Pauly 2003). It occurs at depths from 18 to 122 m (59 to 400 ft), but is most abundant at depths less than 76 m (250 ft). Individuals often form large schools. This fish is not believed to exhibit extensive long range or local movement (SEDAR SAR 2 2003).

The maximum size of a male vermilion snapper, reported by Allen (1985), in Froese and Pauly (2003), was 60.0 cm (23.8 in) TL and 3.2 kg (7.1 lbs). Maximum reported age in the South Atlantic Bight was 14 years (Zhao *et al.* 1997; Potts *et al.* 1998). SEDAR 2-SAR2

(2003) recommends that natural mortality (M) be defined as 0.25/yr, with a range of 0.2-0.3/yr.

This species spawns in aggregations (Lindeman *et al.* 2000) from April through late September in the southeastern United States (Cuellar *et al.* 1996). Zhao *et al.* (1997) indicated that most spawning in the South Atlantic Bight occurs from June through August. Eggs and larvae are pelagic.

Vermilion snapper are gonochorists meaning that all vermilion snapper are mature at 2 years of age and 20.0 cm (7.9 in) (SEDAR SAR2 2003). Cuellar *et al.* (1996) collected vermilion snapper off the southeastern United States and found that all were mature. The smallest female was 16.5 cm (6.5 in) FL and the smallest male was 17.9 cm (7.1 in) FL (Cuellar *et al.* 1996). Zhao and McGovern (1997) reported that 100% of males that were collected after 1982 along the southeastern United States were mature at 14.0 cm (5.6 in) TL and age 1. All females collected after 1988 were mature at 18.0 cm (7.1 in) TL and age 1.

This species preys on fishes, shrimp, crabs, polychaetes, and other benthic invertebrates, as well as cephalopods and planktonic organisms (Allen 1985). Sedberry and Cuellar (1993) reported that small crustaceans (especially copepods), sergestid decapods, barnacle larvae, stomatopods, and decapods dominated the diets of small (< 50 mm (2 in) SL) vermilion snapper off the Southeastern United States. Larger decapods, fishes, and cephalopods are more important in the diet of larger vermilion snapper.

3.2.1.10 Red Snapper, *Lutjanus campechanus*

The red snapper is found from North Carolina to the Florida Keys, and throughout the Gulf of Mexico to the Yucatan (Robins and Ray 1986). It can be found at depths from 10 to 190 m (33-623 ft). Adults usually occur over rocky bottoms. Juveniles inhabit shallow waters and are common over sandy or muddy bottom habitat (Allen 1985).

The maximum size reported for this species is 100 cm (39.7 in) TL (Allen 1985, Robins and Ray 1986) and 22.8 kg (50 lbs) (Allen 1985). Maximum reported age in the Gulf of Mexico is reported as 53 years by Goodyear (1995) and 57 years by Allman et al. (2002). For samples collected from North Carolina to eastern Florida, maximum reported age is 45 years (White and Palmer 2004). McInerny (2007) reports a maximum age of 54 years red snapper in the South Atlantic. Natural mortality (M) is estimated to be 0.078 using the Hoenig (1983) method with a maximum age of 53 years (SEDAR 15 2008). Manooch et al. (1998) estimated M at 0.25 but the maximum age in their study was 25 years (Manooch and Potts 1997).

Red snapper are gonochorists. In the U.S. South Atlantic Bight and in the Gulf of Mexico, Grimes (1987) reported that size at first maturity is 23.7 cm (9.3 in) FL. For red snapper collected along the Southeastern United States, White and Palmer (2004) found that the smallest mature male was 20.0 cm (7.9 in) TL, and the largest immature male was 37.8 cm (15 in) TL. 50% of males are mature at 22.3 cm (8.8 in) TL, while 50% of females are mature at 37.8 cm (15 in) TL. Males are present in 86% of age 1, 91% of age 2, 100% of age 3, 98%

of age 4, and 100% of older age fish. Mature females are present in 0% of age 1, 53% of age 2, 92% of age 3, 96% of age 4, and 100% of older age individuals. Grimes (1987) found that the spawning season of this species varies with location, but in most cases occurs nearly year round. White and Palmer (2004) reported that the spawning season for female red snapper off the southeastern United States extends from May to October, peaking in July through September. Red snapper eat fishes, shrimps, crabs, worms, cephalopods, and some planktonic items (Szedlemayr and Lee 2004).

3.2.2 Science Underlying the Management of Snapper Grouper Species Most Impacted By This FMP Amendment

The status of gag, vermilion snapper, black sea bass, golden tilefish, snowy grouper has been recently assessed through the Southeast Data, Assessment, and Review (SEDAR) process. Black grouper, red grouper, speckled hind, and warsaw grouper have not been recently assessed.

The SEDAR process consists of a series of workshops aimed at ensuring that each assessment is based on the best available scientific information. First, representatives from NOAA Fisheries Service, state agencies, and the South Atlantic Council, as well as experts from non-governmental organizations and academia, participate in a data workshop. The purpose of a data workshop is to assemble and review available fishery-dependent and fishery-independent data and information on a stock, and to develop consensus about what constitutes the best available scientific information on the stock, how that information should be used in an assessment, and what type of stock assessment model should be employed.

Second, assessment biologists from these agencies and organizations participate in a stock assessment workshop, where data from the data workshop are input into one or more stock assessment models (e.g., production, age-structured, length structured, etc.) to generate estimates of stock status and fishery status. Generally, multiple runs of each model are conducted: base runs and a number of additional runs to examine sensitivity of results to various assumptions (e.g., different natural mortality rates, different data sets/catch periods, etc.).

Finally, a stock assessment review workshop is convened to provide representatives from the Center for Independent Experts the opportunity to peer review the results of the stock assessment workshop. Representatives from NOAA Fisheries Service, the South Atlantic Council, and constituent groups may attend and observe the review but the actual review is conducted by the Center for Independent Experts. The Council's Scientific and Statistical Committee (SSC) then reviews the report of the stock assessment review workshop.

The review portion of the SEDAR process has helped improve the acceptance of stock assessments. However, continued lack of basic fishery data has resulted in uncertainty in the assessment results. Each SEDAR Review Panel has identified significant shortcomings in data and research (see Section 4.3 for a detailed list of research and data needs). In addition, not all of the reviews have been completed with 100% consensus.

3.2.2.1 Gag assessment and stock status

SEDAR assessment

The stock of gag off the United States South Atlantic was assessed during a SEDAR assessment workshop, held at the Wyndham Grand Bay Hotel, Miami, Florida, on May 1–5, 2006. The workshop's objectives were to complete the SEDAR 10 benchmark assessment of gag and to conduct stock projections. Participants in the benchmark assessment included state, federal, and university scientists, as well as Council members and staff, and various observers. All decisions regarding stock assessment methods and acceptable data were made by consensus (SEDAR 10 2007).

Available data on the stock included abundance indices, recorded landings, and samples of annual size compositions and age compositions from fishery-dependent sources. Three fishery–dependent abundance indices were developed by the data workshop: one from the NOAA Fisheries Service headboat survey, one from the commercial logbook program, and one from the MRFSS survey. There were no usable fishery–independent abundance data for this stock of gag. Landings data were available from all recreational and commercial fisheries. The assessment included data through 2004.

A forward projecting statistical model of catch at age was used as the primary assessment model. In addition, an age-aggregated production model was used to investigate results under a different set of model assumptions. The assessment workshop developed two base runs: one assuming a time-varying catchability and one assuming constant catchability for the fishery dependent indices. Each base run of the catch-at-age model was used for estimation of benchmarks and stock status.

Stock projections were evaluated under five scenarios starting in 2008. Each scenario applied the current fishing mortality rate (F) in years 2005–2007. Starting in 2008, the five projection scenarios included: (1) current F, (2) F_{MSY}, (3) 85% of F_{MSY}, (4) 75% of F_{MSY}, and (5) 65% of F_{MSY}.

Status

The gag stock in the Atlantic is undergoing **overfishing** as of 2004 (last year of data in the stock assessment). This means fish are being removed more quickly than the stock can replace them such that the maximum sustainable yield (MSY) cannot be achieved. The Council compares the current fishing mortality rate (F) to the level of fishing mortality that would result in overfishing (maximum fishing mortality threshold or MFMT) and if the current F is greater than the MFMT, overfishing is occurring. For gag the most recent estimate of the fishing mortality rate (F) is from 2004 and was = 0.310. The Council is using the fishing mortality rate that would produce the maximum sustainable yield (F_{MSY} = 0.237) as the maximum fishing mortality threshold. Comparing these two numbers:

- F_{2004}/MFMT = 0.310/0.237 = 1.309

This comparison is referred to as the **overfishing ratio**. If the ratio is greater than 1, then overfishing is occurring.

The gag stock in the Atlantic was not **overfished** as of the start of 2005. This means that the spawning stock biomass (pounds of spawning fish in the water) has not been reduced below the level that could produce the maximum sustainable yield. The Council compares the current spawning stock biomass (SSB) to the level of spawning stock biomass that could be rebuilt to the level to produce the MSY in 10 years. This is referred to as the minimum spawning stock biomass or MSST. For gag, the estimated level of spawning stock biomass in 2005 was 7,470,000 pounds gutted weight (gw). The Minimum stock size threshold (MSST) = 6,816,000 pounds gw. Comparing these two numbers:

- SSB_{2005}/MSST = 7,470,000/6,816,000 = 1.096

This comparison is referred to as the **overfished ratio**. If the ratio is less than 1, then the stock is overfished.

3.2.2.2 Vermilion Snapper assessment and stock status

<u>SEDAR assessment</u>

A SEDAR stock assessment workshop was convened at the NOAA Center for Coastal Fisheries and Habitat Research Beaufort, North Carolina, on Monday, April 4, 2007. The workshop's objectives were to conduct an update assessment of the vermilion snapper off the southeastern U.S. and to conduct stock projections based on possible management scenarios. Participants in the update assessment included state and federal scientists, Council AP and SSC members, and various observers. All decisions regarding stock assessment methods and acceptable data were made by consensus (SEDAR Assessment Update #3 2007).

Available data on the species included all those utilized for the benchmark assessment conducted in 2002; no additional data sources were identified during the scoping workshop. These data were abundance indices, recorded landings, and samples of annual size compositions from indices and landings. Four abundance indices were used in the benchmark assessment: one from the NMFS headboat survey and three from the SC MARMAP fishery-independent monitoring program. Landings data were available from all recreational and commercial fisheries. While the MARMAP chevron trap index decreased in recent years, the remaining abundance indices showed neither marked increase nor decline during the assessment period (1976–2006).

The statistical model of catch at length as developed for the benchmark assessment was used as the only assessment model. The assessment workshop provided the base run of the model, identical to that used in the benchmark assessment. This base run was used for the estimation of benchmarks and stock status. The benchmark assessment concluded that the high degree of uncertainty in recruitment and spawning stock biomass estimates meant that reliable biomass based benchmarks could not be developed from the assessment, and this was found to be the case for the update assessment as well.

The ratio of fishing mortality in 2006 to F_{MAX} was 2.05, compared to 1.71 in the benchmark assessment, suggesting that overfishing continues. Projections were used to evaluate the potential of the stock to be rebuilt, but could only be conducted for constant F scenarios. Four projections were considered: $F=F_{MAX}$; $F=85\%F_{MAX}$; $F=75\%F_{MAX}$; and $F=65F_{MAX}$. The results of each were very similar.

Stock Status

The vermilion snapper stock in the Atlantic is undergoing **overfishing** as of 2006 (last year of data in the stock assessment update). This means fish are being removed more quickly than the stock can replace them such that the maximum sustainable yield (MSY) cannot be achieved. The Council compares the current fishing mortality rate (F) to the level of fishing mortality that would result in overfishing (maximum fishing mortality threshold or MFMT) and if the current F is greater than the MFMT, overfishing is occurring. For vermilion snapper the most recent estimate of the fishing mortality rate is from 2006 and was = 0.729. The Council is using the fishing mortality rate that produces the greatest yield per fish (F_{MAX} = 0.355) as the maximum fishing mortality threshold. F_{MAX} is being used as a proxy for F_{MSY} (F_{MSY} = Fishing mortality rate that would produce maximum sustainable yield) because the SSC did not have confidence in the calculated biomass reference points. The SSC does have confidence in the fishing mortality rate estimates from the SEDAR assessment. Comparing these two numbers:

- F_{2006}/MFMT = 0.729/0.355 = 2.05

This comparison is referred to as the **overfishing ratio**. If the ratio is greater than 1, then overfishing is occurring.

Whether the vermilion snapper stock in the Atlantic is currently **overfished** is unknown because the SSC does not have confidence in the biomass reference points from the SEDAR assessment. Recognizing the need for a new benchmark assessment, NMFS and the state of South Carolina began sampling available vermilion snapper otoliths to enable an age-based assessment. Further, the SEDAR steering committee replaced white grunt in the SEDAR schedule with vermilion snapper. Results from an age-based assessment for vermilion snapper will be reviewed by the Council's Scientific and Statistical Committee (SSC) during their November 30 – December 2, 2008 meeting.

3.2.2.3 Black sea bass assessment and stock status

SEDAR assessment

Black Sea Bass was assessed at the second SEDAR (SEDAR 2 2003b). Data for the SEDAR assessment were assembled and reviewed at a data workshop held during the week of October 7, 2002 in Charleston, South Carolina. The assessment utilized commercial and recreational landings, as well as abundance indices and life history information from fishery-independent and fishery-dependent sources. Six abundance indices were developed by the data workshop. Two CPUE indices were used from the NMFS headboat survey (1978-2001) and the MRFSS recreational survey (1992-1998). Four indices were derived from CPUE observed by the South Carolina MARMAP fishery-independent monitoring program ("Florida" trap index, 1981-1987; blackfish trap index, 1981-1987; hook and line index, 1981-1987; and chevron trap index, 1990-2001) (SEDAR 2 2003b).

Age-structured and age-aggregated production models were applied to available data at the assessment workshop. The age-structured model was considered the primary model, as recommended by participants in the data workshop. The stock assessment indicated black sea bass was overfished and overfishing was occurring.

At the request of the South Atlantic Council, the SEDAR panel convened to update the 2003 black sea bass stock assessment, using data through 2003, and to conduct stock projections based on possible management scenarios (SEDAR Update #1 2005). The update indicated the stock was still overfished and overfishing was still occurring but results showed the stock was much more productive that previously indicated. The stock could be rebuilt to the biomass level capable of producing the maximum sustainable yield in 5 years if all fishing mortality were eliminated; previously this was estimated to take 11 years (SEDAR 2 2003b).

<u>Stock Status</u>
The black sea bass stock in the Atlantic is undergoing **overfishing** and is **overfished** as of 2004 (last year of data in the stock assessment update). For black sea bass the most recent estimate of the fishing mortality rate is from 2003 and was = 2.64 and F_{MSY} = 0.429 as the maximum fishing mortality threshold. Comparing these two numbers:

- F_{2003}/MFMT = 0.729/0.355 = 6.15

This comparison is referred to as the **overfishing ratio**. If the ratio is greater than 1, then overfishing is occurring.

The black sea bass stock in the Atlantic is **overfished**. For black sea bass, the estimated level of spawning stock biomass in 2005 was 4,099,884 pounds whole weight. The Minimum stock size threshold (MSST) = 10,511,633 pounds whole weight. Comparing these two numbers:

- SSB_{2005}/MSST = 4,099,884/10,511,633 = 0.39

If the ratio is less than 1, then the stock is overfished.

3.2.2.4 Snowy grouper assessment and stock status

<u>SEDAR assessment</u>
The data workshop convened in Charleston, SC during the week of November 3, 2003 to examine data from eight deep-water species for assessment purposes (SEDAR 4 2004). The group determined that data were adequate to conduct assessments on snowy grouper and tilefish. Four indices were available for snowy grouper including a logbook index, headboat index, MARMAP trap index, and MARMAP short longline index. The assessment workshop chose not to use the logbook index for snowy grouper since this species forms aggregations and has been known to be taken in large numbers over wrecks. Commercial and recreational landings as well as life history information from fishery-independent and fishery-dependent sources were used in the assessment.

Estimates were made of several time series of management interest. These include annual exploitation rate, fishing mortality rate, total landings, number of recruits, mature biomass, and total biomass. Results show a population beginning a decline as early as 1966, reaching its lowest levels in the most recent years. Increasing exploitation of snowy grouper begins at about the same time as the population decline, which coincides with an increase in the reported landings of snowy grouper.

Stock Status

The snowy grouper stock in the Atlantic is undergoing **overfishing** and is **overfished** as of 2004 (last year of data in the stock assessment). For snowy grouper the most recent estimate of the fishing mortality rate is from 2002 and was = 0.154 and F_{MSY} = 0.05 as the maximum fishing mortality threshold. Comparing these two numbers:

- F_{2002}/MFMT = 0.154/0.05 = 3.08

This comparison is referred to as the **overfishing ratio**. If the ratio is greater than 1, then overfishing is occurring.

The snowy grouper stock in the Atlantic is **overfished**. For snowy grouper, the estimated level of spawning stock biomass in 2003 was 869,503 pounds whole weight. The Minimum stock size threshold (MSST) = 3,498,735 pounds whole weight. Comparing these two numbers:

- SSB_{2003}/MSST = 869,503/3,498,735 = 0.25

If the ratio is less than 1, then the stock is overfished. In the absence of fishing it was determined that it would take 13 years to rebuild the stock to B_{MSY}. The maximum recommended rebuilding time is 34 years based on the formula: T_{MIN} (13 years) + one generation time (21 years).

The estimated stock status for snowy grouper in 2002 is quite low, median of 18% for SSB(2002)/SSB_{MSY}. This corresponds to a stock status in 2002 relative to the virgin stock size [SSB(2002)/SSBvirgin] of about 5%. The input data for the assessment model do not include a consistent abundance index that covers the whole time period of the model. The headboat CPUE and length composition data extends back to 1972, but changes in the fishery make interpretation of the observed trends in this index difficult. The headboat fishery moved inshore during the data period and consequently selectivity in the fishery changed. In the age-structured modeling, this was accommodated by dividing the headboat index into three time periods: with constant selectivity in 1972–1976, a possibly different constant selectivity in 1992–2002, and selectivity varying between them in 1977–1991. The other abundance indices do not start until 1990 or later. Therefore, the model must rely on data sources other than abundance indices for determining stock status.

Other data that provide information on stock status are the average weight and length from the fisheries landings as well as the observed age and length composition data. The 2002 average weights and lengths from the commercial fisheries suggest the population is at very low levels. The average weight and length in 2002 from the handline fishery suggests the population is near 11% and 3% of SSB_{MSY}, respectively. The average weight and length in 2002 from the longline fishery suggests the population is near 44% and 28% of SSB_{MSY}, respectively. The length composition data from the most recent years (2000-2002) also suggests a depleted population of snowy grouper. The observed length distributions are skewed toward smaller fish compared to an equilibrium, virgin state length composition.

3.2.2.5 Golden tilefish assessment and stock status

There two indices of abundance available for the golden tilefish stock assessment. A fishery-independent index was developed from MARMAP horizontal longlines (SEDAR 4 2004). A fishery-dependent index was developed from commercial logbook data during the data workshop. Commercial and recreational landings as well as life history information from fishery-independent and fishery-dependent sources were used in the assessment. A statistical catch-at-age model and a production model were used to assess the golden tilefish population.

Exploitation status in 2002 was analyzed relative to the maximum fishing mortality threshold (MFMT; limit reference point in *F*). The MFMT was assumed equal to E_{MSY} or F_{MSY}, depending on the measure of exploitation. Stock status in 2002 was estimated relative to SSB_{MSY} and to maximum spawning size threshold (MSST). The MSST was computed as a fraction *c* of SSB_{MSY}. Restrepo *et al.* (1998) recommend a default definition for that fraction: $c=\max(1 - M,1/2)$, where *M* is the natural mortality rate. However, this definition does not account for age-dependent *M*, as was used in this assessment. Hence to accommodate the default definition, a constant *M* was computed that would correspond to an age-dependent *M*, by providing the same proportion of survivors at the maximum observed age [$M = -\log(P)/A$, where *P* is the proportion survivors at maximum observed age *A*]. This value of constant *M* was computed uniquely for each of the MCB runs.

Overfishing of golden tilefish (F>MFMT) began in the early 1980's and has continued in most years since then. The population responded to the fishing with a steady population decline to levels near SSB_{MSY} starting in the mid-1980's. The median value of $E(2002)/E_{MSY}$ is 1.55, with a 10^{th} to 90^{th} percentile range of [0.77,3.25]. The median value of $F(2002)/F_{MSY}$ is 1.53, with a range of [0.72,3.31]. The median value of $SSB(2002)/SSB_{MSY}$ is 0.95, with a range of [0.61,1.53]. The median value of SSB(2002)/MSST is 1.02, with a range of [0.65,1.67].

It appears likely that overfishing was occurring in 2002; however it is less clear whether the stock was overfished in 2002. The data do not include an abundance index that covers the entire assessment period. To determine stock status, therefore, the assessment must rely in part on other data sources, such as average weight and length from landings as well as the observed age and length composition data. This was explored in the following way: Assuming an equilibrium age-structure, the predicted average weight of landed fish from commercial fisheries is portrayed as a function of stock status. The average weight in 2002 from the handline fishery suggests that the population is near 52% of SSB_{MSY}; the average weight in 2002 from the longline fishery suggests that the population is near 100.1% of SSB_{MSY}. Taken together, these results are consistent with those from the assessment model that the stock is on the border between overfished and not overfished, and that the variability around the point estimate of stock status includes both possibilities. The length composition data from the most recent years (2000 to 2002) also suggests that golden tilefish SSB is near SSB_{MSY}. Observed length distributions are skewed toward smaller fish as compared to an equilibrium virgin length composition, but correspond to the predicted length composition at SSB_{MSY}. Under *F*=0, the median projection depicts a tilefish stock that recovers to SSB_{MSY} within one year.

3.2.2.6 Red snapper assessment and stock status

Red snapper is overfished and experiencing overfishing. A statistical catch-at-age model (SCA) and a surplus-projection model (ASPIC) were considered in this assessment. Data used assessment consist of records of commercial catch for the handline (hook-and-line) and dive fisheries, logbook data from the recreational headboat fishery, and MRFSS survey data of the rest of the recreational sector. The bulk of landings of red snapper come from the recreational fishery, which have exceeded the landings of the commercial fishery by 2-3 fold over the assessment period. Total landings were variable, with a downward trend through the 1990s.

The fishing mortality (F) is compared to what the fishing mortality would be if the fishery were operating at the proxy level for maximum fishing (F40%). The ratio of F/F40% suggests a generally increasing trend from the 1950s through the mid-1980s, and since 1985 has fluctuated about a mean near 14. This indicates that overfishing has been occurring since 1960 at about 9 times the sustainable level, with the 2006 estimate of F/F40% at 7.658.

Estimated abundance-at-age shows truncation of the oldest ages from the 1950s into the 1980s; the age structure continues to be in a truncated condition. Fish of age 10 and above are practically non-existent in the population. Estimated biomass-at-age follows a similar pattern of truncation as seen in the abundance data. Total biomass and spawning biomass show nearly identical trends with a sharp decline during the 1950s and 1960s, continued decline during the 1970s, and stable but low levels since 1980. Numbers of age-1 fish have declined during the same period, however notably strong year classes occurred in 1983 and 1984, and again in 1998 and 1999.

[Note: Additional detail is presented in Section 4.]

3.2.2.7 Black grouper assessment and stock status

The 2007 Report to Congress (NMFS 2008) indicates black grouper are undergoing overfishing and the overfished status is unknown. Black grouper was assessed for the 1988, 1990, 1996, and 1999 fishing years (NMFS 1991; Huntsman *et al.* 1992; Potts and Brennan 2001). The assumption of ½ L_∞ as the age of maturity was used for estimating the static SPR. SPR values were 0.37%, 0.41%, 0.18%, and 0.18% for 1988, 1990, 1996, and 1999 fishing years, respectively.

3.2.2.8 Red grouper assessment and stock status

The 2007 Report to Congress (NMFS 2008) indicates red grouper are undergoing overfishing and the overfished status is unknown. Red grouper was assessed for the 1988, 1990, 1996, and 1999 fishing years (NMFS 1991; Huntsman *et al.* 1992; Potts and Brennan 2001). The assumption of ½ L_∞ as the age of maturity was used for estimating the static SPR. SPR values were 0.41%, 0.61%, 0.19%, and 0.28% for 1988, 1990, 1996, and 1999 fishing years, respectively.

3.2.2.9 Warsaw grouper assessment and stock status

The 2007 Report to Congress (NMFS 2008) indicates warsaw grouper are undergoing overfishing and the overfished status is unknown. Warsaw grouper was assessed by catch curve analysis using data from 1988 and 1990 (Huntsman *et al.* 1992). Because warsaw grouper are infrequently caught, a single length frequency was constructed from several years (e.g., 1983-1988) for the assessment of the 1988 fishing year and 1989-1990 length samples were used for the 1990 fishing year. A limited age length key was applied to the length frequency to obtain catch-at-age data. No reproductive biology data were available; therefore, for SPR calculations the assumption for age-at-maturity was based on ½ L_∞. Static SPR values for warsaw grouper were 0.2% and 6% for 1988 and 1990 fishing years, respectively.

3.2.2.10 Speckled hind assessment and stock status

The 2007 Report to Congress (NMFS 2008) indicates speckled hind are undergoing overfishing and the overfished status is unknown. Speckled hind was assessed for the 1988, 1990, 1996, and 1999 fishing years (NMFS 1991; Huntsman *et al.* 1992; Potts and Brennan 2001). Length frequencies for each fishing year assessed was constructed from that year's data. Length samples came primarily from the commercial fishery. Lengths for 1996 and 1999 were limited by the management restriction of one speckled hind per trip. Age and growth data were available but there were no reproductive biology data. The assumption of ½ L_∞ as the age of maturity was used for estimating the static SPR. SPR values were 25%, 12%, 8%, and 5% for 1988, 1990, 1996, and 1999 fishing years, respectively.

3.2.3 Other Affected Council-Managed Species

Gag and vermilion snapper are targeted by fishermen and are commonly taken on trips together. Red grouper, scamp, blueline tilefish, red snapper, gray triggerfish, greater amberjack, white grunt, and others are also targeted by commercial fishermen and are taken on trips with gag and vermilion snapper. Gag and vermilion snapper are commonly taken on trips by recreational fishermen with white grunt, black sea bass, red snapper, gray triggerfish, and red porgy. A detailed description of the life history of these species is provided in the Snapper Grouper SAFE report (NMFS 2005).

3.2.4 Protected Species

There are 31 different species of marine mammals that may occur in the EEZ of the South Atlantic region. All 31 species are protected under the MMPA and six are also listed as endangered under the ESA (i.e., sperm, sei, fin, blue, humpback, and North Atlantic right whales). There are no known interactions between the South Atlantic snapper grouper fishery and marine mammals. Other species protected under the ESA occurring in the South Atlantic include five species of sea turtle (green, hawksbill, Kemp's ridley, leatherback, and loggerhead); the smalltooth sawfish; and two *Acropora* coral species (elkhorn [*Acropora palmata*] and staghorn [*A. cervicornis*]). A discussion of these species is included below.

Designated critical habitat for the northern right whale also occurs within the South Atlantic region.

The impacts of the South Atlantic snapper grouper fishery on ESA-listed species were evaluated in a biological opinion on the continued authorization of snapper grouper fishing under the South Atlantic Snapper Grouper Fishery Management Plan and Amendment 13C (NMFS 2006). The opinion stated the fishery was not likely to adversely affect Northern right whale critical habitat, seabirds, or marine mammals (see NMFS 2006 for discussion on these species). However, the opinion did state that the snapper grouper fishery would adversely affect sea turtles and smalltooth sawfish. A discussion of these species is included below.

NOAA Fisheries Service has also recently conducted an informal Section 7 consultation evaluating the impacts of the South Atlantic snapper grouper fishery on ESA-listed *Acropora* species. The consultation concluded that the continued operation of the snapper grouper fishery was not likely to adversely affect newly listed *Acropora* species. A discussion of these species is included below.

3.2.4.1 ESA-Listed Sea Turtles

Green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all highly migratory and travel widely throughout the South Atlantic. The following sections are a brief overview of the general life history characteristics of the sea turtles found in the South Atlantic region. Several volumes exist that cover the biology and ecology of these species more thoroughly (i.e., Lutz and Musick (eds.) 1997, Lutz *et al.* (eds.) 2002).

Green sea turtle hatchlings are thought to occupy pelagic areas of the open ocean and are often associated with *Sargassum* rafts (Carr 1987, Walker 1994). Pelagic stage green sea turtles are thought to be carnivorous. Stomach samples of these animals found ctenophores and pelagic snails (Frick 1976, Hughes 1974). At approximately 20 to 25 cm carapace length, juveniles migrate from pelagic habitats to benthic foraging areas (Bjorndal 1997). As juveniles move into benthic foraging areas a diet shift towards herbivory occurs. They consume primarily seagrasses and algae, but are also know to consume jellyfish, salps, and sponges (Bjorndal 1980, 1997; Paredes 1969; Mortimer 1981, 1982). The diving abilities of all sea turtles species vary by their life stages. The maximum diving range of green sea turtles is estimated at 110 m (360 ft) (Frick 1976), but they are most frequently making dives of less than 20 m (65 ft.) (Walker 1994). The time of these dives also varies by life stage. The maximum dive length is estimated at 66 minutes with most dives lasting from 9 to 23 minutes (Walker 1994).

The **hawksbill's** pelagic stage lasts from the time they leave the nesting beach as hatchlings until they are approximately 22-25 cm in straight carapace length (Meylan 1988, Meylan and Donnelly 1999). The pelagic stage is followed by residency in developmental habitats (foraging areas where juveniles reside and grow) in coastal waters. Little is known about the diet of pelagic stage hawksbills. Adult foraging typically occurs over coral reefs, although other hard-bottom communities and mangrove-fringed areas are occupied occasionally.

Hawksbills show fidelity to their foraging areas over several years (van Dam and Diéz 1998). The hawksbill's diet is highly specialized and consists primarily of sponges (Meylan 1988). Gravid females have been noted ingesting coralline substrate (Meylan 1984) and calcareous algae (Anderes Alvarez and Uchida 1994), which are believed to be possible sources of calcium to aid in eggshell production. The maximum diving depths of these animals are not known, but the maximum length of dives is estimated at 73.5 minutes. More routinely, dives last about 56 minutes (Hughes 1974).

Kemp's ridley hatchlings are also pelagic during the early stages of life and feed in surface waters (Carr 1987, Ogren 1989). Once the juveniles reach approximately 20 cm carapace length they move to relatively shallow (less than 50m) benthic foraging habitat over unconsolidated substrates (Márquez-M. 1994). They have also been observed transiting long distances between foraging habitats (Ogren 1989). Kemp's ridleys feeding in these nearshore areas primarily prey on crabs, though they are also known to ingest mollusks, fish, marine vegetation, and shrimp (Shaver 1991). The fish and shrimp Kemp's ridleys ingest are not thought to be a primary prey item but instead may be scavenged opportunistically from bycatch discards or from discarded bait (Shaver 1991). Given their predilection for shallower water, Kemp's ridleys most routinely make dives of 50 m or less (Soma 1985, Byles 1988). Their maximum diving range is unknown. Depending on the life stage a Kemp's ridleys may be able to stay submerged anywhere from 167 minutes to 300 minutes, though dives of 12.7 minutes to 16.7 minutes are much more common (Soma 1985, Mendonca and Pritchard 1986, Byles 1988). Kemp's ridleys may also spend as much as 96% of their time underwater (Soma 1985, Byles 1988).

Leatherbacks are the most pelagic of all ESA-listed sea turtles and spend most of their time in the open ocean. Although they will enter coastal waters and are seen over the continental shelf on a seasonal basis to feed in areas where jellyfish are concentrated. Leatherbacks feed primarily on cnidarians (medusae, siphonophores) and tunicates. Unlike other sea turtles, leatherbacks' diets do not shift during their life cycles. Because leatherbacks' ability to capture and eat jellyfish is not constrained by size or age, they continue to feed on these species regardless of life stage (Bjorndal 1997). Leatherbacks are the deepest diving of all sea turtles. It is estimated that these species can dive in excess of 1000 m (Eckert *et al.* 1989) but more frequently dive to depths of 50 m to 84 m (Eckert *et al.* 1986). Dive times range from a maximum of 37 minutes to more routines dives of 4 to 14.5 minutes (Standora *et al.* 1984, Eckert *et al.* 1986, Eckert *et al.* 1989, Keinath and Musick 1993). Leatherbacks may spend 74% to 91% of their time submerged (Standora *et al.* 1984).

Loggerhead hatchlings forage in the open ocean and are often associated with *Sargassum* rafts (Hughes 1974, Carr 1987, Walker 1994, Bolten and Balazs 1995). The pelagic stage of these sea turtles are known to eat a wide range of things including salps, jellyfish, amphipods, crabs, syngnathid fish, squid, and pelagic snails (Brongersma 1972). Stranding records indicate that when pelagic immature loggerheads reach 40-60 cm straight-line carapace length they begin to live in coastal inshore and nearshore waters of the continental shelf throughout the U.S. Atlantic (Witzell 2002). Here they forage over hard- and soft-bottom habitats (Carr 1986). Benthic foraging loggerheads eat a variety of invertebrates with crabs and mollusks being an important prey source (Burke *et al.* 1993). Estimates of the maximum diving depths of loggerheads range from 211 m to 233 m (692-764ft.) (Thayer *et al.* 1984, Limpus and Nichols 1988). The lengths of loggerhead dives are frequently between 17 and 30 minutes (Thayer *et al.* 1984, Limpus and Nichols 1988, Limpus and Nichols 1994, Lanyan *et al.* 1989) and they may spend anywhere from 80 to 94% of their time submerged (Limpus and Nichols 1994, Lanyan *et al.* 1989).

3.2.4.2 ESA-Listed Marine Fish

Historically the **smalltooth sawfish** in the U.S. ranged from New York to the Mexico border. Their current range is poorly understood but believed to have contracted from these historical areas. In the South Atlantic region, they are most commonly found in Florida, primarily off the Florida Keys (Simpfendorfer and Wiley 2004). Only two smalltooth sawfish have been recorded north of Florida since 1963 [the first was captured off North Carolina in 1999 (Schwartz 2003) and the other off Georgia 2002 (Burgess unpublished data)]. Historical accounts and recent encounter data suggest that immature individuals are most common in shallow coastal waters less than 25 m (Bigelow and Schroeder 1953, Adams and Wilson 1995), while mature animals occur in waters in excess of 100 meters (Simpfendorfer pers. comm. 2006). Smalltooth sawfish feed primarily on fish. Mullet, jacks, and ladyfish are believed to be their primary food resources (Simpfendorfer 2001). Smalltooth sawfish also prey on crustaceans (mostly shrimp and crabs) by disturbing bottom sediment with their saw (Norman and Fraser 1938, Bigelow and Schroeder 1953).

3.2.4.3 ESA-Listed Marine Invertebrates

Elkhorn (*Acropora palmata)* and staghorn (*A. cervicornis*) coral were listed as threatened under the ESA on May 9, 2006. The Atlantic *Acropora* Status Review (*Acropora* Biological Review Team 2005) presents a summary of published literature and other currently available scientific information regarding the biology and status of both these species.

Elkhorn and **staghorn** corals are two of the major reef-building corals in the wider Caribbean. In the South Atlantic region, they are found most commonly in the Florida Keys; staghorn coral occurs the furthest north with colonies documented off Palm Beach, Florida (26º3'N). The depth range for these species ranges from <1 m to 60 m. The optimal depth range for elkhorn is considered to be 1 to 5 m depth (Goreau and Wells 1967), while staghorn corals are found slightly deeper, 5 to 15 m (Goreau and Goreau 1973).

All Atlantic *Acropora* species (including elkhorn and staghorn coral) are considered to be environmentally sensitive, requiring relatively clear, well-circulated water (Jaap *et al.* 1989). Optimal water temperatures for elkhorn and staghorn coral range from 25° to 29°C (Ghiold and Smith 1990, Williams and Bunkley-Williams 1990). Both species are almost entirely dependent upon sunlight for nourishment, contrasting the massive, boulder-shaped species in the region (Porter 1976, Lewis 1977) that are more dependent on zooplankton. Thus, Atlantic *Acropora* species are much more susceptible to increases in water turbidity than some other coral species.

Fertilization and development of elkhorn and staghorn corals is exclusively external. Embryonic development culminates with the development of planktonic larvae called planulae (Bak *et al.* 1977, Sammarco 1980, Rylaarsdam 1983). Unlike most other coral larvae, elkhorn and staghorn planulae appear to prefer to settle on upper, exposed surfaces, rather than in dark or cryptic ones (Szmant and Miller 2006), at least in a laboratory setting. Studies of elkhorn and staghorn corals indicated that larger colonies of both species had higher fertility rates than smaller colonies (Soong and Lang 1992).

3.2.4.4 South Atlantic Snapper Grouper Fishery Interactions with ESA-Listed Species

Sea turtles are vulnerable to capture by bottom longline and vertical hook-and-line gear. The magnitude of the interactions between sea turtles and the South Atlantic snapper grouper fishery was evaluated in NMFS (2006) using data from the Supplementary Discard Data Program (SDDP). Three loggerheads and three unidentified sea turtles were caught on vertical lines; one leatherback and one loggerhead were caught on bottom longlines, all were released alive (Table 3-1). The effort reported program represented between approximately 5% and 14% of all South Atlantic snapper grouper fishing effort. These data were extrapolated in NMFS (2006) to better estimate the number of interactions between the entire snapper grouper fishery and ESA-listed sea turtles. The extrapolated estimate was used to project future interactions (Table 3-2).

The SDDP does not provide data on recreational fishing interactions with ESA-listed sea turtle species. However, anecdotal information indicates that recreational fishermen occasionally take sea turtles with hook-and-line gear. The biological opinion also used the extrapolated data from the SDDP to estimate the magnitude of recreational fishing on sea turtles (Table 3-2).

Smalltooth sawfish are also considered vulnerable to capture by bottom longline and vertical hook-and-line gear based on their capture in other southeast fisheries using such gear (Poulakis and Seitz 2004; Simpfendorfer and Wiley 2004). SDDP data does not include any reports of smalltooth sawfish being caught in the South Atlantic commercial snapper grouper fishery. There are no other documented interactions between smalltooth sawfish and the South Atlantic commercial snapper grouper fishery. However, the potential for interaction, led NOAA Fisheries Service to estimate future interactions between smalltooth sawfish and the snapper grouper fishery in the 2006 biological opinion (Table 3-2).

Table 3-1. Sea turtle incidental take data from the supplementary discard data program (SDDP) for the Southeast U.S. Atlantic.

Reporting Period	Month	Logbook Statistical Grid	Species Caught	Number Caught	Discard Condition
Vertical Hook-and-Line Sea Turtle Catch Data					
8/1/01-7/31/02	April	2482	Unidentified	1	Alive
8/1/01-7/31/02	November	3377	Loggerhead	1	Alive
8/1/02-7/31/03	February	2780	Loggerhead	1	Alive
8/1/02-7/31/03	November	3474	Loggerhead	1	Alive
8/1/02-7/31/03	November	3476	Unknown	1	Alive
8/1/02-7/31/03	December	3476	Unknown	1	Alive
Bottom Longline Sea Turtle Catch Data					
8/1/01-7/31/02	August	3674	Leatherback	1	Alive
8/1/03-7/31/04	January	3575	Loggerhead	1	Unknown

Source: SEFSC Supplementary Discard Data Program

Table 3-2. Three year South Atlantic anticipated takes of ESA-Listed species for snapper grouper gears.

Species	Amount of Take	Total
Green	Total Take	39
	Lethal Take	14
Hawksbill	Total Take	4
	Lethal Take	3
Kemp's ridley	Total Take	19
	Lethal Take	8
Leatherback	Total Take	25
	Lethal Take	15
Loggerhead	Total Take	202
	Lethal Take	67
Smalltooth sawfish	Total Take	8
	Lethal Take	0

Source: NMFS 2006

3.3 Administrative Environment

3.3.1 The Fishery Management Process and Applicable Laws

3.3.1.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1801 et seq.), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the U.S. Exclusive Economic Zone (EEZ), an area extending 200 nautical miles from the seaward boundary of each of the coastal states, and authority over U.S. anadromous species and continental shelf resources that occur beyond the U.S. EEZ.

Responsibility for Federal fishery management decision-making is divided between the U.S. Secretary of Commerce and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary of Commerce (Secretary) is responsible for collecting and providing the data necessary for the councils to prepare fishery management plans and for promulgating regulations to implement proposed plans and amendments after ensuring that management measures are consistent with the M-Magnuson-Stevens Act and with other applicable laws summarized in Section 7.0. In most cases, the Secretary has delegated this authority to NOAA Fisheries Service.

The South Atlantic Fishery Management Council is responsible for conservation and management of fishery resources in Federal waters of the U.S. South Atlantic. These waters extend from 3 to 200 miles offshore from the seaward boundary of the States of North Carolina, South Carolina, Georgia, and east Florida to Key West. The Council has thirteen voting members: one from NOAA Fisheries Service; one each from the state fishery agencies of North Carolina, South Carolina, Georgia, and Florida; and eight public members appointed by the Secretary. On the South Atlantic Council, there are two public members from each of the four South Atlantic States. Non-voting members include representatives of the U.S. Fish and Wildlife Service, U.S. Coast Guard, State Department, and Atlantic States Marine Fisheries Commission (ASMFC). The South Atlantic Council has adopted procedures whereby the non-voting members serving on the Council Committees have full voting rights at the Committee level but not at the full Council level. Council members serve three-year terms and are recommended by State Governors and appointed by the Secretary of Commerce from lists of nominees submitted by State governors. Appointed members may serve a maximum of three consecutive terms.

Public interests also are involved in the fishery management process through participation on Advisory Panels and through council meetings, which, with few exceptions for discussing personnel matters, are open to the public. The Council uses a Scientific and Statistical

Committee to review the data and science being used in assessments and fishery management plans/amendments. In addition, the regulatory process is in accordance with the Administrative Procedures Act, in the form of "notice and comment" rulemaking.

3.3.1.2 State Fishery Management

The state governments of North Carolina, South Carolina, Georgia, and Florida have the authority to manage fisheries that occur in waters extending three nautical miles from their respective shorelines. North Carolina's marine fisheries are managed by the Marine Fisheries Division of the North Carolina Department of Environment and Natural Resources. The Marine Resources Division of the South Carolina Department of Natural Resources regulates South Carolina's marine fisheries. Georgia's marine fisheries are managed by the Coastal Resources Division of the Department of Natural Resources. The Marine Fisheries Division of the Florida Fish and Wildlife Conservation Commission is responsible for managing Florida's marine fisheries. Each state fishery management agency has a designated seat on the South Atlantic Council. The purpose of state representation at the Council level is to ensure state participation in Federal fishery management decision-making and to promote the development of compatible regulations in state and Federal waters.

The South Atlantic States are also involved through the Atlantic States Marine Fisheries Commission (ASMFC) in management of marine fisheries. This commission was created to coordinate state regulations and develop management plans for interstate fisheries. It has significant authority, through the Atlantic Striped Bass Conservation Act and the Atlantic Coastal Fisheries Cooperative Management Act, to compel adoption of consistent state regulations to conserve coastal species. The ASFMC also is represented at the Council level, but does not have voting authority at the Council level.

NOAA Fisheries Service' State-Federal Fisheries Division is responsible for building cooperative partnerships to strengthen marine fisheries management and conservation at the state, inter-regional, and national levels. This division implements and oversees the distribution of grants for two national (Inter-jurisdictional Fisheries Act and Anadromous Fish Conservation Act) and two regional (Atlantic Coastal Fisheries Cooperative Management Act and Atlantic Striped Bass Conservation Act) programs. Additionally, it works with the ASMFC to develop and implement cooperative State-Federal fisheries regulations.

3.3.2 Enforcement

Both the National Oceanic and Atmospheric Administration (NOAA) Fisheries Office for Enforcement (NOAA/OLE) and the United States Coast Guard (USCG) have the authority and the responsibility to enforce South Atlantic Council regulations. NOAA/OLE agents, who specialize in living marine resource violations, provide fisheries expertise and investigative support for the overall fisheries mission. The USCG is a multi-mission agency, which provides at sea patrol services for the fisheries mission.

Neither NOAA/OLE nor the USCG can provide a continuous law enforcement presence in all areas due to the limited resources of NOAA/OLE and the priority tasking of the USCG. To supplement at sea and dockside inspections of fishing vessels, NOAA entered into Cooperative Enforcement Agreements with all but one of the States in the Southeast Region (North Carolina), which granted authority to State officers to enforce the laws for which NOAA/OLE has jurisdiction. In recent years, the level of involvement by the States has increased through Joint Enforcement Agreements, whereby States conduct patrols that focus on Federal priorities and, in some circumstances, prosecute resultant violators through the State when a state violation has occurred.

NOAA General Counsel issued a revised Southeast Region Magnuson-Stevens Act Penalty Schedule in June 2003, which addresses all Magnuson-Stevens Act violations in the Southeast Region. In general, this Penalty Schedule increases the amount of civil administrative penalties that a violator may be subject to up to the current statutory maximum of $120,000 per violation.

3.4 Human Environment

3.4.1 Description of the Fishery

A more detailed description of the snapper grouper fishery is contained in previous amendments [Amendment 13C (SAFMC 2006), Amendment 15A (SAFMC 2007), Amendment 15B (SAFMC 2008), and Amendment 16 (SAFMC 2008)] and is incorporated herein by reference. The following sections summarize key information relevant to this amendment.

3.4.1.1 Commercial Fishery

3.4.1.1.1 Gear and Fishing Behavior

The commercial snapper grouper fishery utilizes vertical lines, longlines, black sea bass pots/traps, spears, and powerheads (i.e., spears with spring-loaded firearms). Vertical lines are used from the North Carolina/Virginia border to the Atlantic side of Key West, Florida. The majority of hook and line fishermen use either electric or hydraulic reels (bandit gear) and generally have 2-4 bandit reels per boat. The majority of the bandit fleet fishes year round for snapper grouper with the only seasonal differences in catch associated with the regulatory spawning season closures in March and April for gag. Most fluctuations in fishing effort in this fishery are a result of the weather. Trips can be limited during hurricane season and also during the winter months from December through March. Some fishermen stop bandit fishing to target king mackerel when they are running.

The Council allows the use of bottom longlines north of St. Lucie Inlet, Florida, in depths greater than 50 fathoms. Bottom longline gear is used to target snowy grouper and golden tilefish. Longline boats are typically bigger than bandit boats, their trips are longer, and they cost more to operate because they operate farther offshore. A longline spool generally holds about 15 miles of cable. Longlines are fished from daylight to dark because sea lice eat the flesh of hooked fish at night. The fishery is operated year long with little or no seasonal fluctuation barring hurricane disruption.

Spears or powerheads are most commonly used off Florida and are illegal for killing snapper grouper species in South Carolina and in Special Management Zones.

Black sea bass pots are used exclusively to target black sea bass, though bycatch of other snapper grouper species is allowed. The pots have mesh size, material, and construction restrictions to facilitate bycatch reduction. All sea bass pots must have a valid identification tag attached and more than 87% of tags in April 2003 were for vessels with homeports in North Carolina. Fishing practices vary by buoy practices, setting/pulling strategies, number of pots set, and length of set, with seasonal variations. The South Carolina pot fishery is mainly a winter fishery with short soak times (in some cases about an hour) and relatively few pots per boat. Most trips are day trips with pots being retrieved before heading to port. The North Carolina pot fishery also is primarily a winter fishery with some fishermen continuing to pot through the summer. North Carolina fishermen tend to use more pots than those in South Carolina. Although most North Carolina trips with sea bass pots last one day, more pots are left to soak for several days than in South Carolina. Many participants in the black sea bass fishery are active in other fisheries, including the recreational charter fishery during the summer months. Many snapper grouper permit holders maintain pot endorsements but are not active in the pot fishery.

3.4.1.1.2 Landings, Ex-vessel Value, Price, and Effort

Landings of all species in the snapper grouper management unit averaged 6.4 million pounds from 2003 through 2007, with an average annual dockside value of $13.0 million in current year dollars and $13.8 million in 2007 dollars (Table 3-5).[1] Since 1993, landings of snapper grouper have exhibited a downward trend with year-to-year variation (Figure 3-1).

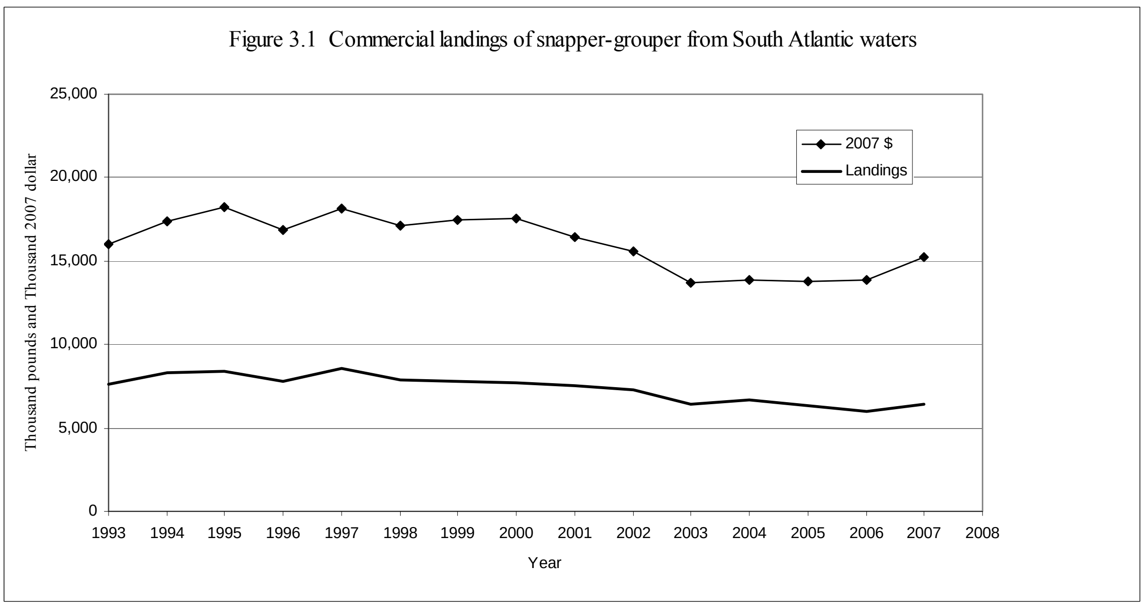


Figure 3.1 Commercial landings of snapper grouper from South Atlantic waters.

The shallow water groupers and mid-shelf snappers are the largest species groups by volume and value within the snapper grouper fishery. Vermilion snapper in the mid-shelf snapper group is the largest volume species in the fishery, and accounts for 13% of total landings and 16% of dockside revenues on trips with at least one pound of snapper grouper species. Gag is the largest volume shallow water grouper, and accounts for 7% of total landings and 11% of

[1] Fishermen are required to report their landings by species by trip to NOAA Fisheries Service Southeast Fisheries Science Center logbook program. However, they do not report prices or revenues on their logbook sheets. Therefore, trip revenues were approximated as reported landings from individual logbook reports multiplied by average monthly prices for each species as calculated from the NOAA Fisheries Service Accumulated Landings System (ALS). To obtain values in 2007 dollars, the BLS Consumer Price Index for urban dwellers was used to adjust for the effects overall price inflation in the U.S. economy at the consumer level.

dockside revenues on trips that landed at least one pound of snapper grouper species. Fishermen also landed an average of 1.9 million pounds of non-snapper grouper species worth $2.3 million in 2007 dollars on trips that landed at least one pound of species in the snapper grouper management unit. These trips included trips that targeted species in the snapper grouper management unit and trips that landed snapper grouper species while targeting non-snapper grouper species.

Table 3-3. Annual landings and dockside (ex-vessel) revenues for trips with at least one pound of species in the snapper grouper fishery management unit in the South Atlantic, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips with at least one pound of snapper grouper					
Landings of snapper grouper, thousand pounds, whole wt	6,471	6,693	6,365	6,112	6,528	6,434
Dockside revenue from snapper grouper, thousand current $	$12,214	$12,155	$12,316	$13,069	$15,435	$13,038
Dockside revenue from snapper grouper, thousand 2007 $	$13,762	$13,340	$13,078	$13,431	$15,426	$13,807
Price/lb (whole wt) for snapper grouper	$1.89	$1.82	$1.93	$2.14	$2.36	$2.03
BLS Producer price index for #2 diesel fuel, index=100 for 2007	43	54	80	92	100	67
Landings of other species, same trips, thousand pounds	2,092	1,651	1,751	2,116	2,122	1,946
Dockside revenue from other species, same trips, thousand 2007 $	$2,149	$2,001	$2,225	$2,394	$2,738	$2,301

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Landings and dockside revenues varied between 2003 and 2007 for species in the snapper grouper management unit (Table 3-3). While lower in 2007 than in 2003, the numbers for trips, days away from port and vessels varied during 2003-2006 (Table 3-4). Part of the variation in snapper grouper landings overall appears to be attributable to landings of vermilion snapper, which experienced a significant decline in 2003 due to unusually cold water temperatures in the summer and fall of 2003. Landings of vermilion snapper recovered in 2004 and 2005, declined in 2006, and recovered in 2007 (Table VS-1, shown later).

Table 3-4. Fishing effort and distribution of landings for trips with at least one pound of species in the snapper grouper fishery management unit in the South Atlantic, 2003-2007.						
Item	2003	2004	2005	2006	2007	Average
	Trips with at least one pound of snapper grouper					
Number of trips	16,545	15,045	13,756	13,224	14,753	14,665
Days away from port	27,556	24,820	22,794	23,160	24,216	26,296
Number of vessels landing snapper grouper	931	905	857	868	889	890
Number of vessels landing 101-1,000 lbs of snapper grouper	245	225	242	258	261	246
Number of vessels landing 1001-5000 lbs of snapper grouper	270	263	239	228	225	245
Number of vessels landing 5,001-10,000 lbs of snapper grouper	104	96	86	64	86	87
Number of vessels landing 10,001-50,000 lbs of snapper grouper	152	133	123	127	134	134
Number of vessels landing more than 50,000 lbs of snapper grouper	20	32	29	27	28	27
Number of permitted vessels	1059	1001	909	874	877	944
Number of vessels with transferable permits*	828	782	721	697	718	749
Number of vessels with non-transferable permits	231	219	188	177	159	195
Number of dealer permits	271	269	268	251		265

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008 and NOAA Fisheries Service, Southeast Regional Office permits database.
*Because of possible problems in estimation for 2006, the number of vessels with transferable permits seems low (697).

The number of boats with snapper grouper permits has exhibited a mostly downward trend since 1999 (1,251 permits). There were 1,059 permits in 2003 and 877 in 2007 (Table 3-6). Two types of permits were created with the limited access program for the snapper grouper fishery that was implemented in 1998. The number of transferable permits that allow an unlimited harvest per trip was 828 in 2003 and 718 in 2007 compared with 938 in 1999. The number of vessels with non-transferable permits with a 225-pound trip limit declined year-by-year from 313 in 1999 to 213 in 2003 and 159 in 2007. The number of transferable permits declined, in part, because new entrants into the fishery must buy two permits and retire one as the condition for entry into the fishery. Furthermore, it is likely that the number of vessels in the snapper grouper fishery declined for economic reasons. For example, fuel prices doubled between 2003 and 2005 and continued to increase through mid-2008. By contrast, average annual prices for species in the snapper grouper management unit were relatively flat (Table 3-3, average annual prices represented by the ratio of annual commercial revenues to landings in current year dollars). The number of fish dealers with permits to operate in the snapper grouper fishery reached a maximum in 2003 (271) and has declined since then (Table 3-4, data through 2006).

From 2003 through 2007, an average of 890 boats averaged 14,665 trips per year on which at least one pound of snapper grouper species was landed (Table 3-4). On average, 246 boats landed 101 – 1,000 pounds of snapper grouper species annually; 245 boats landed 1,001 - 5,000 pounds; 87 boats landed 5,001 - 10,000 pounds; 134 boats landed 10,001 – 50,000 pounds; and 27 boats landed at least 50,000 pounds of snapper grouper species.

3.4.1.1.3 Snapper Grouper Landings, Northeast States

As shown in Tables 3-5 through 3-7, average annual landings of snapper grouper in Northeast Atlantic coastal states amounted to approximately 14 million pounds in 2003-2007, mostly black sea bass, scups and porgies, and tilefish. Landings of other snapper grouper species averaged one thousand pounds out of 6.0 million pounds in New England, one thousand pounds out of 6.7 million pound in the Middle Atlantic, 10 thousand pounds out of 889 thousand pounds in the Chesapeake.

Table 3-5. Landings of snapper grouper species, by region, species, and year, New England (Maine, Connecticut, New Hampshire and Rhode Island).						
Species	2003	2004	2005	2006	2007	Average
	Thousand pounds, round weight					
SEA BASS, BLACK	806	843	822	880	809	832
SCUP					5,295	5,295
SCUPS OR PORGIES	5,003	4,457	4,890	5,030		4,845
TILEFISH	19	464	38	159	18	140
TILEFISH, BLUELINE		2			2	2
TILEFISH, SAND		0				0
TILEFISHES	254	155				205
SUBTOTAL	6,082	5,921	5,750	6,069	6,124	5,989
AMBERJACK		0				0
GROUPER, YELLOWEDGE		0				0
GROUPERS		3	0	0		1
RUNNER, BLUE			0			0
SHEEPSHEAD		0				0
SNAPPER, RED		0				0
SNAPPERS		0			2	1
SUBTOTAL	0	3	0	0	2	1
Total	6,082	5,925	5,750	6,070	6,126	5,991
NMFS, Fisheries Statistics Division (personal communication), Silver Spring, MD, 11Oct08.						

Table 3-6. Landings of snapper grouper species, by region, species, and year, Middle Atlantic (New York, New Jersey, Pennsylvania, Delaware).						
Species	2003	2004	2005	2006	2007	Average
	Thousand pounds, round weight					
SEA BASS, BLACK	1,000	1,040	862	894	823	924
SCUPS OR PORGIES	4,156	3,826	4,126	3,809	3,900	3,963
TILEFISH	2,212	2,056	1,469	1,836	1,613	1,837
TILEFISH, BLUELINE	5	3				4
TILEFISH, SAND		0	1	2	1	
TILEFISHES	1	2	0	0		
SUBTOTAL	7,374	6,927	6,458	6,541	6,337	6,727
AMBERJACK	0	1	0		0	0
GROUPER, SNOWY		0				0
GROUPER, YELLOWEDGE					0	0
GRUNTS	0					0
JACK, CREVALLE	0	0			0	0
RUNNER, BLUE	0	0	0	0	0	0
SHEEPSHEAD	0	0	0	1	0	0
SNAPPER, RED		0			0	0
SNAPPERS		2			3	3
SUBTOTAL	0	3	0	1	3	1
Total	7,376	6,930	6,458	6,540	6,342	6,729
NMFS, Fisheries Statistics Division (personal communication), Silver Spring, MD, 11Oct08.						

Table 3-7. Landings of snapper grouper species, by region, species, and year, Chesapeake (Maryland and Virginia).

Species	2,003	2,004	2,005	2,006	2,007	Average
	Thousand pounds, round weight					
SEA BASS, BLACK	820	498	806	678	190	598
PORGY, RED		0		0		0
SCUPS OR PORGIES	558	449	289	80		344
TILEFISH	1		3	0	1	1
TILEFISH, BLUELINE	2		1	1	15	5
TILEFISHES	2		1	1		1
SUBTOTAL	1,383	947	1,100	760	206	879
AMBERJACK	0	0	1	0	1	0
HOGFISH				0		0
JACK, CREVALLE	0	0				0
RUNNER, BLUE					0	0
SHEEPSHEAD	10	5	4	4	27	10
SNAPPER, RED					0	0
SUBTOTAL	10	5	5	4	28	10
Total	1,393	952	1,104	765	233	889

NMFS, Fisheries Statistics Division (personal communication), Silver Spring, MD, 11Oct08.

3.4.1.1.4 The South Atlantic Snapper Grouper Fishery By State

The following discussion provides annual averages from 2003 to 2007. To maintain the confidentiality of individual reporting units, summaries are provided for regions defined as North Carolina, South Carolina, Georgia and northeast Florida combined, and central and south Florida combined. The northeast Florida region consists of trips landed in Nassau, Duval, and St. Johns Counties, and the central and south Florida region consists of trips landed from Flagler through Miami-Dade Counties and trips from Atlantic waters off the Florida Keys and landed in Monroe County.

The average annual quantities of snapper grouper species harvested from 2003-2007 included 1.82 million pounds worth $3.74 million (in 2007 dollars) per year in North Carolina, 1.60 million pounds worth $3.80 million in South Carolina, 0.73 million pounds worth $1.65 million in Georgia and northeast Florida, and 0.79 million pounds worth $1.61 million in central and south Florida, and 1.50 million pounds worth $3.0 million in the Florida Keys (Table 3-8). Snapper grouper landings by state were not proportional to total days fished in each state. Boats in central and south Florida, and the Florida Keys made 73% of the trips that landed species in the snapper grouper management unit and accounted for 35% of the total snapper grouper harvest. Conversely, boats in other states accounted for relatively larger portions of the total snapper grouper harvest. Boats in North Carolina made 18% of the trips and landed 28% of the snapper grouper harvest. Boats in South Carolina made 6% of the trips and landed 25% of the harvest. In addition, boats in Georgia and northeast Florida made 3% of the trips and landed 12% of the snapper grouper harvest. Boats in South Carolina and Georgia and northeast Florida took fewer but longer trips than their counterparts in North Carolina or central and south Florida and the Florida Keys.

Table 3-8 (SG-3). Average annual landings and dockside revenues for trips with at least one pound of species in the snapper grouper fishery, averages for 2003-2007 by state.

Item	North Carolina	South Carolina	Georgia and Northeast Florida	Central and South Florida	Florida Keys	South Atlantic
	Trips with at least one pound of snapper grouper					
Snapper-grouper landings, thousand pounds, whole wt	1,816	1,591	734	790	1,504	6,434
Percentage of South Atlantic snapper grouper landings, by state	28%	25%	11%	12%	23%	100%
Dockside revenue, snapper grouper, thousand 2007 $	$3,738	$3,795	$1,651	$1,615	$3,008	$13,807
Landings of other species, same trips, thousand lbs	286	125	54	1,293	188	1,946
Dockside revenue, other species, same trips, thousand 2007 $	$389	$182	$123	$1,406	$202	$2,301
Number of boats*	175	64	46	342	294	921
Number of trips	2,607	916	486	4,691	5,964	14,665
Percent of trips	18%	6%	3%	32%	41%	100%
Number of days	4,727	4,702	1,946	5,473	7,661	24,509
Trips per boat	14.9	14.2	10.6	13.7	20.3	15.9
Days per trip	1.8	5.1	4.0	1.2	1.3	1.7

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation. *Some boats land in more than one area.

Gag and other shallow water groupers and vermilion snapper and other mid-shelf snappers tend to be landed in North Carolina, South Carolina, and Georgia and northeast Florida, while jacks and shallow water snappers tend to be landed in central and south Florida (Tables 3-9 and 3-10). The species groups that accounted for more than 10% of total landings and revenues in North Carolina include shallow water groupers with nearly 24% of total pounds landed and nearly 34% of total revenues on trips with at least one pound of snapper grouper species; black sea bass with 17% of total landings and 19% of total revenues; and mid-shelf snappers with 18% of total landings and 23% of total revenues. In South Carolina, the shallow water groupers accounted for 32% of total pounds and 46% of total revenues, and the mid-shelf snappers accounted for 21% of total pounds and 23% of total revenues. In Georgia and northeast Florida, mid-shelf snappers accounted for 44% of total pounds and 51% of total revenues; shallow water groupers accounted for 19% of total pounds and 21% of total revenues; and jacks accounted for 17% of total pounds and 7% of total revenues. In central and south Florida, coastal pelagics accounted for 49% of total pounds and 38% of total revenues, and jacks accounted for 12% of total pounds and 7% of total revenues, while tilefish accounted for 11% of total pounds and 17% of total revenue on trips with at least one pound of snapper grouper species. Fishermen in central and south Florida, especially in the Keys, tend to catch larger quantities of non-snapper grouper species such as mackerels.

Table 3-9 (SG-4). Average annual landings (in thousands of pounds, whole weights) on trips that landed at least one pound of snapper grouper species: averages for 2003-2007, by state and species group.

Item	North Carolina		South Carolina		Georgia and Northeast Florida		Central and South Florida		Florida Keys		South Atlantic	
	1000 lbs	col %	1000 lbs	col %	1000 lbs	col %	1000 lbs	col %	1000 lbs	col %	1000 lbs	col %
Shallow water groupers	504	24%	555	32%	152	19%	107	5%	100	6%	1,418	17%
Deep water groupers	84	4%	78	5%	5	1%	28	1%	59	3%	254	3%
Tilefish	78	4%	112	6%	1	0%	227	11%	12	1%	430	5%
Shallow water snappers	10	0%	20	1%	21	3%	128	6%	887	52%	1,065	13%
Mid-shelf snappers	375	18%	366	21%	347	44%	33	2%	15	1%	1,136	14%
Triggerfish / Spadefish	131	6%	77	4%	56	7%	5	0%	2	0%	271	3%
Jacks	111	5%	159	9%	132	17%	240	12%	406	24%	1,047	12%
Grunts / porgies	127	6%	92	5%	14	2%	16	1%	24	1%	274	3%
Sea basses	395	19%	133	8%	6	1%	6	0%	0	0%	540	6%
Snapper grouper	1,816	86%	1,591	93%	734	93%	790	38%	1,504	89%	6,434	77%
Coastal pelagics	216	10%	52	3%	34	4%	1,016.50	49%	81	5%	1,399	17%
Sharks	9	0%	19	1%	6	1%	195	9%	77	5%	306	4%
Tunas	22	1%	2	0%	1	0%	1	0%	0	0%	25	0%
Other	39	2%	54	3%	13	2%	81	4%	30	2%	217	3%
All species	2,102	100%	1,717	100%	787	100%	2,083	100%	1,692	100%	8,380	100%

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008.

Table 3-10 (SG-5). Average annual dockside revenues in thousands of 2007 dollars for trips that landed at least one pound of snapper grouper species: averages for 2003-2007 by state and species group.												
Item	North Carolina		South Carolina		Georgia and Northeast Florida		Central and Southeast Florida		Florida Keys		South Atlantic	
	$1,000, 2007$	col %	$1,000, 2007$	col %	$1,000, 2007$	col %	$1,000, 2007$	col %	$1,000, 2007$	col %	$1,000, 2007$	col %
Shallow water groupers	$1,404	34%	$1,847	46%	$475	27%	$338	11%	$272	8%	$4,336	27%
Deep water groupers	$216	5%	$219	5%	$13	1%	$77	3%	$156	5%	$680	4%
Tilefish	$100	2%	$203	5%	$2	0%	$518	17%	$15	0%	$838	5%
Shallow water snappers	$23	1%	$52	1%	$51	3%	$330	11%	$2,112	66%	$2,567	16%
Mid-shelf snappers	$969	23%	$933	23%	$909	51%	$100	3%	$37	1%	$2,947	18%
Triggerfish / Spadefish	$109	3%	$62	2%	$48	3%	$4	0%	$2	0%	$225	1%
Jacks	$106	3%	$161	4%	$126	7%	$223	7%	$396	12%	$1,011	6%
Grunts / porgies	$122	3%	$90	2%	$18	1%	$16	1%	$20	1%	$266	2%
Sea basses	$689	17%	$229	6%	$10	1%	$10	0%	$0	0%	$937	6%
Snapper-grouper	$3,738	91%	$3,795	95%	$1,651	93%	$1,615	53%	$3,008	94%	$13,807	86%
Coastal pelagics	$299	7%	$100	3%	$66	4%	$1,139	38%	$104	3%	$1,708	11%
Sharks	$4	0%	$11	0%	$2	0%	$78	3%	$23	1%	$118	1%
Tunas	$44	1%	$4	0%	$1	0%	$2	0%	$0	0%	$50	0%
Other species	$42	1%	$67	2%	$55	3%	$187	6%	$75	2%	$425	3%
All species	$4,127	100 %	$3,977	100 %	$1,775	100 %	$3,020	100 %	$3,210	100 %	$16,108	100 %
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.												

3.4.1.1.5 The Snapper Grouper Fishery by Gear

The following discussion provides annual averages from 2003 to 2007. To maintain the confidentiality of individual reporting units, summaries are provided for vertical lines, longlines, black sea bass pots, and all other gears combined. The all-other-gear category includes trolling lines, diving gear, nets, and other gears.

Most of the snapper grouper harvest, including vermilion snapper and gag, is taken by some type of vertical hook-and-line gear. The exceptions include black sea bass, which is harvested primarily with black sea bass pots and golden tilefish and yellowedge grouper, which are harvested primarily with bottom longlines. Some species, such as snowy grouper, are harvested by both vertical lines and longlines. Longlines also are used in the shark fishery and may catch species in the snapper grouper management unit as secondary species.

The average quantities of snapper grouper species harvested from 2003-2007 included 5.18 million pounds worth $11.31 million (in 2007 dollars) per year with vertical lines, 0.41 million pounds worth $0.90 million with longlines, 0.53 million pounds worth $0.83 million with black sea bass pots, and 0.12 million pounds worth $0.17 million with other gears (Table 3-11). Trips with vertical lines accounted for 81% of all trips that landed species in the snapper grouper management unit and 82% of the total snapper grouper harvest. Trips with longlines tend to be longer than trips with other gears. Longline trips accounted for 2% of the trips and 6% of the snapper grouper harvest. Trips with black sea bass pots

Table 3-11 (SG-6). Annual landings and dockside revenues for trips with at least one pound of species in the snapper grouper fishery by primary gear, 2003-2007

Item	Diving	Hook & Line	Longline	Traps	Other gear	Total
	Trips with at least one pound of snapper grouper					
Landings of snapper grouper, thousand pounds, whole weight	219	5,185	408	116	506	6,434
Percentage of landings	3%	81%	6%	2%	8%	100%
Revenue, snapper grouper, thousand 2007 $	$571	$11,314	$895	$168	$861	$13,807
Percentage of 2007 $	4%	82%	6%	1%	6%	100%
Landings of other species, same trips, thousand pounds	49	674	265	941	17	1,946
Percentage of landings, other	3%	35%	14%	48%	1%	100%
Revenue from other species, same trips, thousand 2007 $	$191	$958	$153	$980	$19	$2,301
Percentage of total	8%	42%	7%	43%	1%	100%
Number of boats*	65	723	27	50	245	1,110
Number of trips	648	11,405	246	690	1,676	14,665
Percent of trips	4%	78%	2%	5%	11%	100%
Number of days	920	19,910	924	944	1,811	24,509
Trips per boat	10.0	15.8	9.0	13.8	6.8	13.2
Days per trip	1.4	1.7	3.8	1.4	1.1	1.7

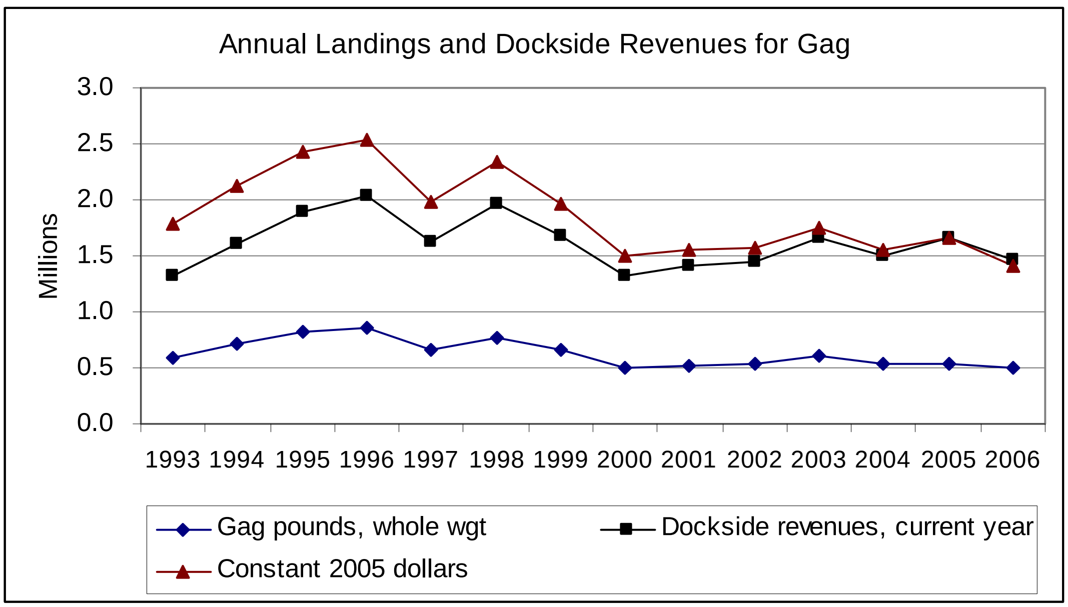
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation. *Some boats employ more than one gear.

represented 5% of the trips and accounted for 2% of the harvest, while trips with other gears represented 11% of the trips and 8% of the harvest.

3.4.1.1.6 The commercial fishery for gag

Logbook data provide information about commercial landings for gag from 1993 through 2006. Between 1993 and 2006, commercial landings of gag ranged from a high of 0.85 million pounds (whole weight) worth approximately $2.03 million in 1996 to a low of 0.50 million pounds worth $1.32 million in 2000 (Figure 3-2). Data for 2006 indicate that landings of gag were approximately 0.50 million pounds worth $1.46 million. Dockside revenues and pounds landed fluctuate in the same direction, which suggests that ex-vessel demand is price elastic. The policy implication is that regulations that reduce industry landings in the short-term are expected to reduce dockside revenues in the short-term. Conversely, dockside revenues are expected to increase over time if regulation successfully increases biomass and landings.

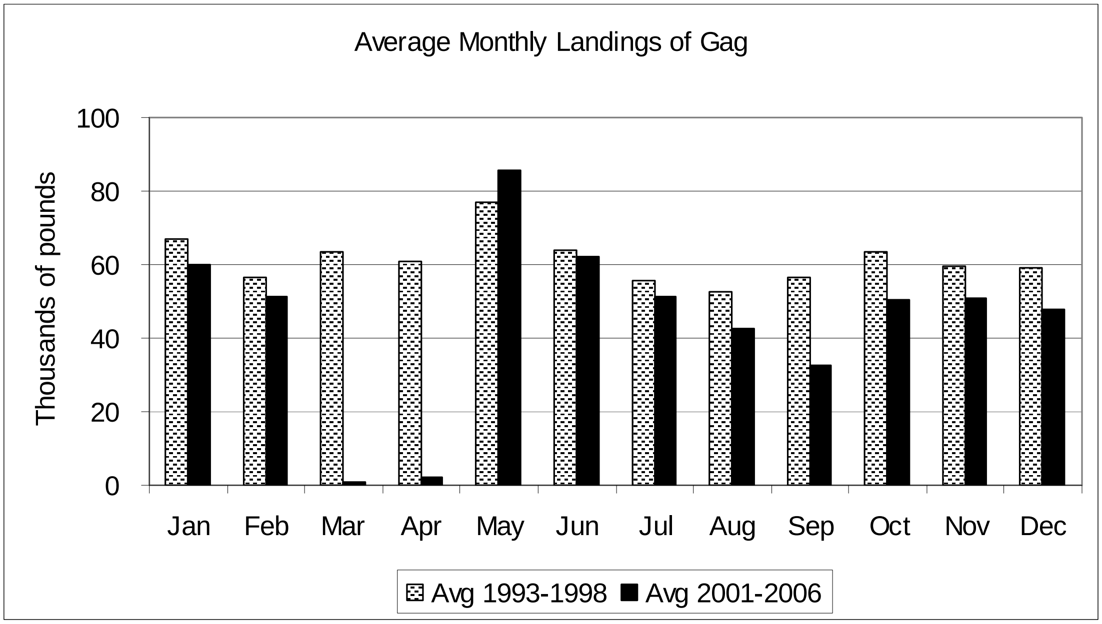
Figure 3-2. Annual landings and dockside revenues for gag, 1993-2006.



Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of October 10, 2007, and NOAA Fisheries Service, Southeast Fisheries Science Center Accumulated Landings System as of October 5, 2007.

The time series for gag is defined by regulatory periods, with landings between 1993 and 1999 usually exceeding landings between 2000 and 2006. Between 1992 and 1998, the fishery for gag was regulated with a 20-inch minimum size limit. Beginning in 1999, the size limit was increased to 24 inches and the fishery was closed in March and April to protect the spawning stock. Prior to 1998, average monthly landings were highest in May and lowest in August (Figure 3-3). After the closure and larger size limit were implemented, average monthly landings increased in May, but otherwise declined in the remaining open months when compared to the 1993-1998 period, especially in September.

Figure 3-3. Average monthly landings of gag for the 1993-1998 and 2001-2006 periods.



Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of October 10, 2007.

On average from 2001-2006, there were 2,417 trips that landed at least one pound of gag, and totaled an annual average of 0.54 million pounds of gag worth $1.52 million in current year dollars and $1.58 million in constant 2005 dollars (Table 3-12). In addition, these trips annually produced an average of 2.13 million pounds of other species worth $3.98 million in current year dollars.

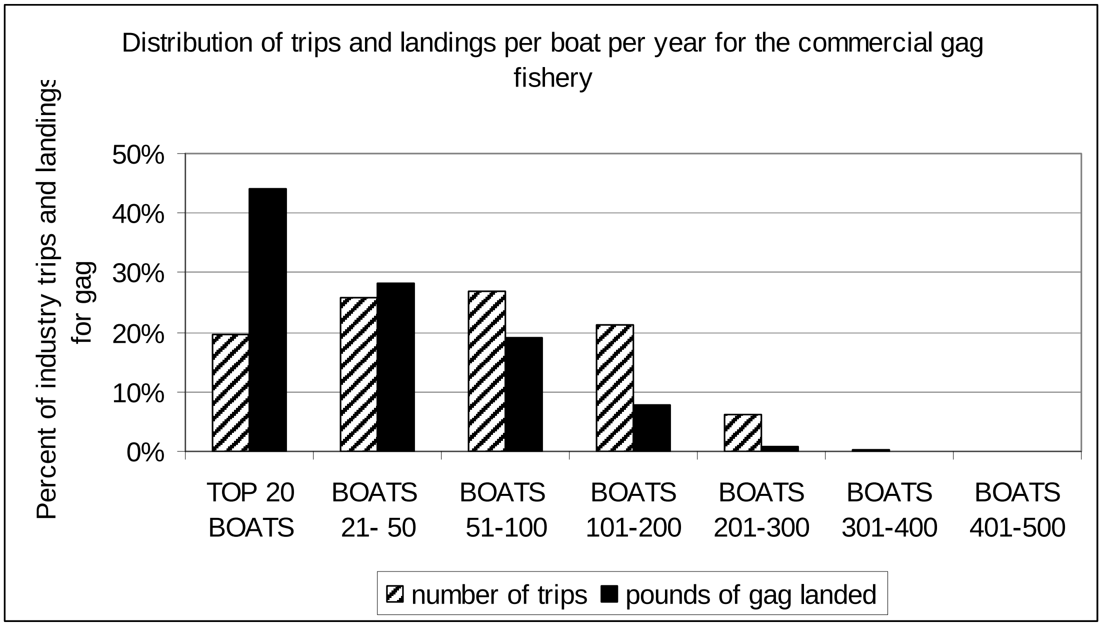
Table 3-12 (GAG-1). Annual landings, dockside revenues and fishing effort, trips and boats with landings of at least one pound of gag, 2003-2007.						
Item	2003	2004	2005	2006	2007	Average
	Trips and boats with at least one pound of gag					
Number of trips with at least one pound of gag	2,481	2,182	2,200	2,082	2,487	2,286
Landings of gag, thousand pounds, whole weight	598	532	541	496	605	554
Dockside revenue from gag, thousand current $	$1,636	$1,521	$1,651	$1,617	$2,140	$1,713
Dockside revenue from gag, thousand 2007 $	$1,844	$1,668	$1,751	$1,661	$2,136	$1,812
Dockside price, current $ / pound	$2.73	$2.86	$3.05	$3.26	$3.53	$3.09
Landings of all species, same trips, thousand pounds	2,576	2,509	2,584	2,363	2,819	2,570
Dockside revenue, all species, same trips, thousand 2007 $	$5,898	$5,482	$5,845	$5,629	$7,154	$6,001
Dockside revenue, all species, all trips, same boats, thousand 2007 $	$9,923	$9,538	$10,357	$9,238	$12,137	$10,239
Number of boats that landed gag	302	292	302	259	305	292
Number of boats landing 1-100 lbs per year of gag	99	100	100	90	92	96
Number of boats landing 101-1,000 lbs per year of gag	89	92	103	74	100	92
Number of boats landing 1,001-5,000 lbs per year of gag	76	68	64	61	72	68
Number of boats landing 5,001-10,000 lbs per year of gag	25	19	22	21	30	23
Number of boats landing 10,000-50,000 lbs per year of gag	13	13	13	13	11	13
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.						

Gag was the primary source of trip revenue on an average of 1,062 trips per year and a lesser source of revenue on 1,355 trips per year (Table 3-13). Therefore, gag was the primary source of trip revenue on 44% of the total number of trips on which they were landed. However, these trips accounted for approximately 67% of the total commercial harvest of gag. Trips on which gag was the primary source of revenue accounted for an annual average of 0.36 million pounds of gag worth $1.03 million in current dollars and 0.43 million pounds of other species, including other groupers, snappers, jacks, grunts, porgies and non-snapper grouper species, worth $0.78 million. Trips on which gag was a lesser source of revenue accounted for an annual average of 0.17 million pounds of gag worth $0.49 million in current dollars and 1.70 million pounds of other species worth $3.20 million. Gags were caught as a lesser source of revenue on trips for vermilion snapper, scamp, red grouper, jacks, and other species.

Table 3-13 (GAG-2). Annual landings and dockside revenues on trips with gag as the top source of trip revenue, 2003-2007.						
Item	2003	2004	2005	2006	2007	Average
	Trips with gag as the top source of trip revenue					
Trips	1,183	1,011	1,044	904	1,070	1,042
Boats	184	193	188	169	206	188
Landings of gag on trips with gag as the top source of revenue, thousand pounds	415	385	372	341	440	391
Dockside revenue for gag on trips with red as the top source of revenue, thousand 2007 $	$1,282	$1,212	$1,213	$1,149	$1,567	$1,284
Landings of other species, same trips	505	482	432	418	512	470
Dockside revenue for other species, same trips, thousand 2007 $	$1,015	$935	$877	$861	$1,142	$966
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.						

The number of boats that reported landing at least one pound of gag varied little from 302 in 2003 to 305 in 2007, and averaged 292 boats per year (Table 3-12). The fleet was not uniformly productive in the fishery for gag, which is consistent with the observation that gag was the primary source of trip revenue on some trips and a lesser source of revenues on other trips. On average for 2001-2006, the top 20 boats for gag production made 20% of the trips that landed gag and recorded 44% of the total commercial harvest of gag (Figure 3-4). The top 50 producing boats made 46% of the trips and recorded 72% of the total harvest, while the top 100 producing boats made 72% of the trips and landed 91% of the total harvest. On average, 92 boats landed 101 - 1,000 pounds of gag per year, 68 boats landed 1,001 - 5,000 pounds per year, 23 boats landed 5,001 – 10,000 pounds per year, and 13 boats landed 10,001 – 50,000 pounds of gag per year (Table 3-12). Approximately 82% of gag is landed with vertical lines, and most of the remainder is landed with dive gear (Table 3-15).

Figure 3-4. Distribution of trips and landings per boat per year, based on trips that reported at least one pound of gag (averages for 2001-2006).



Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of October 10, 2007.

Table 3-14. Annual landings and dockside revenues on trips with gag as a lesser source of trip revenue, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips with gag as a lesser source of trip revenue					
Trips	1,298	1,171	1,156	1,178	1,417	1,244
Boats	263	247	253	225	262	250
Landings of gag on trips with gag as a lesser source of revenue, thousand pounds	184	147	169	155	166	164
Dockside revenues for gag on trips with gag as a lesser source of revenue, thousand 2007 $	$562	$456	$538	$512	$569	$527
Landings of other species, same trips	1,472	1,496	1,611	1,449	1,701	1,546
Dockside revenue for other species, same trips, thousand 2007 $	$3,039	$2,878	$3,217	$3,107	$3,876	$3,224

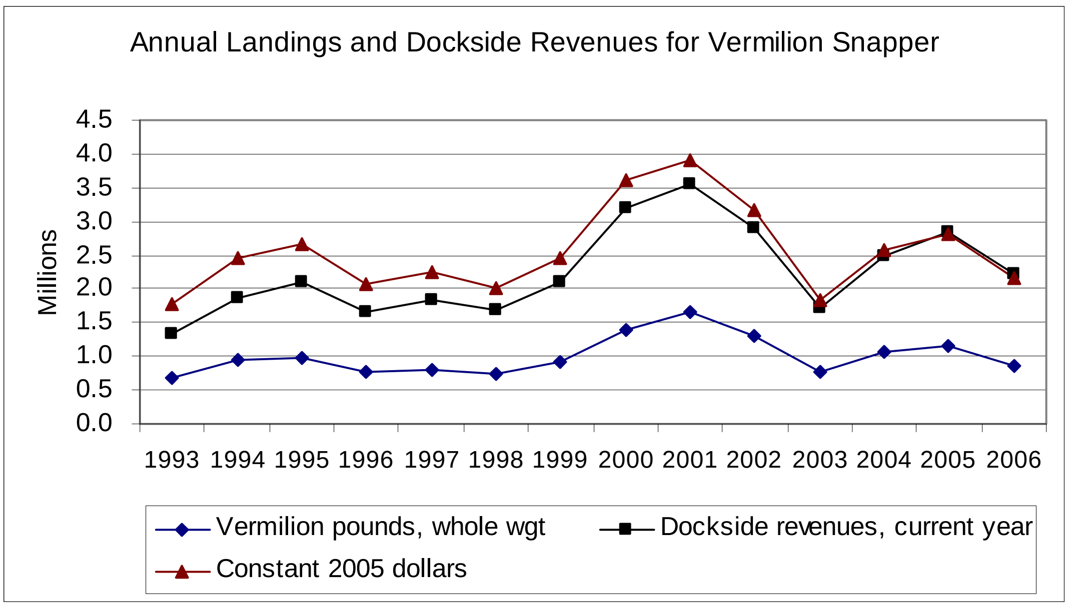
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-15. Annual landings of gag for trips with at least one pound of gag, by region and primary gear, 2003-2007.						
	2003	2004	2005	2006	2007	Average
	Trips with at least one pound of gag					
Gag caught off North Carolina, thousand pounds	141	143	175	154	141	151
Gag caught off South Carolina, thousand pounds	234	233	216	204	241	226
Gag caught off Georgia and northeast Florida, thousand pounds	100	88	90	71	117	93
Gag caught off central and southeast Florida, thousand pounds	120	66	58	66	101	82
Gag caught off Florida Keys, thousand pounds	3	2	1	1	4	2
Gag caught with vertical lines, thousand pounds	455	450	467	410	462	447
Gag caught with dive gear, thousand pounds	131	76	67	81	133	98
Gag caught with other gear, thousand pounds	13	7	6	5	11	8
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008.						

3.4.1.1.7 The commercial fishery for vermilion snapper

Based on logbook data from 1993 through 2006, commercial landings of vermilion snapper ranged from a low of 0.68 million pounds (whole weight) worth $1.33 million in 1993 to a high of 1.65 million pounds worth approximately $3.54 million in 2001 (Figure 3-5). Landings of vermilion snapper began to increase in 1999 coincident with the implementation of more restrictive regulations for gag, peaked in 2001, and then declined through 2003 when unusually cold water temperatures reduced the availability of fish in the summer and fall of 2003. Landings of vermilion snapper recovered in 2004 and 2005, but not to the levels experienced in 2001 and 2002. Data for 2006 indicate that landings of vermilion snapper were approximately 0.86 million pounds worth $2.23 million. Dockside revenues generally displayed the same trend over time as commercial landings, which suggests that ex-vessel demand for vermilion snapper is price elastic. Hence, regulations that reduce industry landings in the short-term are expected to reduce dockside revenues in the short-term. Conversely, dockside revenues are expected to increase over time if regulation successfully increases biomass and landings.

Figure 3-5. Annual landings and dockside revenues for vermilion snapper, 1993-2006.



Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of October 10, 2007, and NOAA Fisheries Service, Southeast Fisheries Science Center Accumulated Landings System as of October 5, 2007.

Vermilion snapper are landed throughout the year, with peak months from August through November (Figure 3-6). Average monthly landings were higher for all months except December during the 2001-2006 period compared to the 1993-1998 period. The greatest relative monthly increases in average landings between the two periods occurred during March and April, apparently as fishermen shifted their fishing effort from gag to vermilion in response to the closed season that was implemented in 1999.

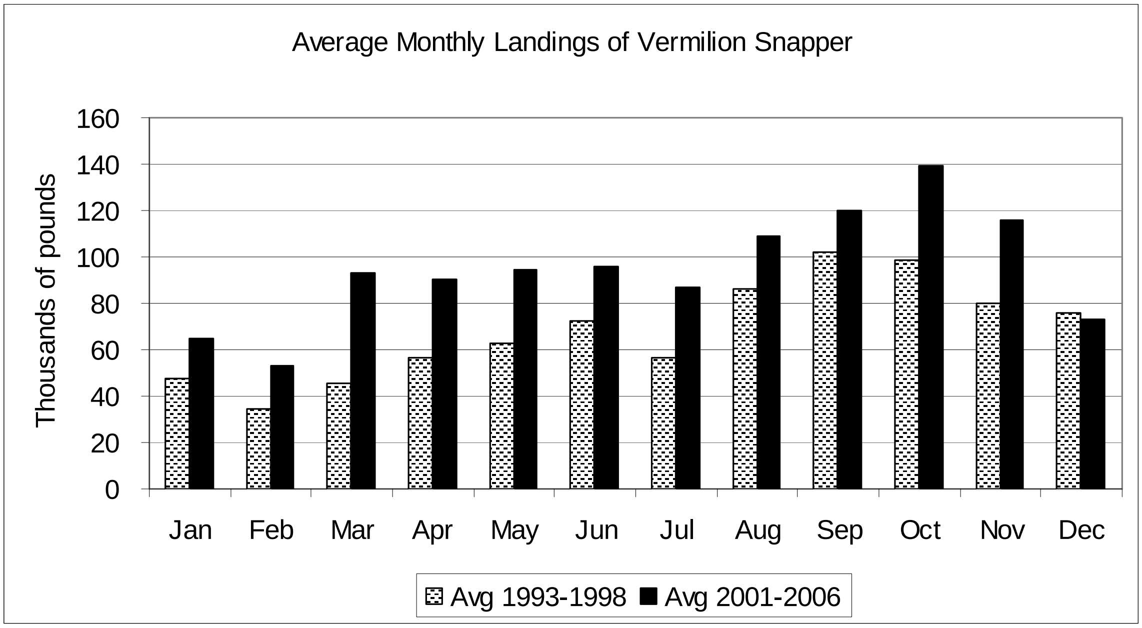
On average from 2001-2006, there were 2,423 trips that landed at least one pound of vermilion snapper, and totaled an average of nearly 1.14 million pounds of vermilion snapper worth $2.62 million in current-year dollars and $2.74 million in constant 2005 dollars (Table 3-16). In addition, these trips annually produced an average of 2.14 million pounds of other species combined worth $4.07 million in current year dollars.

Table 3-16 (VS-1). Annual landings, dockside revenues and fishing effort, trips and boats with landings of at least one pound of vermilion snapper, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips and boats with at least one pound of vermilion snapper					
Number of trips with at least one pound of vermilion snapper	2,171	2,147	2,170	2,107	2,554	2,230
Landings of vermilion snapper, thousand pounds, whole weight	769	1,071	1,152	865	1,108	993
Dockside revenue from vermilion snapper, thousand current $	$1,866	$2,274	$2,552	$2,083	$3,078	$2,370
Dockside revenue from vermilion snapper, thousand 2007 $	$2,100	$2,490	$2,704	$2,140	$3,070	$2,501
Dockside price, current $ / pound	$2.43	$2.12	$2.21	$2.41	$2.78	$2.39
Landings of all species, same trips, thousand pounds	2,796	3,131	3,210	3,026	3,777	3,188
Dockside revenue, all species, same trips, thousand 2007 $	$6,377	$6,629	$7,012	$6,889	$9,086	$7,199
Dockside revenue, all species, all trips, same boats, thousand 2007 $	$9,517	$9,383	$9,550	$10,124	$12,741	$10,263
Number of boats that landed vermilion snapper	248	255	252	233	275	253
Number of boats landing 1-100 lbs per year of vermilion snapper	91	95	99	89	111	97
Number of boats landing 101-1,000 lbs per year of vermilion snapper	66	75	59	63	70	67
Number of boats landing 1,001-5,000 lbs per year of vermilion snapper	38	28	38	35	37	35
Number of boats landing 5,001-10,000 lbs per year of vermilion snapper	26	13	18	12	18	17
Number of boats landing more than 10,000 lbs per year of vermilion snapper	27	44	38	34	39	36

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Figure 3-6. Average monthly landings of vermilion snapper for the 1993-1998 and 2001-2006 periods.



Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of October 10, 2007.

Vermilion snapper was the primary source of trip revenue on an average of 1,186 trips per year and a lesser source of revenue on 1,237 trips per year (Table 3-17). Therefore, vermilion snapper was the primary source of trip revenue on 49% of the total number of trips on which they were landed. However, these trips accounted for 86% of total vermilion snapper landings. Trips on which vermilion snapper was the primary source of revenue accounted for an annual average of 0.98 million pounds of vermilion snapper worth $2.27 million in current dollars and 0.92 million pounds of other species, including groupers, jacks, grunts, porgies, and non-snapper grouper species, worth $1.53 million. Trips on which vermilion snapper was a lesser source of revenue accounted for an annual average of 0.16 million pounds of vermilion snapper worth $0.35 million in current dollars and 1.22 million pounds of other species worth $2.54 million. Vermilion snapper were caught as a lesser source of revenue on trips for gag, scamp, and red grouper in the shallow water grouper fishery and snowy grouper in the deep water grouper fishery.

Table 3-17 (VS-2). Annual landings and dockside revenues on trips with vermilion snapper as the top source of trip revenue, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips with vermilion snapper as the top source of trip revenue					
Trips	956	1,024	1,059	809	1,063	982
Boats	152	159	156	135	147	150
Landings of vermilion snapper on trips with vermilion snapper as the top source of revenue, thousand pounds	630	911	992	687	901	824
Dockside revenue for vermilion snapper on trips with red as the top source of revenue, thousand 2007 $	$1,716	$2,126	$2,329	$1,717	$2,496	$2,077
Landings of other species, same trips	722	834	963	733	997	850
Dockside revenue for other species, same trips, thousand 2007 $	$1,323	$1,391	$1,754	$1,348	$1,842	$1,532
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.						

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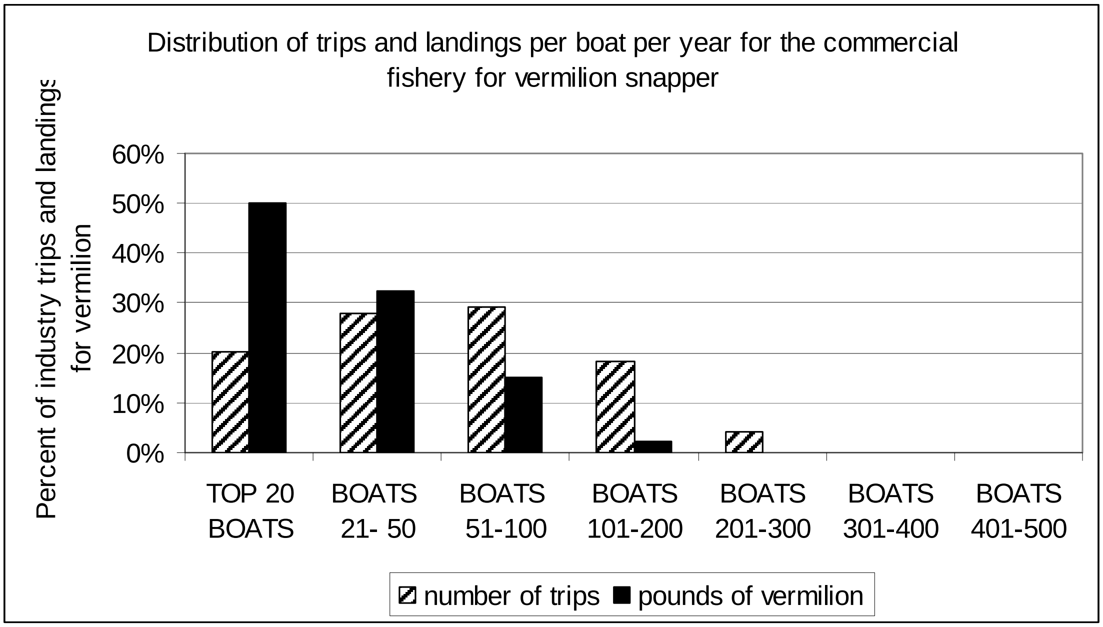
The number of boats that reported landing at least one pound of vermilion snapper declined from 295 in 2001 to 232 in 2006, and averaged 259 boats per year (Table 3-13). The fleet was not uniformly productive in the fishery for vermilion snapper, which is consistent with the observation that vermilion snapper was the primary source of trip revenue on some trips and a lesser source of revenues on other trips. On average for 2001-2006, the top 20 boats for the production of vermilion snapper made 20% of the trips that landed vermilion and recorded 50% of the total commercial harvest of vermilion snapper (Figure 3-7). The top 50 producing boats made 48% of the trips and recorded 82% of the total harvest, while the top 100 producing boats made 77% of the trips and landed 98% of the total harvest. On average, 95 boats landed at least 1,000 pounds of vermilion snapper per year, 49 boats landed at least 5,000 pounds per year, and 43 boats landed at least 10,000 pounds of vermilion snapper per year (Table 3-13). Virtually all vermilion snapper are landed with vertical lines (Table 3-10).

Figure 3-7. Distribution of trips and landings per boat per year, based on trips that reported at least one pound of vermilion snapper (averages for 2001-2006).



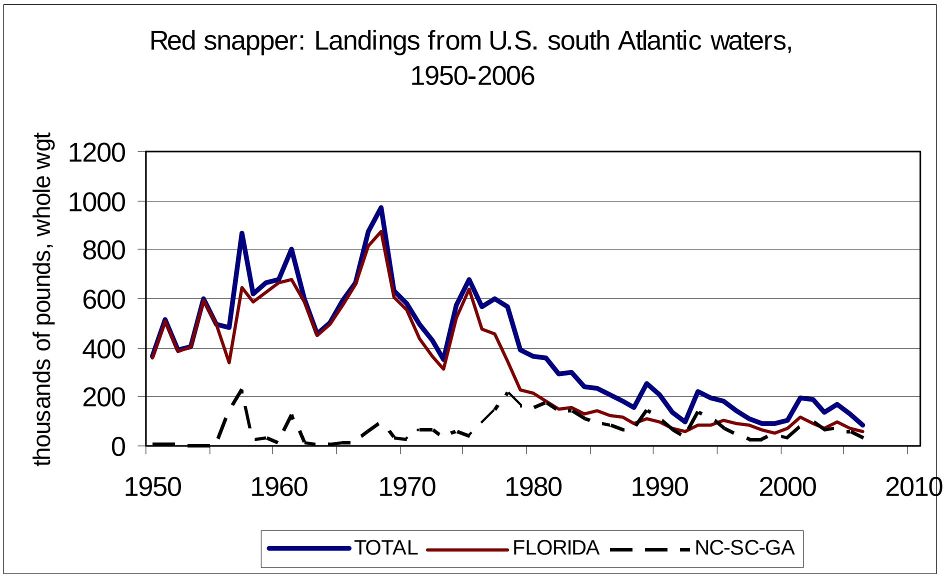
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of October 10, 2007.

3.4.1.1.8 The commercial fishery for red snapper

A small commercial fishery for red snapper along the Atlantic coast has existed at least since 1902 when 155,000 pounds were landed, primarily in Georgia.[2] The fishery continued at relatively low levels until after World War 2. Landings jumped to approximately 250,000 pounds in 1945 and 363,000 pounds in 1950. Landings fluctuated along a generally increasing trend through 1968 when they peaked at 974,000 pounds, and then declined to less than 100,000 pounds in 2006 (Figure 3-8). Commercial landings of red snapper averaged 540,000 pounds per year from 1950-1959, 678,000 pounds per year from 1960-1969, 524,000 pounds per year from 1970-1979, 259,000 pounds per year from 1980-1989, and 147,000 pounds per year from 1990-2000.

[2] NOAA. 1990. Historical catch statistics: Atlantic and Gulf coast states, 1879-1989. Current Fishery Statistics 9010, NMFS Fishery Statistics Division, 107p.

Figure 3-8. Commercial landings of red snapper, 1950-2006



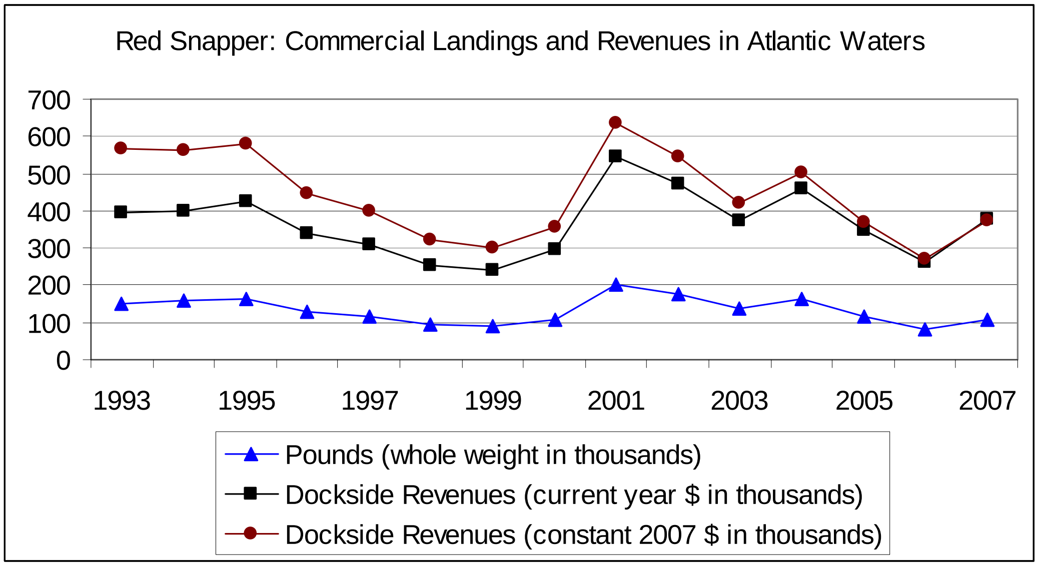
Source: SEDAR 15.

Fishermen along the east coast of Florida dominated the commercial fishery for red snapper until the mid-1970s, and accounted for more than 90% of landings from 1950-1975 (Figure 3-1). Geographic expansion of the fishery occurred during the late 1970s. Landings increased in Georgia, South Carolina and North Carolina and declined in Florida. Since 1980, landings in Florida have averaged approximately 55% of the total fishery.

Logbook data provide additional details about the commercial fishery for red snapper.[3] Between 1993 and 2007, commercial landings of red snapper in Federal waters ranged from a high of 202,000 pounds (whole weight) worth approximately $544,000 in current year dollars in 2001 to a low of 81,000 pounds worth $263,000 in 2006 (Figure 3-9). Preliminary data for 2007 indicate that commercial fishermen landed approximately 108,000 pounds of red snapper worth $377,000 in current year dollars. Dockside revenues and pounds landed fluctuate in the same direction, which suggests that ex-vessel demand is price elastic. The policy implication is that regulations that reduce industry landings in the short-term are expected to reduce dockside revenues in the short-term. Conversely, dockside revenues are expected to increase over time if regulation successfully increases biomass and landings.

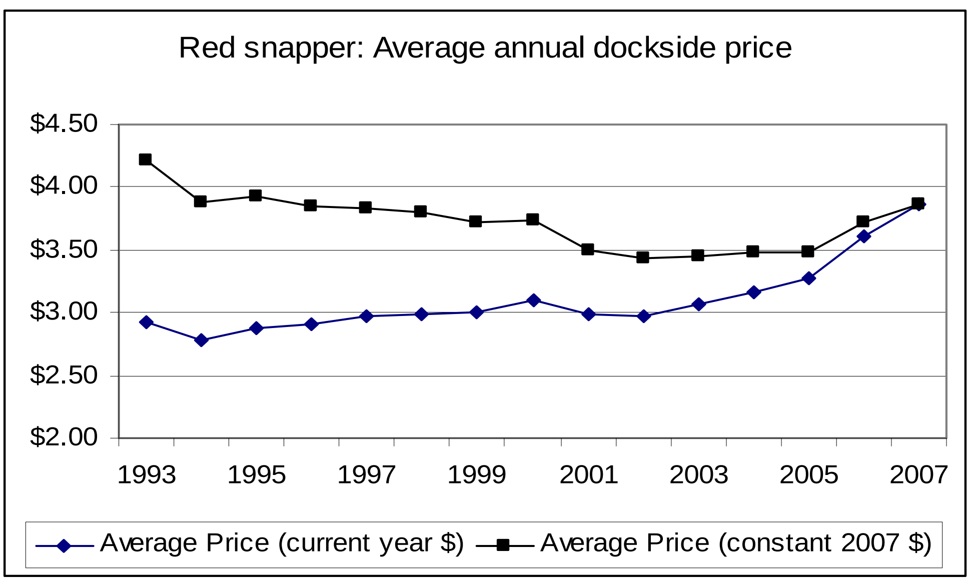
[3] Fishermen with a permit to fish in Federal waters are required to submit a logbook report to the NMFS with information about landings, gear type, approximate location of trip and date of landing. Trip revenues were calculated as landings multiplied by average prices from the NMFS Accumulated Landings System. The logbook database does not include landings from trips in state waters by fishermen who do not have Federal permits.

Figure 3-9. Annual landings and dockside revenues for red snapper, 1993-2007.



Average annual dockside prices for red snapper increased steadily in current year dollars (Figure 3-10). However, prices in constant 2007 dollars (after adjusting for the effects of inflation as measured by the consumer price index for all urban consumers) declined through 2002 before increasing in 2006 and 2007.

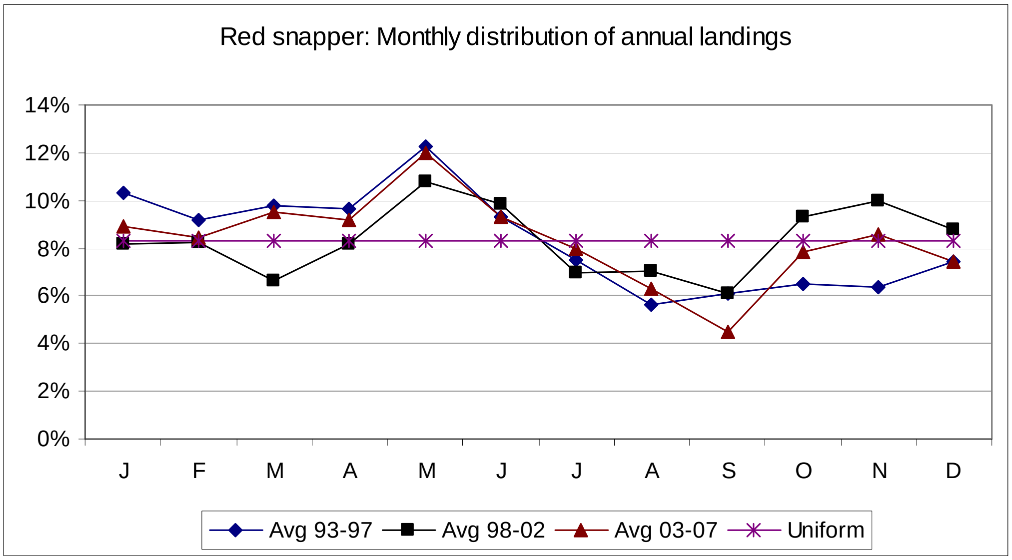
Figure 3-10. Average annual dockside prices for red snapper, in current dollars and 2007 dollars.



Although the seasonal distribution of landings varied from 1993-2007, landings tend to be highest in May and lowest in September (Figure 3-11). During the 5-year period from 2003-2007, landings were above average from March through June, below average in August and

September, and about average between October and February when compared to a uniform distribution of landings throughout the year.

Figure 3-11. Seasonal distribution of red snapper landings, 1993-2007.



On average between 2003 and 2007, 220 vessels reported 1,385 trips that landed at least one pound of red snapper (Table 3-18). These trips totaled an annual average of 121,000 pounds of red snapper worth $364,000 in current year dollars, and produced an average of 8.26 million pounds of other species worth $14.85 million. Clearly, red snapper was not the primary revenue species on most of these trips. An average of 102 vessels landed less than 100 pounds of red snapper per year, 84 vessels landed between 101 and 1000 pounds of red snapper per year, and 34 vessels landed more than 1000 pounds of red snapper per year.

Table 3-18. Annual landings, dockside revenues and fishing effort, trips and boats with landings of at least one pound of red snapper, 2003-2007.						
Item	2003	2004	2005	2006	2007	Average
	Trips and boats with at least one pound of red snapper					
Number of trips with at least one pound of red snapper	1,639	1,476	1,341	1,153	1,315	1,385
Landings of red snapper, thousand pounds, whole weight	136	161	117	81	108	121
Dockside revenue from red snapper, thousand current $	$374	$459	$346	$263	$377	$364
Dockside revenue from red snapper, thousand 2007 $	$422	$505	$368	$271	$376	$388
Dockside price, current $ / pound	$2.76	$2.85	$2.95	$3.25	$3.49	$3.02
Landings of all species, same trips, thousand pounds	2,252	2,292	2,199	1,679	2,059	2,096
Dockside revenue, all species, same trips, thousand 2007 $	$5,190	$5,105	$4,969	$3,990	$5,131	$4,877
Dockside revenue, all species, all trips, same boats, thousand 2007 $	$9,448	$8,886	$8,992	$9,286	$12,286	$9,780
Number of boats that landed red snapper	236	217	216	206	225	220
Number of boats landing 1-100 lbs per year of red snapper	106	87	97	106	114	102
Number of boats landing 101-1000 lbs per year of red snapper	91	86	86	74	81	84
Number of boats landing more than 1,000 lbs per year of red snapper	39	44	33	26	30	34
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.						

Red snapper is part of the mid-shelf snapper grouper complex that includes scamp, gag, vermilion snapper, red porgy, gray triggerfish and red grouper, among other species. Red snapper was the primary source of trip revenue on an average of 163 trips per year (Table 3-19) and a lesser source of revenue on 1,222 trips per year (Table 3-20). Therefore, red snapper was the primary source of trip revenue on less than 12% of the total number of trips on which they were landed. These trips accounted for approximately 30% of the total commercial harvest of red snapper, with an annual average of 38,000 pounds of red snapper worth $117,000 in current dollars and 49,000 pounds of other species worth $96,000 (Table 3-19). Trips with red snapper as a lesser source of revenue accounted for an annual average of 82,000 pounds of red snapper worth $247,000 in current dollars and 8.2 million pounds of other species worth $14.7 million (Table 3-20). Red snapper were most commonly caught on trips with vermilion snapper, gag or scamp as the primary revenue species on the trip. Red snapper were landed primarily from South Carolina through central Florida, with approximately 45% of the catch occurring in Georgia and northeast Florida (Table 3-21). Trips with vertical lines as the primary gear accounted for nearly 90% of red snapper landings (Table 3-21).

Table 3-19. Annual landings and dockside revenues on trips with red snapper as the top source of trip revenue, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips with red snapper as the top source of trip revenue					
Trips	172	198	157	140	149	163
Boats	80	76	66	58	61	68
Landings of red snapper on trips with red snapper as the top source of revenue, thousand pounds	43	58	29	27	35	38
Dockside revenue for red snapper on trips with red as the top source of revenue, thousand 2007 $	$134	$183	$91	$93	$125	$125
Landings of other species, same trips	63	75	38	29	41	49
Dockside revenue for other species, same trips, thousand 2007 $	$133	$153	$78	$66	$86	$103

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-20. Annual landings and dockside revenues on trips with red snapper as a lesser source of trip revenue, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips with red snapper as a lesser source of trip revenue					
Trips	1,467	1,278	1,184	1,013	1,166	1,222
Boats	224	204	199	191	213	206
Landings of red snapper on trips with red snapper as a lesser source of revenue, thousand pounds	93	103	89	54	73	82
Dockside revenues for red snapper on trips with red snapper as a lesser source of revenue, thousand 2007 $	$288	$321	$277	$178	$251	$263
Landings of other species, same trips	2,053	2,057	2,044	1,569	1,910	1,927
Dockside revenue for other species, same trips, thousand 2007 $	$4,635	$4,447	$4,524	$3,653	$4,669	$4,386

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-21. Annual landings of red snapper for trips with at least one pound of red snapper, by region and primary gear, 2003-2007.

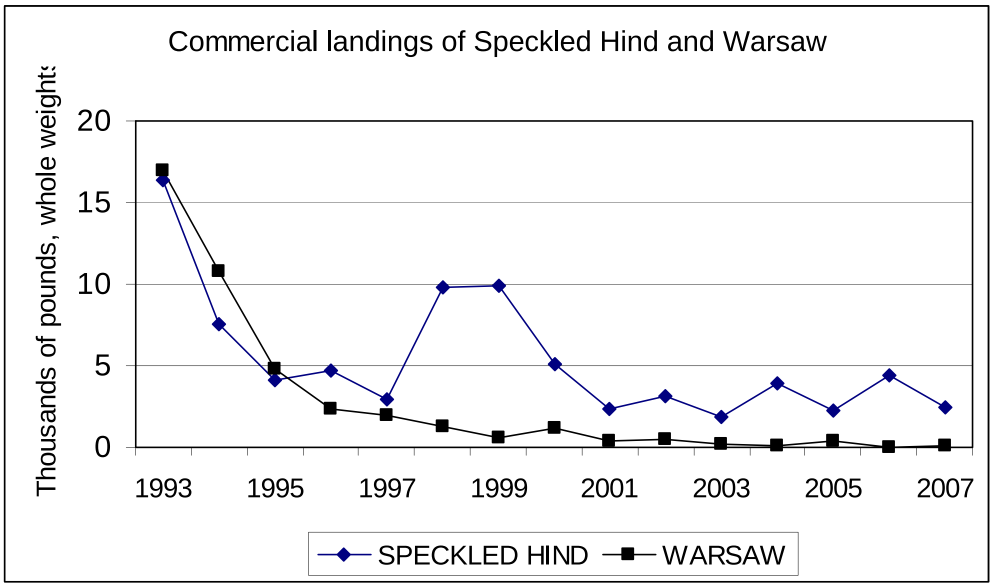
	2003	2004	2005	2006	2007	Average
	Trips with at least one pound of red snapper					
Red snapper caught off North Carolina, thousand pounds	15	10	7	6	5	9
Red snapper caught off South Carolina, thousand pounds	37	43	38	20	25	33
Red snapper caught off Georgia and northeast Florida, thousand pounds	65	90	46	34	52	58
Red snapper caught off central and southeast Florida, thousand pounds	16	16	23	17	25	19
Red snapper caught off Florida Keys, thousand pounds	3	1	2	4	1	2
Red snapper caught with vertical lines, thousand pounds	122	147	103	72	90	107
Red snapper caught with dive gear, thousand pounds	11	13	11	7	16	12
Red snapper caught with other gear, thousand pounds	3	1	2	2	1	2

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008.

3.4.1.1.9 Commercial Fisheries for Speckled Hind and Warsaw Grouper

There are no directed commercial fisheries for speckled hind and Warsaw. In 1993, commercial fishermen landed 16,300 pounds of speckled hind worth $28,600, and 17,000 pounds of Warsaw worth $23,800. Landings of both species have declined since then (Figure 3-12), as Amendment 6 to the Snapper Grouper FMP prohibited their sale in mid-1994 (Table 1-3). There is a one fish possession limit for each species, presumably for home consumption since these deep water groupers probably would not survive if released after being caught. Although fishermen are instructed not to report fish landed for personal use, small quantities of both species were reported in the logbook database. It is unclear if these quantities were for personal use or were sold.

Figure 3-12. Commercial landings of speckled hind and warsaw, 1993-2007.



Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008.

On average from 2003-2007, 3,000 pounds of speckled hind were landed by 32 vessels on 74 trips per year (Table 3-22). These trips averaged 87,200 pounds of other species worth $183,700 per year. Speckled hind are caught most commonly in North Carolina, South Carolina and the Florida Keys with vertical hook-and-line gear on trips for vermilion snapper, red grouper and scamp. Warsaw were reported on a total of only 9 trips between 2003 and 2007.

Table 3-22. Average annual landings and dockside revenues on trips that landed speckled hind, 2003-2007, by state.

	North Carolina	South Carolina	Georgia and Florida east coast	Florida Keys	Total
	Trips with at least one pound of speckled hind				
Number of boats that landed speckled hind	18	6	4	4	32
Number of trips with at least one pound of speckled hind	40	21	4	9	74
Landings of speckled hind (thousand pounds, whole wgt)	0.8	1.6	0.0	0.6	3.0
Dockside revenue from speckled hind in current year dollars (thousands)	$1.6	$3.4	$0.0	$1.0	$6.0
Landings of other species on trips with speckled hind (thousand pounds)	33.0	45.0	5.8	3.4	87.2
Dockside revenue for other species on trips with speckled hind (thousands current $)	$67.9	$97.0	$11.9	$6.8	$183.6

Table 3-23. Annual landings, dockside revenues and fishing effort, trips and boats with landings of at least one pound of speckled hind, 2003-2007.						
Item	2003	2004	2005	2006	2007	Average
	Trips and boats with at least one pound of speckled hind					
Number of trips with at least one pound of speckled hind	77	65	70	77	79	74
Landings of speckled hind, thousand pounds, whole weight	1.9	3.9	2.2	4.4	2.5	3.0
Dockside revenue from speckled hind, thousand current $	$3.3	$7.1	$4.2	$9.9	$6.1	$6.1
Dockside revenue from speckled hind, thousand 2007 $	$3.7	$7.7	$4.5	$10.1	$6.1	$6.4
Dockside price, current $ / pound	$1.74	$1.82	$1.91	$2.25	$2.44	$2.05
Landings of all species, same trips, thousand pounds	82	64	103	116	87	90
Dockside revenue, all species, same trips, thousand 2007 $	$177	$135	$218	$263	$206	$200
Dockside revenue, all species, all trips, same boats, thousand 2007 $	$1,540	$1,335	$1,894	$1,812	$1,433	$1,603
Number of boats that landed speckled hind	33	33	34	31	27	32
Number of boats landing 1-100 lbs per year of speckled hind	26	28	30	26	22	26
Number of boats landing more than 100 lbs per year of speckled hind	7	5	4	5	5	5
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.						

Table 3-24. Annual landings and dockside revenues on trips with speckled hind as a lesser source of revenue, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips with speckled hind as a lesser source of revenue					
Trips	77	64	70	77	79	73
Boats	33	32	34	31	27	31
Landings of speckled hind on trips with speckled hind as a lesser source of revenue, thousand pounds	1.9	3.9	2.2	4.4	2.5	3.0
Dockside revenues for speckled hind on trips with speckled hind as a lesser source of revenue, thousand 2007 $	$3.7	$7.6	$4.5	$10.1	$6.1	$6.4
Landings of other species on trips with speckled hind as a lesser source of revenue, thousand pounds	80	60	101	111	84	87
Dockside revenues for other species on trips with speckled hind as a lesser source of revenue, thousand 2007 $	$173	$127	$214	$253	$200	$194

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-25. Annual landings of speckled hind for trips with at least one pound of speckled hind, by region and primary gear, 2003-2007.						
	2003	2004	2005	2006	2007	Average
	Trips with at least one pound of speckled hind					
Speckled hind caught off North Carolina, thousand pounds	1	1	1	1	1	1
Speckled hind caught off South Carolina, thousand pounds	1	0	1	4	2	2
Speckled hind caught off Georgia and northeast Florida, thousand pounds	0		0	0	0	0
Speckled hind caught off central and southeast Florida, thousand pounds	0	0	0	0		0
Speckled hind caught off Florida Keys, thousand pounds	0	3	0		0	1
Speckled hind caught with vertical lines, thousand pounds	2	1	2	4	2	2
Speckled hind caught with dive gear, thousand pounds	0					0
Speckled hind caught with other gears, thousand pounds*	0	2	0	0	0	0
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008.						

3.4.1.1.10 Commercial Fisheries for Golden Tilefish

Table 3-26. Annual landings, dockside revenues and fishing effort, trips and boats with landings of at least one pound of golden tilefish, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips or boats with at least one pound of golden tilefish					
Number of trips with at least one pound of golden tilefish	391	336	359	331	593	402
Landings of golden tilefish, thousand pounds, whole weight	344	272	307	410	320	330
Dockside revenue from golden tilefish, thousand current $	$658	$511	$664	$827	$748	$682
Dockside revenue from golden tilefish, thousand 2007 $	$741	$561	$702	$849	$753	$721
Dockside price, current $ / pound	$1.92	$1.88	$2.17	$2.02	$2.34	$2.06
Landings of all species, same trips, thousand pounds	686	504	497	691	408	557
Dockside revenue, all species, same trips, thousand 2007 $	$1,287	$930	$1,068	$1,336	$905	$1,105
Dockside revenue, all species, all trips, same boats, thousand 2007 $	$2,668	$2,264	$2,627	$2,801	$2,578	$2,588
Number of boats that landed golden tilefish	63	65	65	60	65	64
Number of boats landing 1-100 lbs per year of golden tilefish	23	20	16	25	18	20
Number of boats landing 101-1000 lbs per year of golden tilefish	21	21	25	16	19	20
Number of boats landing 1,001-5,000 lbs per year of golden tilefish	3	13	16	9	18	12
Number of boats landing more than 5,000 lbs per year of golden tilefish	15	11	8	10	10	11

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-27. Annual landings and dockside revenues on trips with golden tilefish as the top source of trip revenue, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips with golden tilefish as the top source of trip revenue					
Trips	240	233	247	216	481	283
Boats	40	43	45	33	47	42
Landings of golden tilefish, thousand pounds	307	243	276	378	312	303
Dockside revenue for golden tilefish, thousand 2007 $	$671	$505	$639	$786	$735	$667
Landings of other species on trips where golden tilefish is the top source of trip revenue, thousand pounds	140	81	40	78	27	73
Dockside revenue for other species on trips where golden tilefish is the top source of trip revenue, thousand 2007 $	$188	$116	$64	$123	$40	$106

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-28. Annual landings and dockside revenues on trips with golden tilefish as a lesser source of trip revenue, 2003-2007.

3	2003	2004	2005	2006	2007	Average
	Trips with golden tilefish as a lesser source of trip revenue					
Trips	151	103	112	115	112	119
Boats	50	45	46	45	39	45
Landings of golden tilefish on trips with golden tilefish as a lesser source of revenue, thousand pounds	36	30	30	32	7	27
Dockside revenues for golden tilefish on trips with golden tilefish as a lesser source of revenue, thousand 2007 $	$70	$56	$63	$63	$18	$54
Landings of other fish on trips with golden tilefish as a lesser source of revenue, thousand pounds	203	150	150	203	61	153
Dockside revenues for other fish on trips with golden tilefish as a lesser source of revenue, thousand 2007 $	$357	$253	$301	$365	$112	$278

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-29. Annual landings of golden tilefish for trips with at least one pound of golden tilefish, by region and primary gear, 2003-2007.						
	2003	2004	2005	2006	2007	Average
	Trips with at least one pound of golden tilefish					
Golden tilefish caught off North Carolina, thousand pounds	17	40	1	2	2	12
Golden tilefish caught off South Carolina, thousand pounds	128	105	62	122	27	89
Golden tilefish caught off Georgia and northeast Florida, thousand pounds			0		0	0
Golden tilefish caught off central and southeast Florida, thousand pounds	191	126	240	283	289	226
Golden tilefish caught off Florida Keys, thousand pounds	8	1	4	2	1	3
Golden tilefish caught with vertical lines, thousand pounds	18	25	38	35	44	32
Golden tilefish caught with dive gear, thousand pounds		0	0		0	0
Golden tilefish caught with other gear, thousand pounds	325	248	269	374	296	302
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008.						

3.4.1.1.11 Commercial Fisheries for Snowy Grouper

Table 3-30. Annual landings, dockside revenues and fishing effort, trips and boats with landings of at least one pound of snowy grouper, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips and boats with at least one pound of snowy grouper					
Number of trips with at least one pound of snowy grouper	1,342	1,060	979	820	1,084	1,057
Landings of snowy grouper, thousand pounds, whole weight	284	240	248	258	123	230
Dockside revenue from snowy grouper, thousand current $	$642	$577	$605	$703	$373	$580
Dockside revenue from snowy grouper, thousand 2007 $	$723	$634	$643	$721	$373	$619
Dockside price, current $ / pound	$2.26	$2.41	$2.44	$2.73	$3.03	$2.52
Landings of all species, same trips, thousand pounds	1,683	1,398	1,348	1,324	1,216	1,394
Dockside revenue, all species, same trips, thousand 2007 $	$3,209	$2,820	$2,837	$2,857	$2,894	$2,923
Dockside revenue, all species, all trips, same boats, thousand 2007 $	$8,399	$8,359	$8,575	7903	$8,841	$8,415
Number of boats that landed snowy grouper	189	167	163	132	147	160
Number of boats landing 1-100 lbs per year of snowy grouper	61	52	54	39	58	53
Number of boats landing 101-1,000 lbs per year of snowy grouper	70	67	70	50	62	64
Number of boats landing 1,001-5,000 lbs per year of snowy grouper	44	30	26	28	23	30
Number of boats landing 5,001-10,000 lbs per year of snowy grouper	7	13	8	5	2	7
Number of boats landing more than 10,000 lbs per year of snowy grouper	7	5	5	10	2	6

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-31. Annual landings and dockside revenues on trips with snowy grouper as the top source of trip revenue, 2003-2007.						
Item	2003	2004	2005	2006	2007	Average
	Trips with snowy grouper as the top source of trip revenue					
Trips	540	441	438	366	149	387
Boats	108	95	86	69	59	83
Landings of snowy grouper on trips with snowy grouper as the top source of revenue, thousand pounds	201	178	192	202	74	170
Dockside revenue for snowy grouper on trips with red as the top source of revenue, thousand 2007 $	$511	$471	$501	$566	$226	$455
Landings of other species, same trips	190	150	164	182	57	149
Dockside revenue for other species, same trips, thousand 2007 $	$292	$238	$273	$281	$89	$234
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.						

Table 3-32. Annual landings and dockside revenues on trips with snowy grouper as a lesser source of trip revenue, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips with snowy grouper as a lesser source of trip revenue					
Trips	802	619	541	454	621	607
Boats	168	141	137	112	135	139
Landings of snowy grouper on trips with snowy grouper as a lesser source of revenue, thousand pounds	83	62	55	56	49	61
Dockside revenues for snowy grouper on trips with snowy grouper as a lesser source of revenue, thousand 2007 $	$211	$164	$142	$155	$147	$164
Landings of other species, same trips	1,210	1,008	936	885	1,036	1,015
Dockside revenue for other species, same trips, thousand 2007 $	$2,194	$1,948	$1,920	$1,855	$2,433	$2,070

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-33. Annual landings of snowy grouper for trips with at least one pound of snowy grouper, by region and primary gear, 2003-2007.						
	2003	2004	2005	2006	2007	Average
	Trips with at least one pound of snowy grouper					
Snowy grouper caught off North Carolina, thousand pounds	95	90	81	91	47	81
Snowy grouper caught off South Carolina, thousand pounds	94	65	86	95	13	71
Snowy grouper caught off Georgia and northeast Florida, thousand pounds	9	6	4	3	3	5
Snowy grouper caught off central and southeast Florida, thousand pounds	36	28	25	15	15	24
Snowy grouper caught off Florida Keys, thousand pounds	50	51	52	54	46	51
Snowy grouper caught with vertical lines, thousand pounds	197	176	185	188	117	173
Snowy grouper caught with dive gear, thousand pounds		0	0			0
Snowy grouper caught with other gear, thousand pounds	87	64	62	69	6	58
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008.						

3.4.1.1.12 Commercial Fisheries for Black Grouper

Table 3-34. Annual landings, dockside revenues and fishing effort, trips and boats with landings of at least one pound of black grouper, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips and boats with at least one pound of black grouper					
Number of trips with at least one pound of black grouper	1,743	1,905	1,726	1,331	1,405	1,622
Landings of black grouper, thousand pounds, whole weight	158	205	196	170	180	182
Dockside revenue from black grouper, thousand current $	$386	$518	$521	$495	$575	$499
Dockside revenue from black grouper, thousand 2007 $	$436	$569	$552	$510	$575	$528
Dockside price, current $ / pound	$2.45	$2.52	$2.66	$2.92	$3.19	$2.75
Landings of all species, same trips, thousand pounds	921	1,150	1,145	981	1,079	1,055
Dockside revenue, all species, same trips, thousand 2007 $	$1,934	$2,379	$2,445	$2,241	$2,607	$2,321
Dockside revenue, all species, all trips, same boats, thousand 2007 $	$8,779	$8,604	$7,339	$7,396	$8,693	$8,162
Number of boats that landed black grouper	372	363	309	289	281	323
Number of boats landing 1-100 lbs per year of black grouper	171	152	139	157	138	151
Number of boats landing 101-1,000 lbs per year of black grouper	164	172	138	101	110	137
Number of boats landing 1,001-5,000 lbs per year of black grouper	34	28	23	23	25	27
Number of boats landing more than 5,000 lbs per year of black grouper	3	11	9	8	8	8

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-35. Annual landings and dockside revenues on trips with black grouper as the top source of trip revenue, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips with black grouper as the top source of trip revenue					
Trips	691	802	686	510	554	649
Boats	206	203	169	149	151	176
Landings of black grouper on trips with black grouper as the top source of revenue, thousand pounds	106	137	113	108	111	115
Dockside revenue for black grouper on trips with black grouper as the top source of revenue, thousand 2007 $	$292	$380	$319	$325	$356	$334
Landings of other species, same trips	107	149	86	123	147	122
Dockside revenue for other species, same trips, thousand 2007 $	$188	$262	$154	$243	$315	$232

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-36. Annual landings and dockside revenues on trips with black grouper as a lesser source of trip revenue, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips with black grouper as a lesser source of trip revenue					
Trips	1,052	1,103	1,040	821	851	973
Boats	309	294	263	242	232	268
Landings of black grouper on trips with black grouper as a lesser source of revenue, thousand pounds	52	69	83	62	69	67
Dockside revenues for black grouper on trips with black grouper as a lesser source of revenue, thousand 2007 $	$144	$189	$233	$185	$219	$194
Landings of other species, same trips	656	795	864	688	752	751
Dockside revenue for other species, same trips, thousand 2007 $	$1,310	$1,548	$1,740	$1,488	$1,717	$1,561

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-37. Annual landings of black grouper for trips with at least one pound of black grouper, by region and primary gear, 2003-2007.						
	2003	2004	2005	2006	2007	Average
	Trips with at least one pound of black grouper					
Black grouper caught off North Carolina, thousand pounds	41	50	58	61	30	48
Black grouper caught off South Carolina, thousand pounds	24	32	31	49	65	40
Black grouper caught off Georgia and northeast Florida, thousand pounds	3	19	12	8	19	12
Black grouper caught off central and southeast Florida, thousand pounds	14	16	11	10	12	13
Black grouper caught off Florida Keys, thousand pounds	76	89	83	42	54	69
Black grouper caught with vertical lines, thousand pounds	121	172	168	156	159	155
Black grouper caught with dive gear, thousand pounds	24	21	24	12	18	20
Black grouper caught with other gear, thousand pounds	12	11	4	1	3	6
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008.						

3.4.1.1.13 Commercial Fisheries for Black Sea Bass

Table 3-38. Annual landings, dockside revenues and fishing effort, trips and boats with landings of at least one pound of black sea bass, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips and boats with at least one pound of black sea bass					
Number of trips with at least one pound of black sea bass	2,238	2,372	2,056	2,172	1,949	2,157
Landings of black sea bass, thousand pounds, whole weight	597	707	460	527	409	540
Dockside revenue from black sea bass, thousand current $	$916	$842	$571	$988	$1,089	$881
Dockside revenue from black sea bass, thousand 2007 $	$1,033	$927	$611	$1,020	$1,097	$937
Dockside price, current $ / pound	$1.53	$1.19	$1.24	$1.87	$2.66	$1.63
Landings of all species, same trips, thousand pounds	4,189	4,616	4,441	4,508	4,805	4,512
Dockside revenue, all species, same trips, thousand 2007 $	$4,411	$4,643	$4,358	$4,549	$4,594	$4,511
Dockside revenue, all species, all trips, same boats, thousand 2007 $	$8,835	$8,961	$9,116	$9,569	$11,441	$9,584
Number of boats that landed black sea bass	225	243	240	220	256	237
Number of boats landing 1-100 lbs per year of black sea bass	84	86	104	87	134	99
Number of boats landing 101-1,000 lbs per year of black sea bass	85	93	81	81	72	82
Number of boats landing 1,001-5,000 lbs per year of black sea bass	35	34	36	31	27	33
Number of boats landing 5,001-10,000 lbs per year of black sea bass	7	12	7	6	11	9
Number of boats landing more than 10,000 lbs per year of black sea bass	14	18	12	15	12	14

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-39. Annual landings and dockside revenues on trips with black sea bass as the top source of trip revenue, 2003-2007.						
Item	2003	2004	2005	2006	2007	Average
	Trips with black sea bass as the top source of trip revenue					
Trips	858	889	620	811	649	765
Boats	86	94	83	85	88	87
Landings of black sea bass on trips with black sea bass as the top source of revenue, thousand pounds	546	637	403	482	378	489
Dockside revenue for black sea bass on trips with red as the top source of revenue, thousand 2007 $	$948	$827	$539	$936	$1,023	$855
Landings of other species, same trips	51	57	38	69	57	54
Dockside revenue for other species, same trips, thousand 2007 $	$62	$66	$43	$94	$76	$68
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.						

Table 3-40. Annual landings and dockside revenues on trips with black sea bass as a lesser source of trip revenue, 2003-2007.						
Item	2003	2004	2005	2006	2007	Average
	Trips with black sea bass as a lesser source of trip revenue					
Trips	1,380	1,483	1,436	1,361	1,300	1,392
Boats	195	217	216	194	233	211
Landings of black sea bass on trips with black sea bass as a lesser source of revenue, thousand pounds	51	70	57	45	31	51
Dockside revenues for black sea bass on trips with black sea bass as a lesser source of revenue, thousand 2007 $	$85	$99	$73	$84	$74	$83
Landings of other species, same trips	1,446	1,721	1,674	1,498	1,408	1,549
Dockside revenue for other species, same trips, thousand 2007 $	$3,316	$3,651	$3,704	$3,436	$3,422	$3,506

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-41. Annual landings of black sea bass for trips with at least one pound of black sea bass, by region and primary gear, 2003-2007.						
	2003	2004	2005	2006	2007	Average
	Trips with at least one pound of black sea bass					
Black sea bass caught off North Carolina, thousand pounds	476	485	324	421	271	395
Black sea bass caught off South Carolina, thousand pounds	112	210	120	94	128	133
Black sea bass caught off Georgia and northeast Florida, thousand pounds	4	7	8	6	5	6
Black sea bass caught off central and southeast Florida, thousand pounds	4	5	9	7	4	6
Black sea bass caught off Florida Keys, thousand pounds			0		0	0
Black sea bass caught with vertical lines, thousand pounds	70	85	63	58	44	64
Black sea bass caught with traps, thousand pounds	521	617	390	466	362	471
Black sea bass caught with dive gear, thousand pounds	0	1	0	0	0	0
Black sea bass caught with other gear, thousand pounds	6	5	6	3	2	4
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008.						

3.4.1.1.14 Commercial Fisheries for Red Grouper

Table 3-42. Annual landings, dockside revenues and fishing effort, trips and boats with landings of at least one pound of red grouper, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips and boats with at least one pound of red grouper					
Number of trips with at least one pound of red grouper	2,840	2,670	2,558	2,522	3,035	2,725
Landings of red grouper, thousand pounds, whole weight	282	245	202	316	551	319
Dockside revenue from red grouper, thousand current $	$614	$493	$444	$773	$1,440	$753
Dockside revenue from red grouper, thousand 2007 $	$692	$542	$471	$793	$1,436	$787
Dockside price, current $ / pound	$2.18	$2.01	$2.20	$2.45	$2.62	$2.36
Landings of all species, same trips, thousand pounds	2,806	2,810	2,862	3,012	3,707	3,039
Dockside revenue, all species, same trips, thousand 2007 $	$6,132	$5,994	$6,333	$6,922	$9,121	$6,900
Dockside revenue, all species, all trips, same boats, thousand 2007 $	$12,307	$11,646	$11,709	$11,351	$14,284	$12,259
Number of boats that landed red grouper	461	420	389	347	391	402
Number of boats landing 1-100 lbs per year of red grouper	232	217	197	183	182	202
Number of boats landing 101-1,000 lbs per year of red grouper	158	137	134	94	114	127
Number of boats landing 1,001-5,000 lbs per year of red grouper	59	56	53	51	56	55
Number of boats landing 5,001-10,000 lbs per year of red grouper	9	9	5	16	23	12
Number of boats landing more than 10,000 lbs per year of red grouper	3	1	0	3	16	5

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-43. Annual landings and dockside revenues on trips with red grouper as the top source of trip revenue, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips with red grouper as the top source of trip revenue					
Trips	476	388	304	430	830	486
Boats	175	143	117	119	157	142
Landings of red grouper on trips with red grouper as the top source of revenue, thousand pounds	105	88	49	128	308	136
Dockside revenue for red grouper on trips with red as the top source of revenue, thousand 2007 $	$256	$191	$115	$322	$803	$337
Landings of other species, same trips	110	109	55	162	275	142
Dockside revenue for other species, same trips, thousand 2007 $	$247	$221	$109	$343	$637	$311

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-44. Annual landings and dockside revenues on trips with red grouper as a lesser source of trip revenue, 2003-2007.

Item	2003	2004	2005	2006	2007	Average
	Trips with red grouper as a lesser source of trip revenue					
Trips	2,364	2,282	2,254	2,092	2,205	2,239
Boats	431	399	368	326	365	378
Landings of red grouper on trips with red grouper as a lesser source of revenue, thousand pounds	176	158	153	188	243	183
Dockside revenues for red grouper on trips with red grouper as a lesser source of revenue, thousand 2007 $	$436	$350	$356	$471	$633	$449
Landings of other species, same trips	2,415	2,455	2,605	2,534	2,881	2,578
Dockside revenue for other species, same trips, thousand 2007 $	$5,193	$5,232	$5,753	$5,786	$7,048	$5,803

Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008, and Accumulated Landings System data base as of September 17, 2008. The BLS Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-45. Annual landings of red grouper for trips with at least one pound of red grouper, by region and primary gear, 2003-2007.						
	2003	2004	2005	2006	2007	Average
	Trips with at least one pound of red grouper					
Red grouper caught off North Carolina, thousand pounds	171	139	120	202	374	201
Red grouper caught off South Carolina, thousand pounds	52	49	41	85	142	74
Red grouper caught off Georgia and northeast Florida, thousand pounds	11	9	9	7	9	9
Red grouper caught off central and southeast Florida, thousand pounds	10	8	7	7	9	8
Red grouper caught off Florida Keys, thousand pounds	38	41	26	15	16	27
Red grouper caught with vertical lines, thousand pounds	268	223	191	309	540	306
Red grouper caught with dive gear, thousand pounds	7	7	7	4	8	7
Red grouper caught with other gear, thousand pounds	6	15	3	3	3	6
Source: NOAA Fisheries Service, Southeast Fisheries Science Center logbook database as of September 22, 2008.						

3.4.1.1.15 Imports

Imports have been a major source of seafood supply in the U.S., and the domestic snapper grouper market is not an exception. For the period 2003-2006, imports of fresh and frozen snappers and groupers have stayed at relatively high levels, averaging44.7 million pounds (Table 3-46). Compare this with the average overall landings of snapper grouper in the South Atlantic for the same period of 6.77 million pounds (Table 3-6), and one can immediately see the dominance of imports in the snapper grouper market. At an annual average of $79.2 million for the years 2003-2006, imports clearly dwarf the $12.99 million ex-vessel value of South Atlantic snapper grouper landings. Dominance of imports in the snapper grouper market may be expected to exert limits on the movement of domestic ex-vessel prices resulting from changes in domestic landings of snappers and groupers.

Table 3-46. U.S. imports of snappers and groupers, 2003-2006.

YEAR	Pounds of imports by product form Millions of pounds*			Value of imports by product form Millions of dollars		
	FRESH	FROZEN	TOTAL	FRESH	FROZEN	TOTAL
2003	31.1	8.4	39.4	$51.7	$10.6	$62.3
2002	33.4	9.2	42.6	$57.1	$12.3	$69.5
2003	34.3	10.2	44.5	$58.9	$14.4	$73.3
2004	33.3	9.8	43.1	$61.7	$13.9	$75.6
2005	35.9	13.8	49.7	$72.0	$21.0	$93.0
2006	35.2	13.4	48.6	$78.8	$22.9	$101.7
Average	33.9	10.8	44.7	$63.4	$15.9	$79.2

Source: NOAA Fisheries, Foreign Trade Database.
*Weights are not converted to equivalent whole weights.

3.4.1.2 Recreational Fishery

The East Coast (South Atlantic, Mid-Atlantic, and New England) recreational fishery is comprised of the private sector and for-hire sector. The private sector includes anglers fishing from shore (all land-based structures) and private/rental boats. The for-hire sector is composed of the charterboat and headboat (also called partyboat) sectors. Charterboats generally carry fewer passengers and charge a fee on an entire vessel basis, whereas headboats carry more passengers and payment is per person. The type of service, from a vessel- or passenger-size perspective, affects the flexibility to search different fishing locations during the course of a trip and target different species since larger concentrations of fish are required to satisfy larger groups of anglers.

3.4.1.2.1 Harvest

Recreational snapper grouper harvest in the South Atlantic has been variable during the period 2003-2007, averaging slightly below 11million pounds (Table 3-47). On average, the private/shore mode of fishing accounted for the largest harvests at around 7.23 million pounds (MP). Well below this harvest level are those of the charter mode at 1.97 MP and headboat at 1.69 MP. Harvests in each state also fluctuated during the same period (Table 3-48). On average, Florida accounted for most of snapper grouper harvest in the South Atlantic at around 6.83 MP, followed by North Carolina at 2.07 MP, South Carolina at 1.41 MP, and lastly by Georgia at 0.64 MP.

Table 3-47. Harvest of snapper grouper species by mode in the South Atlantic, 2003-2007..

Year	Charterboat[1]	Headboat[2]	Shore and Private/Rental Boat[1]	Total
2003	2,301,303	1,375,688	7,265,886	10,942,877
2004	1,517,384	1,889,010	6,688,596	10,094,990
2005	2,313,468	1,649,210	6,123,049	10,085,727
2006	1,998,902	1,648,405	7,282,328	10,929,635
2007	1,697,350	1,893,031	8,777,570	12,367,950
Average	1,965,681	1,691,068	7,227,485	10,884,235

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab and MRFSS database, NOAA Fisheries, NMFS, SERO.
[1] Pounds of A and B1 fish estimated from the MRFSS Survey.
[2] The total annual estimate of headboat catch derived from data collected through the NMFS headboat survey.

Table 3-48. Harvest of snapper grouper species by state in the South Atlantic, 2003-2007.

Year	Florida	Georgia	South Carolina	North Carolina
2003	7,848,011	770,993	1,042,157	1,281,714
2004	5,970,816	763,609	1,625,212	1,735,353
2005	6,696,212	622,302	852,105	1,915,107
2006	6,474,221	746,982	1,466,944	2,241,489
2007	7,173,255	320,927	2,079,880	3,199,767
Average	6,832,503	644,962	1,413,259	2,074,686

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab and MRFSS database, NOAA Fisheries, NMFS, SERO.

In the Mid-Atlantic, harvests of snapper grouper (species in the fishery management unit of the South Atlantic snapper grouper FMP) fell from 2003 to 2005 but started to recover in 2006 although still at levels substantially lower than those in 2003 (Table 3-49). For 2003-2005, total harvests averaged at slightly below 4 MP. The shore and private mode of fishing dominated the harvest averaging at 3.57 MP. Harvests by the other fishing modes averaged at 0.84 MP for charterboats and at 0.59 MP for headboats. New York dominated all other states in harvests, averaging at 2.49 MP, followed by New Jersey at 1.28 MP, then by Virginia, Maryland, and Delaware in that order (Table 3-50).

Table 3-49. Harvest of snapper grouper species by mode in the Mid-Atlantic, 2003-2007.

Year	Charterboat	Headboat	Shore and Private/Rental Boat	Total
2003	2,040,303		6,784,987	8,825,290
2004	934,045		2,559,977	3,494,022
2005	328,682	481,845	2,127,007	2,937,534
2006	447,665	555,066	2,878,776	3,881,507
2007	457,149	735,310	3,511,240	4,703,699
Average	841,569	590,740	3,572,397	4,768,410

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 3-50. Harvest of snapper grouper species by state in the Mid-Atlantic, 2003-2007.

Year	Virginia	Maryland	Delaware	New Jersey	New York
2003	817,271	279,585	301,871	1,753,908	5,672,655
2004	384,117	162,765	75,457	1,205,003	1,666,679
2005	654,918	111,184	75,925	980,967	1,114,538
2006	741,891	147,428	128,822	1,078,690	1,784,676
2007	914,527	73,329	148,412	1,375,916	2,191,513
Average	702,545	154,858	146,097	1,278,897	2,486,012

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

In New England, total harvests also fell from 2003 to 2005 and started to recover in 2006. The 2003-2007 average harvest of 2.41 MP is not substantially lower than harvests in 2003 of 3.4 MP (Table 3-51). Just as in other sub-regions, the shore and private mode of fishing dominated harvests, averaging at 2.15 MP. Harvests by other fishing modes averaged at substantially lower levels at 0.17 MP for headboats and 0.16 MP for charterboats. Of the five New England states, New Hampshire and Maine have not shown any snapper grouper harvests for the 2003-2007 period (Table 3-52). Harvests are about evenly distributed among the other three states, with averages of 0.83 MP for Massachusetts, 0.78 MP for Connecticut, and 0.53 MP for Rhode Island.

Table 3-51. Harvest of snapper grouper species by mode in New England, 2003-2007.

Year	Charterboat	Headboat	Shore and Private/Rental Boat	Total
2003	472,072		2,927,480	3,399,552
2004	106,330		2,691,904	2,798,234
2005	37,037	52,336	1,995,970	2,085,343
2006	100,250	192,745	1,350,519	1,643,514
2007	59,669	272,002	1,773,658	2,105,329
Average	155,072	172,361	2,147,906	2,406,394

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 3-52. Harvest of snapper grouper species by state in New England, 2003-2007.

Year	Connecticut	Rhode Island	Massachusetts	New Hampshire	Maine
2003	1,536,353	828,253	1,034,947	0	0
2004	624,917	888,075	1,285,241	0	0
2005	837,567	513,755	734,022	0	0
2006	737,463	525,903	380,148	0	0
2007	780,896	498,795	825,637	0	0
Average	903,439	650,956	851,999	0	0

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

There are ten species currently under consideration in this amendment. The distribution by mode of these species in the South Atlantic is presented in Table 3-53. Five species (black sea bass, gag, red grouper, vermilion snapper, red snapper) show relatively large harvests over the 2003-2007 period. Black sea bass accounted for the largest harvest at an average of 0.84 MP, followed somewhat closely by vermilion snapper at an average of 0.601 MP and gag at an average of 0.597 MP. Except for golden tilefish, snowy grouper, speckled hind, and vermilion snapper, the shore and private mode of fishing dominated the harvest of the ten species. Charterboats dominated in the harvest of golden tilefish and snowy grouper while headboats dominated in the harvest of speckled hind and vermilion snapper. Florida registers harvests of all ten species, Georgia does not show harvests of golden tilefish and snowy grouper, South Carolina does not show harvests of golden tilefish and black grouper, and North Carolina does not register any harvest of black grouper (Table 3-54).

Table 3-53. South Atlantic average harvest (lbs) of 10 species in this amendment, by mode, 2003-2007.

Species	Charterboat	Headboat	Shore and Private/Rental Boat	Total
Golden Tilefish	69,303	0	16,228	68,425
Snowy Grouper	50,553	474	6,369	53,575
Speckled Hind	212	1,060		1,230
Warsaw Grouper	4,810	847	28,145	15,953
Black Grouper	3,129	1,689	32,761	36,953
Black Sea Bass	102,610	177,477	555,316	835,402
Gag	108,909	49,123	439,510	597,543
Red Grouper	48,215	23,166	280,044	351,424
Vemilion Snapper	118,490	386,936	96,071	601,497
Red Snapper	101,457	51,355	168,511	321,322

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab and MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 3-54. South Atlantic average harvest (lbs) of 10 species in this amendment, by state, 2003-2007.

Species	Florida	Georgia	South Carolina	North Carolina
Golden Tilefish	5,282			80,249
Snowy Grouper	36,401		178	17,175
Speckled Hind	1,083	53	1,099	186
Warsaw Grouper	15,426	26	869	447
Black Grouper	36,842	19		
Black Sea Bass	268,816	79,753	75,722	244,377
Gag	345,322	12,332	45,582	204,332
Red Grouper	112,730	54	9,800	235,723
Vemilion Snapper	173,928	49,938	273,711	167,988
Red Snapper	263,256	25,923	23,050	10,716

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab and MRFSS database, NOAA Fisheries, NMFS, SERO.

In the Mid-Atlantic, only two of the ten species appear to be harvested. Only the charterboat mode registers harvest of golden tilefish at an average of 6,740 pounds, but all fishing modes register relatively large harvests of black seas bass (Table 3-55). Virginia and Delaware are the only two states that show harvests of golden tilefish but all five states show harvest of black sea bass, with New Jersey being the leader by significant margin (Table 3-56).

Table 3-55. Mid-Atlantic average harvest (lbs) of 10 species in this amendment, by mode, 2003-2007.

Species	Charterboat	Headboat	Shore and Private/Rental Boat	Total
Golden Tilefish	6,740			6,740
Snowy Grouper				
Speckled Hind				
Warsaw Grouper				
Black Grouper				
Black Sea Bass	655,438	445,048	1,012,521	2,113,007
Gag				
Red Grouper				
Vemilion Snapper				
Red Snapper				

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab and MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 3-56. Mid-Atlantic average harvest (lbs) of 10 species in this amendment, by state, 2003-2007.

Species	Virginia	Maryland	Delaware	New Jersey	New York
Golden Tilefish	2,955		1,079		
Snowy Grouper					
Speckled Hind					
Warsaw Grouper					
Black Grouper					
Black Sea Bass	164,581	139,047	118,038	1,169,906	333,461
Gag					
Red Grouper					
Vemilion Snapper					
Red Snapper					

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab and MRFSS database, NOAA Fisheries, NMFS, SERO.

Only black sea bass appears to be harvested in the New England area, with all fishing modes showing some harvests of the species (Table 3-57). The shore and private mode of fishing is by far the dominant fishing mode in harvesting black sea bass. New Hampshire and Maine does not show any landings of any of the ten species under consideration. Of the remaining three states in the area, Massachusetts dominated Rhode Island and Connecticut in the harvest of black sea bass (Table 3-58).

Table 3-57. New England average harvest (lbs) of 10 species in this amendment, by mode, 2003-2007.

Species	Charterboat	Headboat	Shore and Private/Rental Boat	Total
Golden Tilefish				
Snowy Grouper				
Speckled Hind				
Warsaw Grouper				
Black Grouper				
Black Sea Bass	37,695	22,263	209,348	269,305
Gag				
Red Grouper				
Vemilion Snapper				
Red Snapper				

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab and MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 3-58. New England average harvest (lbs) of 10 species in this amendment, by state, 2003-2007.

Species	Connecticut	Rhode Island	Massachusetts	New Hampshire	Maine
Golden Tilefish					
Snowy Grouper					
Speckled Hind					
Warsaw Grouper					
Black Grouper					
Black Sea Bass	8,201	68,723	183,477		
Gag					
Red Grouper					
Vemilion Snapper					
Red Snapper					

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab and MRFSS database, NOAA Fisheries, NMFS, SERO.

For the period 2003-2007, the ten species addressed in this amendment accounted for about 26 percent of all recreational harvests of snapper grouper in the South Atlantic. The corresponding figures for the other sub-regions are 44 percent for Mid-Atlantic and 11 percent for New England.

3.4.1.2.2 Effort

Recreational effort derived from the MRFSS can be characterized in terms of the number of trips as follows:

1. Target effort - The number of individual angler trips, regardless of duration, where the intercepted angler indicated that the species or a species in the species group was targeted as either the first or second primary target for the trip. The species did not have to be caught.
2. Catch effort - The number of individual angler trips, regardless of duration and target intent, where the individual species or a species in the species group was caught. The fish did not have to be kept.
3. Total recreational trips - The total estimated number of recreational trips in the South Atlantic, regardless of target intent or catch success.

Estimates of recreational effort for the entire snapper grouper fishery in the South Atlantic are provided in Table 3-59 for trips by mode and Table 3-60 for trips by state; those for the Mid-Atlantic are presented in Table 3-61 for trips by mode and Table 3-62 for trips by state; and, those for New England are presented in Table 3-63 for trips by mode and Table 3-64 for trips by state. The total column refers to the total number of trips taken by anglers in the South Atlantic snapper grouper fishery and not to the sum of catch and target trips.

In the South Atlantic, total angler trips were highest for the shore mode, followed by the private mode, and then by the charter mode (Table 3-59). However, average catch trips were highest on those taken through the private mode and lowest on those through the charter mode. The same is true with target trips: they were highest for private mode and lowest for charter mode. For the charter mode, both catch and target trips peaked in 2005 and decreased thereafter. Shore mode catch trips dropped from 2003 to 2004 but steadily increased thereafter; shore mode target trips fell from 2003 to 2005 and increased thereafter. Catch trips for the private mode fell in 2004 but increased thereafter, with relatively high levels in the last two years; target trips declined through 2005 and picked up in the last two years. Florida registered the highest total angler trips, followed in order by North Carolina, South Carolina, and Georgia (Table 3-60). The same pattern holds for catch trips but not for target trips. South Carolina registered slightly higher target trips than North Carolina.

Table 3-59. Recreational effort for the snapper grouper fishery in the South Atlantic, in thousand trips, by mode, 2003-2007.

	Charter Mode Trips			**Shore Mode Trips**			**Private Mode Trips**		
	Catch	**Target**	**Total**	**Catch**	**Target**	**Total**	**Catch**	**Target**	**Total**
2003	118	23	412	1,103	263	10,872	2,105	648	9,963
2004	129	28	418	987	209	11,186	1,985	477	9,488
2005	373	69	971	1,095	195	11,240	2,096	473	9,886
2006	285	68	834	1,276	272	12,511	2,603	530	10,749
2007	129	40	501	1,400	321	11,938	2,851	668	13,137
Avg.	207	45.6	627	1,172	252	11,549	2,328	559	10,644

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 3-60. Recreational effort for the snapper grouper fishery in the South Atlantic, in thousand trips, by state, 2003-2007.

	Florida			Georgia			South Carolina			North Carolina		
	Catch	Target	Total	Catch	Target	Total	Catch	Target	Total	Catch	Target	Total
2003	2,860	723	11,444	92	46	971	143	86	2,098	231	80	6,733
2004	2,530	532	10,800	90	26	960	191	84	2,224	289	71	7,107
2005	2,835	579	12,200	96	28	859	178	60	2,188	454	70	6,849
2006	3,325	633	13,349	71	28	799	248	133	2,670	520	76	7,276
2007	3,807	784	15,169	104	20	926	137	109	2,529	332	116	6,951
Avg.	3,071	650	12,592	90	29	903	179	94	2,341	365	82	6,983

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

In the Mid-Atlantic, the private mode trips were highest at an average of 11.75 million angler trips (Table 3-61). Total charter mode trips were significantly lower than either shore mode or private mode angler trips. For the years 2003-2005, total private mode and shore mode angler trips fluctuated about their respective means, but charter mode trips were substantially lower in the last three years. In terms of catch trips, the private mode registered an average of 74.6 thousand trips, the shore mode at 14.8 thousand trips, and the charter mode at 0.28 thousand trips. Average target trips were about the same as average catch trips for the private mode but significantly lower for both the shore and charter modes. On a state-by-state basis, New Jersey registered the highest number of total angler trips, followed by New York, Virginia, Maryland, and Delaware (Table 3-62). Except for Virginia with average catch trips of 68.4 thousand, catch trips were relatively low for the various states, with a range of 5 thousand trips in Maryland to 8.02 thousand trips in New Jersey. A similar pattern holds for target trips: Virginia registered an average of 69.2 thousand trips while the other states showed a range of 0.38 thousand trips in Delaware to 3.2 thousand trips in New York.

Table 3-61. Recreational effort for the snapper grouper fishery in the Mid-Atlantic, in thousand trips, by mode, 2003-2007.

	Charter Mode Trips			Shore Mode Trips			Private Mode Trips		
	Catch	Target	Total	Catch	Target	Total	Catch	Target	Total
2003	3	0	1,182	3	11	7,383	51	49	11,286
2004	9	1	1,323	13	2	6,327	52	58	11,084
2005	0.8	0	735	17	4	7,935	76	76	11,729
2006	0.2	0	749	29	0	7,895	79	83	12,123
2007	6	0.4	760	12	4	8,768	115	105	12,551
Avg.	3.8	0.28	949.8	14.8	4.2	7,661.6	74.6	74.2	11,754.6

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 3-62. Recreational effort for the snapper grouper fishery in the Mid-Atlantic, in thousand trips, by state, 2003-2007.

	Virginia			Maryland			Delaware			New Jersey			New York		
	Catch	Targ.	Total	Catch	Targ.	Total	Catch	Targ.	Total	Catch	Targ.	Total	Catch	Targ.	Total
2003	44	48	3,113	6	0	3,329	2	0	1,104	2	2	6,779	5	9	5,525
2004	39	49	3,594	5	2	2,644	8	1	1,177	13	4	6,544	8	4	4,773
2005	55	72	3,829	11	1	3,157	6	0	1,042	13	4	6,484	10	3	5,885
2006	101	83	3,883	3	0	3,534	3	0.3	1,154	0.1	0	6,954	1	0	5,240
2007	103	94	3,696	0	12	4,003	12	0.6	1,263	12	3	7,136	8	0	5,979
Avg.	68.4	69.2	3,623	5	3	3,333.4	6.2	0.38	1,148	8.02	2.6	6,779.4	6.4	3.2	5,480

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

In New England, snapper grouper recreational trips were substantially lower than those in other sub-regions (Table 3-63). Private mode trips were highest with an average of 4.69 million trips, followed by shore mode trips at 4.09 million trips and charter mode trips at 248 thousand trips. Both catch and target trips for snapper grouper were very low for all fishing modes. Among the five states in the sub-region, Massachusetts registered the highest number of total trips, followed in order by Rhode Island, Connecticut, Maine, and New Hampshire (Table 3-64). Both catch and target trips were very low in all states. In fact, Connecticut, New Hampshire, and Maine registered no catch or target trips for snapper grouper.

Table 3-63. Recreational effort for the snapper grouper fishery in New England, in thousand trips, by mode, 2003-2007.

	Charter Mode Trips			**Shore Mode Trips**			**Private Mode Trips**		
	Catch	**Target**	**Total**	**Catch**	**Target**	**Total**	**Catch**	**Target**	**Total**
2003	0.1	0	319	0.4	0	3,833	1	0	4,426
2004	0	0	301	0.6	2	3,909	3	0	4,450
2005	0.03	0	205	0.6	0	3,819	0	0	5,016
2006	0	0	189	0.6	0	4,510	0	2	4,681
2007	0	0	226	0	3	4,355	3	0	4,862
Avg.	0.03	0	248	0.44	1	4,085.2	1.4	0.4	4,687

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 3-64. Recreational effort for the snapper grouper fishery in New England, in thousand trips, by state, 2003-2007.

	Connecticut			Rhode Island			Massachusetts			New Hampshire			Maine		
	Catch	Targ.	Total	Catch	Targ.	Total	Catch	Targ.	Total	Catch	Targ.	Total	Catch	Targ.	Total
2003	0	0	1,563	2	0	1,594	0	0	4,085	0	0	415	0	0	919
2004	1	0	1,538	0.6	0.2	1,503	1	2	4,501	0	0	360	0	0	758
2005	0	0	1,573	0.6	0	1,590	0	0	4,318	0	0	481	0	0	1,076
2006	0	0	1,454	0.6	0	1,671	0	2	4,602	0	0	469	0	0	1,181
2007	0	0	1,658	0	0	1,509	3	3	4,610	0	0	456	0	0	1,209
Avg.	0.2	0	1,557.2	0.76	0.04	1,573.4	0.8	1.4	4,423.2	0	0	436.2	0	0	1,028.6

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Estimates of recreational effort for the ten species considered in this amendment are provided in Table 3-65 for trips by mode and Table 3-66 for trips by state. The total column refers to the total number of trips taken by anglers for all ten species and not to the sum of catch and target trips.

In terms of total angler trips, the shore mode dominated all other modes for trips catching and/or targeting any of the ten species in this amendment (Table 3-65). However, in terms of catch and target trips, the private mode dominated the other two fishing modes in most of the ten species. There are also observable regional variations in catch and target trips for the ten species under consideration (Table 3-66). In both catch and target trips, Florida dominated all other states for most species. Notable exceptions are golden tilefish and black sea bass where North Carolina had a slight edge over Florida in catch but not in target trips. It is also worth noting that South Carolina showed higher target trips for black sea bass than either Florida or North Carolina.

Table 3-65. South Atlantic average recreational effort for 10 species in this amendment, in thousand trips, by mode, 2003-2007.

	Charter Mode Trips			Shore Mode Trips			Private Mode Trips		
Species	**Catch**	**Target**	**Total**	**Catch**	**Target**	**Total**	**Catch**	**Target**	**Total**
Golden Tilefish	3	0	463	0	0	11,514	2	1	10,658
Snowy Grouper	2	247	463	0	0	11,514	2,217	414	10,658
Speckled Hind	0.1	0.0	463	0.2	0.0	11,514	0.8	0.1	10,658
Warsaw Grouper	0.2	0.0	463	0.2	0.0	11,514	1.2	0.0	10,658
Black Grouper	0.8	0.0	463	0.7	0.2	11,514	12.7	3.7	10,658
Black Sea Bass	37.1	3.5	463	73.8	0.8	11,514	489.3	46.6	10,658
Gag Grouper	8.1	1.8	463	10.5	2.2	11,514	93.0	33.5	10,658
Red Grouper	9.6	0.0	463	1.8	0.5	11,514	59.9	3.1	10,658
Vermilion Snapper	25.6	0.6	463	1.0	0.0	11,514	53.5	2.4	10,658
Red Snapper	14.8	2.8	463	1.6	4.2	11,514	63.0	36.3	10,658

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Table 3-66. South Atlantic average recreational effort for 10 species in this amendment, in thousand trips, by state, 2003-2007. .

	Florida			Georgia			South Carolina			North Carolina		
Species	**Catch**	**Target**	**Total**	**Catch**	**Target**	**Total**	**Catch**	**Target**	**Total**	**Catch**	**Target**	**Total**
Golden Tilefish	1.3	0.5	12,487.4	0.0	0.0	895.0	0.0	0.0	2,315.6	3.6	0.3	6,936.4
Snowy Grouper	3.0	0.7	12,487.4	0.0	0.0	895.0	0.0	0.0	2,315.6	1.4	0.0	6,936.4
Speckled Hind	1.1	0.0	12,487.4	0.0	0.0	895.0	0.0	0.0	2,315.6	0.0	0.1	6,936.4
Warsaw Grouper	1.4	0.0	12,487.4	0.0	0.0	895.0	0.0	0.0	2,315.6	0.0	0.0	6,936.4
Black Grouper	14.0	3.9	12,487.4	0.0	0.0	895.0	0.3	0.0	2,315.6	0.0	0.0	6,936.4
Black Sea Bass	200.3	12.0	12,487.4	30.7	4.7	895.0	140.0	23.2	2,315.6	229.2	11.0	6,936.4
Gag Grouper	88.5	35.5	12,487.4	2.0	0.0	895.0	5.0	0.9	2,315.6	16.1	1.0	6,936.4
Red Grouper	56.1	3.0	12,487.4	0.0	0.0	895.0	1.0	0.0	2,315.6	14.3	0.5	6,936.4
Vermilion Snapper	53.0	1.6	12,487.4	6.9	0.0	895.0	9.9	1.0	2,315.6	10.3	0.4	6,936.4
Red Snapper	71.6	39.1	12,487.4	5.0	1.4	895.0	2.0	2.8	2,315.6	0.9	0.0	6,936.4

Source: MRFSS database, NOAA Fisheries, NMFS, SERO.

Similar analysis of recreational effort is not possible for the headboat sector since data are not collected at the angler level. Estimates of effort in the headboat sector are provided in terms of angler days, or the number of standardized 12-hour fishing days that account for the different half-, three-quarter-, and full-day fishing trips by headboats. Despite the inability to associate headboat effort with specific species, the stationary bottom nature of headboat fishing, as opposed to trolling, suggests that all headboat trips and, hence, angler days, are snapper grouper trips by intent, though not necessarily success.

Headboat angler days are presented in Table 3-67. Due to very low headboat angler days for Georgia, entries for Georgia were combined with those of Florida. For the period 2003-2007, total headboat angler days fluctuated around the mean of 240,980 days. On average, Florida accounted for the largest number of angler days (164,492), or about 68 percent of all headboat angler days. Nevertheless, the numbers for South Carolina (47,571 days) and North Carolina (27,312 days) are far from being negligible.

Table 3-67. Estimate of headboat angler days for the U.S. South Atlantic.

	Florida	South Carolina	North Carolina	Total
2003	145,011	36,556	22,998	206,568
2004	173,701	50,461	27,255	253,421
2005	171,078	34,036	31,573	238,692
2006	175,522	56,074	25,736	259,338
2007	157,150	60,729	29,002	246,881
Average	164,492	47,571	27,312	240,980

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab.

3.4.1.2.3 Permits

For-hire vessels in the South Atlantic are required to have a snapper grouper for-hire permit to fish for or possess snapper grouper species in the EEZ. The number of permitted vessels for the period 2003-2005 is provided in Table 3-68. This sector operates as an open access fishery and not all permitted vessels are necessarily active in the fishery. Some vessel owners have been known to purchase open access permits as insurance for uncertainties in the fisheries in which they currently operate.

The number of for-hire permits issued in the South Atlantic snapper grouper fishery increased over the period 2003-2007, from 1,477 permits in 2003 to 1,754 permits in 2007. Most of the increases would likely be for strictly for-hire business, since permits issued for vessels operating as for-hire and commercial entities remained about flat from 2005 to 2006 and fell in 2007. The majority of snapper grouper for-hire permitted vessels were home-ported in Florida; a good number of vessels were also home-ported in North Carolina and South Carolina. Interestingly, there were several vessels with homeports in states other than those within the South Atlantic Council's area of jurisdiction. Most of the vessels with both for-hire and commercial permits were home-ported in the South Atlantic Council's area of jurisdiction.

The for-hire permit does not distinguish between whether the vessel operates as a charterboat or headboat. Based on a 1997 survey, Holland *et al.* (1999) estimated that a total of 1,080 charter vessels and 96 headboats supplied for-hire services in all South Atlantic fisheries during 1997.

Table 3-68. South Atlantic snapper grouper for-hire permit holders by home port state, 2003-2007.

	Number of vessels issued for-hire vessel permits						Number of vessels with both a for-hire permit and a commercial snapper grouper permit					
Home Port State	**2003**	**2004**	**2005**	**2006**	**2007**	**Avg.**	**2003**	**2004**	**2005**	**2006**	**2007**	**Avg.**
Florida	957	1,084	1,119	1,108	1,140	**1,082**	148	151	148	151	122	**144**
North Carolina	206	232	254	284	315	**258**	45	42	43	46	40	**43**
South Carolina	122	108	121	119	129	**120**	34	33	33	34	24	**32**
Georgia	36	27	33	33	30	**32**	4	2	2	2	3	**3**
Virginia	5	13	10	10	8	**9**		4	3	2		**3**
Other States	69	48	51	62	69	**60**	8	3	5	3	2	**4**
Gulf States	82	82	79	65	63	**74**						
Total	**1,477**	**1,594**	**1,667**	**1,681**	**1,754**	**1,635**	**239**	**235**	**234**	**238**	**191**	**227**

Source: Southeast Permits Database, NOAA Fisheries, SERO.

3.4.1.2.4 Economic Value and Expenditures

Participation, effort, and harvest are indicators of the value of saltwater recreational fishing. However, a more specific indicator of value is the satisfaction that anglers experience over and above their costs of fishing. The monetary value of this satisfaction is referred to as consumer surplus. The value or benefit derived from the recreational experience is dependent on several quality determinants, which include fish size, catch success rate, and the number of fish kept. These variables help determine the value of a fishing trip and influence total demand for recreational fishing trips.

Estimates of the economic value of a day of saltwater recreational fishing in the South Atlantic indicate that the mean value of access per marine recreational fishing trip is $109.31 for the South Atlantic (Haab *et al.* 2001). While this estimate is not specific to snapper grouper fishing trips, it may shed light on the magnitude of an angler's willingness to pay for this type of recreational experience.

Willingness to pay for an incremental increase in catch and keep rates per trip was also estimated to be $3.01 for bottom fish species by Haab *et al.* (2001). Whitehead *et al.* (2001) estimated the marginal willingness to pay to avoid a one fish red snapper bag limit decrease to be $1.06 to $2.20. Finally, Haab *et al.* (2001) provided a compensating variation (the amount of money a person would have to receive to be no worse off after a reduction of the bag limit) estimate of $2.49 per fish when calculated across all private boat anglers that targeted snapper grouper species in the South Atlantic.

These valuation estimates should not be confused with angler expenditures or economic activity. While expenditures for a specific good or service may represent a proxy or lower bound of value (a person would not logically pay more for something than it was worth to them), they do not represent the net value (benefits minus cost), nor the change in value associated with a change in the fishing experience. However, angler expenditures benefit a number of sectors that provide goods and services for salt-water sport fishing. Gentner *et al.* (2001) provides estimates of saltwater recreational fishing trip expenditures (Table 3-69). These estimates do not include expenditures in Monroe County, Florida, or expenditures in the headboat sector.

Table 3-69. Summary of expenditures on saltwater trips.

	North Carolina		**South Carolina**		**Georgia**		**Florida**	
Item	**Resident**	**Non Resident**	**Resident**	**Non Resident**	**Resident**	**Non Resident**	**Resident**	**Non Resident**
Shore mode trip expenses	$63.61	$75.53	$54.12	$104.27	$31.78	$115.13	$36.90	$141.30
Private/rental boat trip expenses	$71.28	$92.15	$35.91	$67.07	$161.34	$77.51	$66.59	$94.15
Charter mode trip expenses	$201.66	$110.71	$139.72	$220.97	$152.45	$155.90	$96.11	$196.16
Charter fee-average-per day	$133.76	$70.59	$114.26	$109.97	$73.68	$80.99	$71.37	$100.79

Source: 1999 MRFSS add-on survey (Gentner *et al.* 2001).

3.4.1.2.5 Financial Operations of the Charter and Headboat Sectors

Holland *et al.* (1999) estimated that the charterboat fee in the South Atlantic ranged from $292 to $2,000. The actual cost depended on state, trip length, and the variety of services offered by the charter operation. Depending on the state, the average fee for a half-day trip ranged from $296 to $360, for a full day trip the range was $575 to $710, and for an overnight trip the range was $1,000 to $2,000. Most (>90 percent) Florida charter operators offered half-day and full-day trips and about 15 percent of the fleet offered overnight trips. In comparison, only about 3 percent of operations in the other South Atlantic states offered overnight trips.

For headboats, the average fee in Florida was $29 for a half-day trip and $45 for a full day trip. For North and South Carolina, the average base fee was $34 per person for a half-day trip and $61 per person for a full day trip. Most of these headboat trips operated in Federal waters in the South Atlantic (Holland *et al.* 1999).

Capital investment in charter vessels averaged $109,301 in Florida, $79,868 for North Carolina, $38,150 for South Carolina and $51,554 for Georgia (Holland *et al.* 1999). Charterboat owners incur expenses for inputs such as fuel, ice, and tackle in order to offer the services required by their passengers. Most expenses incurred in 1997 by charter vessel owners were on crew wages and salaries and fuel. The average annual charterboat business expenditures incurred was $68,816 for Florida vessels, $46,888 for North Carolina vessels, $23,235 for South Carolina vessels, and $41,688 for vessels in Georgia in 1997. The average capital investment for headboats in the South Atlantic was approximately $220,000 in 1997. Total annual business expenditures averaged $135,737 for headboats in Florida and $105,045 for headboats in other states in the South Atlantic.

The 1999 study on the for-hire sector in the Southeastern U.S. presented two sets of average gross revenue estimates for the charter and headboat sectors in the South Atlantic (Holland *et al*., 1999). The first set of estimates were those reported by survey respondents and were as follows: $51,000 for charterboats on the Atlantic coast of Florida; $60,135 for charterboats in North Carolina; $26,304 for charterboats in South Carolina; $56,551 for charterboats in Georgia; $140,714 for headboats in Florida; and $123,000 for headboats in the other South Atlantic states (Holland *et al*., 1999). The authors generated a second set of estimates using the reported average trip fee, average number of trips per year, and average number of passengers per trip (for the headboat sector) for each vessel category for Florida vessels. Using this method, the resultant average gross revenue figures were $69,268 for charterboats and $299,551 for headboats. Since the calculated estimates were considerably higher than the reported estimates (22 percent higher for charterboats and 113 percent higher for headboats), the authors surmised that this was due to sensitivity associated with reporting gross receipts, and subsequent under reporting. Alternatively, the respondents could have overestimated individual components of the calculated estimates. Although the authors only applied this methodology to Florida vessels, assuming the same degree of under reporting in the other states results in the following estimates in average gross revenues: $73,365 for charterboats in North Carolina, $32,091 for charterboats in South Carolina; $68,992 for charterboats in Georgia; and $261,990 for headboats in the other South Atlantic states.

It should be noted that the study's authors were concerned that while the reported gross revenue figures may be underestimates of true vessel income, the calculated values could overestimate gross income per vessel from for-hire activity (Holland *et al.*, 1999). Some of these vessels are also used in commercial fishing activities and that income is not reflected in these estimates.

3.4.2 Social and Cultural Environment

A more detailed description of the social and cultural environment of the snapper grouper fishery is contained in Amendment 13C (SAFMC 2006) and is incorporated herein by reference. The following sections summarize key information relevant to this action. Key communities were identified primarily based on permit and employment activity. These data were obtained from the U.S. Bureau of the Census and from state and federal permitting agencies.

Permit trends are hard to determine, since several factors may affect how many vessels are homeported in certain communities, including vessel mobility, shifting stock locations, and resettlement of fishermen due to coastal development. Nevertheless, although vessel location shifts occur, static geographical representations help determine where impacts may be felt.

Data from the US Census Bureau must be used with some caution. Census data may not reflect shifting community demographics. Businesses routinely start up and fail or move and the census data collection cycle may fail to capture key changes. Further, census estimates do not include seasonal visitors and tourists, or those that live less than half the year in a surveyed area. Many of the latter group may work as seasonal employees and not be counted. Census data also misses some types of labor, such as day laborers, undocumented crew members, or family members that help with bookkeeping responsibilities.

Permit requirements for the commercial snapper grouper fishery were established in 1998 by Amendment 8 (SAFMC 1997). This amendment created a limited entry system for the fishery and established two types of permits based on the historic landings associated with a particular permit. Those who could demonstrate a certain amount of landings over a certain time period received permits that did not limit the number of pounds of snapper grouper that could be landed from federal waters (hereafter referred to as "unlimited commercial permits"). These permits were transferable. Vessels with verified landings, but did not meet the threshold were issued permits that allowed them to land 225 pounds of snapper grouper species from federal waters each trip (hereafter referred to as "limited commercial permits"). These permits were not transferable. New entry into the fishery required the purchase of two unlimited permits from existing permit holders for exchange for a new permit. This "two for one" system was intended to gradually decrease the number of permits in the fishery. These restrictions only applied to the commercial snapper grouper permit.

Impacts on fishing communities from coastal development, rising property taxes, decreasing access to waterfront due to increasing privatization of public resources, rising cost of dockage and fuel, lack of maintenance of waterways and ocean passages, competition with imported fish, and other less tangible (often political) factors have combined to put all these communities and their associated fishing sectors under great stress.

While studies on the general identification of fishing communities have been undertaken in the past few years, little social or cultural investigation into the nature of the snapper grouper fishery itself has occurred. A socioeconomic study by Waters *et al.* (1997) covered the general characteristics of the fishery in the South Atlantic, but those data are now almost 10 years old and do not capture important changes in the fishery. Cheuvront and Neal (2004) conducted survey work of the North Carolina commercial snapper grouper fishery south of Cape Hatteras, but did not include ethnographic examination of communities dependent upon fishing.

To help fill information gaps, members of the South Atlantic Council's Snapper Grouper Advisory Panel, Council members, Advisory Panel members, and representatives from the angling public identified communities they believed would be most impacted by the management measures proposed in Amendment 13C on the species addressed by this amendment. Details of their designation of particular communities, and the factors considered in this designation, can be found in Amendment 13C (SAFMC 2006).

Because so many communities in the South Atlantic benefit from snapper grouper fishing, the following discussion focuses on "indicator communities," defined as communities thought to be most heavily impacted by snapper grouper regulations.

3.4.2.1 North Carolina

Figure 3-13. North Carolina communities with substantial fishing activity, as identified by South Atlantic Advisory Panels.

3.4.2.1.1 *Statewide*

Overview

Of the four states in the South Atlantic region, North Carolina (Figure 3-11) is often recognized as possessing the most "intact" commercial fishing industry; that is, it is more robust in terms of viable fishing communities and fishing industry activity than the other three states. The state offers a wide variety of fishing opportunities, including sound fishing, trolling for tuna, bottom fishing, and shrimping. Perhaps because of the wide variety of fishing opportunities, fishermen have been better able to weather regulations and coastal development pressures, adjusting their annual fishing patterns as times have changed.

Commercial Fishing

There has been a steady decline in the number of federal commercial snapper grouper permits North Carolina since 1999, with 194 unlimited commercial permits in 1999, but only 139 in 2004. Limited permits similarly declined from 36 to16.

State license sale and use statistics for all types of licenses also indicate an overall decrease since 1994. While the overall number of state licenses to sell any species of fish or shellfish increased from 6,781 in 1994 to 9,712 in 2001/2002, the number of license holders actually reporting sales decreased from 6,710 in 1994/1995 to 5,509 in 2001/2002 (SAFMC 2006).

North Carolina fishermen demographics are detailed in Cheuvront and Neal (2004). Ninety eight percent of surveyed fishermen were white and 58 percent had completed some college or had graduated from college. Of those who chose to answer the question, 27 percent of respondents reported a household income of less than $30,000 per year, and 21 percent made at least $75,000 per year. On average, respondents had been fishing for 18 years, and had lived in their communities for 27 years.

Cheuvront and Neal (2004) also provided an overview of how North Carolina commercial snapper grouper fishermen carry out their fishery. Approximately 65 percent of surveyed fishermen indicated year-round fishing. Gag is the fish most frequently targeted by these fishermen, with 61 percent of fishermen targeting gag at some point in the year, despite the prohibition of commercial sales and limit to the recreational bag limit in March and April. Vermilion snapper (36.3 percent) and black sea bass (46 percent) are the next most frequently targeted species. A significant number of fishermen land king mackerel during each month, with over 20 percent of fishermen targeting king mackerel between October and May. During the gag closed season, king mackerel are targeted by about 35 percent of the fishermen. Other snapper/grouper complex species landed by at least 5 percent of the fishermen in any given month were red grouper (39.5 percent), scamp (27.4 percent), snowy grouper (9.7 percent), grunts (14.5 percent), triggerfish (13.7 percent), and golden tilefish (5.6 percent). Non-snapper/grouper complex species landed by at least 5 percent of the fishermen in any given month included Atlantic croaker, yellowfin tuna, bluefin tuna, dolphin, and shrimp.

Recreational Fishing

Recreational fishing is well developed in North Carolina and, due to natural geography, is not limited to areas along the coast. Data show that North Carolina is almost on par with east Florida for total recreational fishing participation effort (data not shown; see SAFMC (2006)). A brief discussion of public boat ramps and local recreational fishing clubs, as well as sources of information used by these anglers, can be found in SAFMC (2006).

The North Carolina state legislature approved the creation of a state recreational saltwater fishing license in 2004. The license created controversy for both the recreational and commercial sectors, each believing that it will hurt or help their access to marine resources. Possession of the license, subject to exemptions, has been required as of January 1, 2007 (http://www.ncdmf.net/recreational/NCCRFLfaq.htm).

3.4.2.1.2 *Hatteras Village*

A detailed history of this community, from its discovery by Italian explorers in the 16th century to establishment of a National Seashore in 1953, can be found in SAFMC (2006).

Overview

Census data indicate there was not a significant increase in population size in Hatteras Village from 1990 to 2000 (SAFMC 2006). The demographics of the island have shifted, as is evidenced in the decreasing percentage of the population that is actively in the workforce, perhaps reflecting a larger number of retirees in the community, and the increasing proportion of residents with higher education, also reflecting a retired, professional segment of the population. Hatteras Village has also experienced a significant increase in the percent of the population in the farming, fishing, and forestry occupations, from 5.6 percent to 10.8 percent. This may be reflective of the increasing number of persons employed in businesses related to recreational fishing, such as charter boat captains and crew, boat repair and sales, marinas, etc. See SAFMC (2006) for the raw data describing community demographics. Figure 3-12 includes two maps detailing the area.

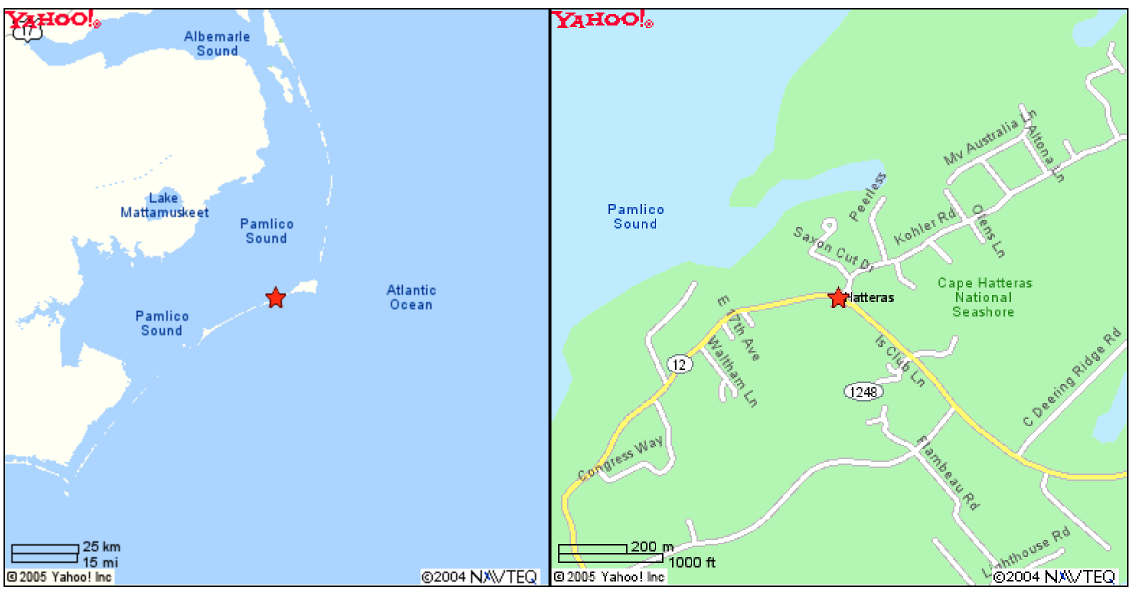


Figure 3-14. Hatteras Island and Village, Outer Banks, North Carolina.
Source: Yahoo Maps, http://www.yahoo.com.

Commercial Fishing

Anecdotal information from Hatteras residents indicates the number of fish houses has decreased as tourism has increased (SAFMC 2006). Residents, however, still promote the fisherman's way of life through festivals and special community designations (SAFMC 2006).

Mirroring the statewide trend, the number of unlimited commercial permits held by residents of Hatteras decreased from 1999 (9 permits) to 2004 (5 permits). The number of limited commercial permits has remained at 3 (SAFMC 2006). Twenty people stated they were employed in fishing related industry in the 1998 census, with 18 of these employed by marinas. A listing of the six marinas and eight bait and tackle stores in Hatteras Village can be found in SAFMC (2006).

Recreational Fishing

Hatteras is host to several prestigious fishing tournaments and is homeport for the island's famous charter fishing fleet. The number of charter/headboat permits held by Hatteras residents has dramatically increased, from one permit in 1999 to 28 in 2004.

3.4.2.1.3 *Wanchese*

A history of this community, and neighboring Manteo, describing its persistence as a small, close-knit community focused on making its living from the sea, can be found in SAFMC (2006).

Figure 3-15. Map of Roanoke Island, North Carolina, showing Wanchese and Manteo.
Source: Kitner 2005.

Overview

Figure 3-13 provides a map of Roanoke Island, including Wanchese and Manteo. While Wanchese has maintained its identity as a commercial fishing community, it faces continuing pressure from developers in nearby Manteo and other Outer Banks communities. However, the town has recently approved a zoning document that would prevent unplanned growth and would help preserve working waterfronts and residential areas (Kozak 2005). A partial community profile detailing local traffic patterns, businesses, and prominent families can be found in SAFMC (2006).

The largest industrial area in Wanchese is centered on the Wanchese Seafood Industrial Park, built to enhance business opportunities in the seafood and marine trades. Tenants of the park are able to ship products overnight to major domestic and international markets through the airport in Norfolk, Virginia. The park is utilized by fishermen and seafood dealers, as well as boatbuilding and boat maintenance businesses. The park is full of activity and it is common to find large numbers of people, especially Hispanics, working in the marine trade industries.

Census statistics from 2000 show the population of Wanchese is aging and very homogenous, with little ethnic diversity. There has been a slight increase in the Hispanic population since 1990, mirroring most other communities in North Carolina. Education levels have also increased, and the poverty rate has decreased. A higher percentage of people are employed in fishing-related professions in Wanchese than in almost any other community – 10 percent – although even that number has decreased nearly 50 percent since 1990.

Commercial Fishing

Commercial landings and value for Wanchese/Stumpy Point declined from 31.9 million pounds valued at $26.1 million in 2001 to 28.7 million pounds valued at $23.2 million in 2002. In 2001, Wanchese/Stumpy Point was listed as the 28th most prominent United States port based on the value of the product landed, declining to 30th in 2002. While landings increased in 2003, to 33 million pounds, value further declined to $21 million (31st place), with further declines in both poundage (31 million pounds) and value ($20.5 million) in 2004.

Amendment 8, which limited entry into the commercial snapper grouper fishery, does not appear to have caused a decrease in the number of commercial permits held by residents of Wanchese (SAFMC 2006). In 1999, seven unlimited commercial permits were held, with eight in 2004. Three limited commercial licenses were held in both 1999 and in 2004.

One hundred twenty residents of Wanchese stated they were employed in fishing related industries in the 1998 census (SAFMC 2006). Sixteen of these were listed as employed in fishing, 56 in fish and seafood, and 40 in boatbuilding.

There were 228 commercial vessels registered and 201 state standard commercial fishing licenses issued in the community in 2002 (SAFMC 2006). Wanchese residents also held 12 dealer licenses. The town is an important unloading port for many vessels transiting to and from the Mid-Atlantic and South Atlantic.

Recreational Fishing

As of 2005, nine boatbuilding businesses were located in Wanchese, building either pleasure yachts, recreational fishing vessels or, less often, commercial fishing vessels. There were two bait and tackle businesses and two marinas in town. All these businesses rely on the fishing industry. Manteo also maintains an active private and for-hire recreational fishing community. From 1999 to 2004, there was an increase in the number of charter/headboat licenses held, from two permits to nine permits. As most of the recreational sector for the region operates out of Manteo and Nags Head, these communities would be more affected by recreational fishing restrictions than would Wanchese.

Figure 3-16. Area of Carteret County, North Carolina, showing Morehead City, Atlantic Beach (at the red star), and Beaufort.
Source: Yahoo Maps, http://www.yahoo.com.

3.4.2.1.4 *Morehead City*

In Carteret County, Morehead City, Beaufort, and Atlantic Beach form a triad of different but complementary communities in close geographic proximity (Figure 3-14). A detailed history of Morehead City, from its founding in the 1840s-1850s to its development as a center for sport and tournament fishing in recent years, can be found in SAFMC (2006).

Overview

Morehead City's economy is currently based on tourism, fishing (commercial and recreational), light industry, government, and other service and professional industries. The town has regained its commercial viability as a modern port terminal, and benefits from its location on the “sound-side” of the Atlantic Beach resort trade. Diving has become an important tourist activity; Rodale’s Scuba Diving magazine recently named North Carolina as the best wreck diving destination in North America, and Morehead City as the best overall dive destination. Recreational fishing effort is growing quickly, as new marinas, boat storage areas, boat builders, and marine supply stores open in the city.

Detailed statistics detailing community demographics of Morehead City in 1990 and 2000 can be found in SAFMC (2006). The population of Morehead City increased from 1990 to 2000, with sizable increases in the number of people declaring non-white ethnicities. Median income increased from approximately $20,000 to nearly $29,000 from 1990 to 2000. Median home value nearly doubled, and median rent increased 35 percent. The percentage of those completing high school increased by 10 percent, and there was a seven percent increase in those receiving a bachelor’s degree or higher. The poverty level decreased. However, the unemployment rate increased. The occupations of farming, fishing, and forestry employ more than one percent of the population of Morehead City.

Commercial Fishing

In 1998, 100 people were employed in fishing related businesses according to census figures, with 40 employed in marinas and 36 employed in fish and seafood businesses (SAFMC 2006). Over 200 state commercial vessel licenses, 150 state standard commercial fishing licenses, and 14 dealer licenses were issued by the state to residents of Morehead City in 2002. The number of unlimited commercial permits held by Morehead City residents was 15 in 1999 and 14 in 2004, while the three limited commercial permits held in 1999 were no longer held by 2004 (SAFMC 2006). As of 2002, the state had issued 211 commercial vessel registrations, 150 standard commercial licenses, and 14 dealer licenses to Morehead City residents. Residents of Morehead City were primarily employed by marinas (40 percent) and fish and seafood (36 percent), with 16 percent employed in boatbuilding businesses.

A narrative detailing the fishing methods, habits, and observations of a bandit-rig fisherman in Morehead City can be found in SAFMC (2006).

Recreational Fishing

The number of charter/headboat permits held by Morehead City residents nearly doubled, from seven in 1999 to 13 in 2004.

3.4.2.1.5 *Beaufort*

Beaufort is located on the coast near Cape Lookout, and borders the southern portion of the Outer Banks. Its deep harbor is home to vessels of all sizes, and its marinas are a favorite stop-over for transient boaters. A detailed history of Beaufort, from its establishment to its importance as a trade center during the 18th and 19th centuries, to its later involvement in the menhaden fishing industry, can be found in SAFMC (2006).

Overview

Tourism, service industries, retail businesses, and construction are important mainstays of the Beaufort area, with many shops and restaurants catering to people from outside the area. Census data show a slight decrease in population size from 1990 to 2000, from 3,808 inhabitants to 3,771, perhaps due to the aging population. Educational attainment rose over the last decade, and the percentage of individuals below the poverty line fell slightly. The percentage of those in the labor force decreased, another possible indication of an aging population. However, the percentage unemployed also decreased. The number of people working in farming, fishing, and forestry remained about the same from 1990 to 2000. According to census business pattern data from 1998, most of the fishing-related employment in Beaufort (total 300 persons) occurs in the boat building industry, which employs 184 residents (SAFMC 2006). Forty-eight people reported working in marinas, while others are employed in fish processing, fish harvesting, and seafood marketing.

Commercial Fishing

There has been a slight decrease in the number of unlimited commercial permits held by residents of Beaufort, from 5 permits in1999 to 4 permits in 2004. In the last two years, the one limited commercial permit held by a Beaufort resident was no longer reported. As of 2002, the state had issued 430 commercial vessel registrations, 294 standard commercial licenses, and 32 dealer licenses to Beaufort residents.

Recreational Fishing

There has been virtually no change in the number of charter/headboat permits, 1 permit in 2003 and 2004, held by residents.

3.4.2.1.6 *Atlantic Beach*

Atlantic Beach has been a popular resort town since the 1870s. The first bathing pavilion was built on Bogue Banks in 1887. Tourists flocked to the resorts, and ferry service to Atlantic Beach increased. Other resorts and tourism related development occurred over the next century, and the area remains a popular vacation destination (www.atlanticbeach-nc.com/history_part-1.html).

Overview

Atlantic Beach demographic data from 1990 and 2000 show a slight population decline since 1990, as well as decreases in the percent of the population involved in farming, fishing, and forestry (SAFMC 2006). The median age of the population has increased, perhaps a reflection of the growing number of retirees moving to this area of the coast.

Commercial Fishing

As observed in other areas of North Carolina, since limited access was put into place, the number of commercial permits has decreased from eight unlimited commercial permits in 1999 to four in 2004, and four limited commercial permits to zero (SAFMC 2006). In 1998, 60 residents of Atlantic Beach were employed in fishing related industry, with 93 percent of those employed by the marine sector. In 2002, 56 vessels were registered with the state as commercial fishing vessels, 42 standard commercial fishing licenses were held by Atlantic Beach residents, and there were ten valid dealer licenses issued to community members (SAFMC 2006).

Recreational Fishery

Since 1999, the number of federal charter/headboat permits held by Atlantic City residents has increased from six to 19, though only one permit was recorded in 2002. Of the 60 individuals reporting working in a fishing related industry in 1998, 46 worked in marinas. Two state permits were issued to recreational fishing tournaments to sell licenses in 2002 (SAFMC 2006).

Figure 3-17. General area of Sneads Ferry, North Carolina.
Source: Yahoo Maps, http://www.yahoo.com.

3.4.2.1.7 *Sneads Ferry*

Sneads Ferry is a historical fishing village located on the New River near the northern tip of Topsail Island (Figure 3-15). The river joins the Intracoastal Waterway at Sneads Ferry, with easy access to the Atlantic Ocean. A very active commercial fishing community, Sneads Ferry takes in more fish than any other Onslow County port (http://www.cbcoastline.com/areainfo.htm). It also includes Camp Lejeune, a U.S. Marine base. The Sneads Ferry Shrimp Festival has been held annually since 1971. Now grown to a two-day event, the annual shrimp festival is the town's major fund-raiser. From its proceeds, the town established a 14-acre community park and built a 7200-sq. ft. Shrimp Festival Community Building (www.sneadsferry.com/areahistory/his_sf.htm).

Overview

Census data indicate the population of Sneads Ferry increased by about 10 percent from 1990 to 2000, from 2,031 inhabitants to 2,248. Most new residents were white, and the number of black or African American residents decreased from 159 to 115. Median income increased from about $20,000 to nearly $35,000. Median home value increased from $65,000 to $110,000, but median rent remained about the same. The percentage of those completing high school increased by 10 percent and the percent of residents with at least a Bachelor's degree doubled, from six percent to 12.8 percent. The poverty level decreased from 20.9 percent to 13.5 percent, and the percentage of the population unemployed decreased from 8.3 percent to 2.2 percent. The percentage of residents employed in farming, fishing, and forestry decreased by half from 18.2 percent to 9 percent, while employment in sales and office occupations increased by over 17 percent. It is unclear who may be buying home sites on newly developed land in the town, but the town's current demographics may point to an increase in retirees in Sneads Ferry, as they are better educated, have higher incomes, and are older. The dramatic decline by approximately 50 percent of persons employed in extractive natural resource occupations may be due to increasing job opportunities outside of the community, the changing impacts of regulations, or status of the resources

Commercial Fishing

Sneads Ferry is a small town with little of the large-scale development seen elsewhere on the North Carolina coast. Many houses in the community have fishing vessels docked in front of the house or on the lawn. The white rubber boots worn by commercial fishermen in this community and many other parts of North Carolina are commonly referred to as "Sneads Ferry Sneakers", suggesting the importance of commercial fishing to the area. Most of the fishermen in town are shrimpers and net fishermen who go out daily. There is also a strong contingent of black sea bass pot fishermen resident in the town. The species with the highest consistent landings in the town are black sea bass, button clams, blue crab, flounders, mullet, shrimp, spot, and whiting.

The number of federal charter/headboat permits held by residents increased from six in 1999 to 13 in 2004, while the number of unlimited commercial permits decreased from 22 to 17, and the number of limited commercial permits remained at one (SAFMC 2006). Over 347 commercial fishing vessels were registered with the state in 2002, and 228 residents held state-issued standard commercial fishing licenses. There were also 18 dealer licenses in the community and 169 shellfish licenses. In 1998, 16 persons were employed in fishing related industry, with 75 percent working in fish and seafood.

Recreational Fishing

Recreational fishing in Sneads Ferry is not as prominent an activity as in Morehead City. However, there are a large number of vessels with charter permits for snapper grouper homeported there. Little is currently known about recreational fishing out of Sneads Ferry, aside for its advertisement as an important tourist attraction in many websites that discuss the community. At least five marinas cater to recreational fishermen. There are two other marinas at Camp LeJeune Marine Base, just across the Neuse River. Some smaller river and sound fishing charters operating out of the area and one headboat runs from Sneads Ferry. Other than black sea bass, it does not appear that many snapper grouper species are frequently caught recreationally from Sneads Ferry.

3.4.2.2 South Carolina

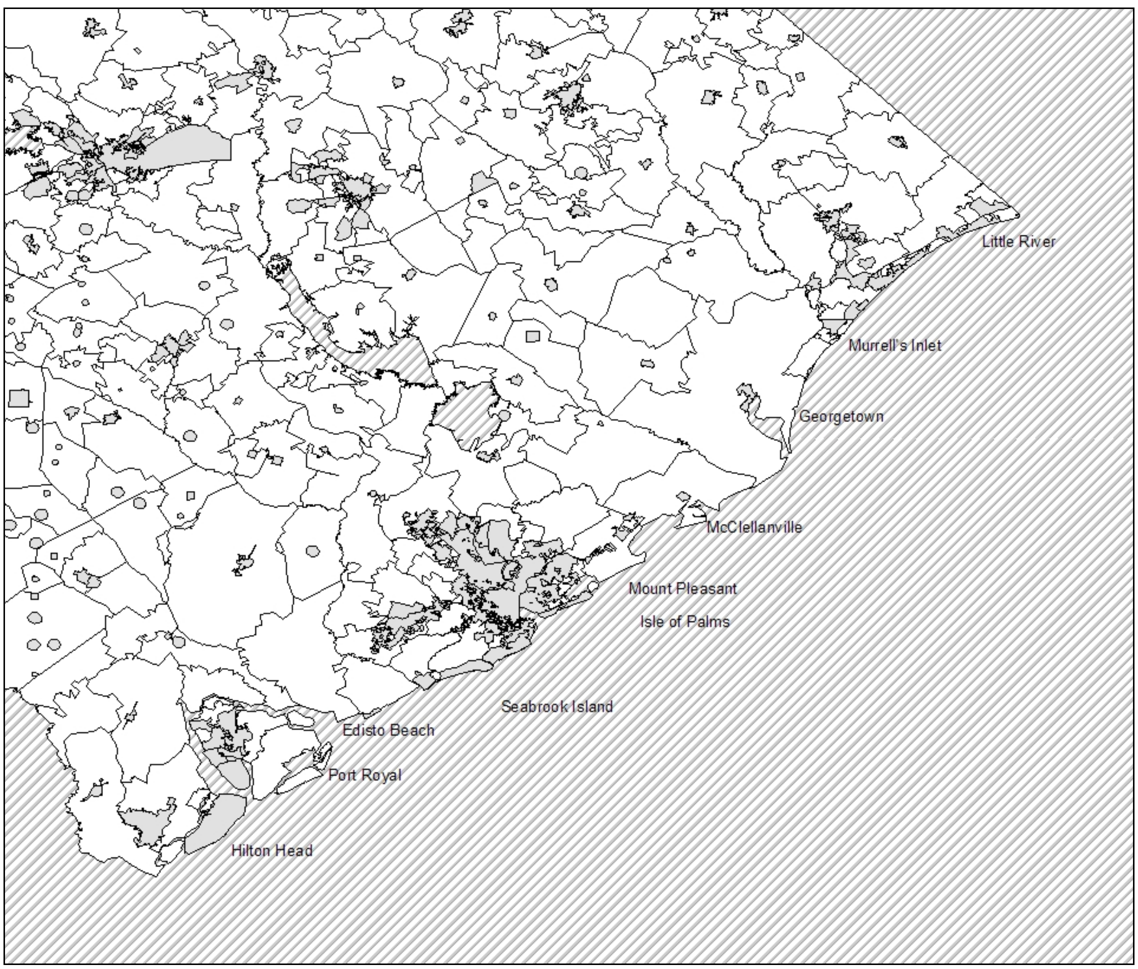


Figure 3-18. South Carolina communities with substantial fishing activity, as identified by South Atlantic Advisory Panels.

3.4.2.2.1 *Statewide*

Overview

South Carolina communities with substantial fishing activity are less developed than those in North Carolina and, over the past 20 to 30 years, the state has seen much more tourist-oriented development along its coasts than Georgia or North Carolina. In Horry County, the urban area of Myrtle Beach has expanded greatly in the past few decades, and much of the coastal area has been developed as vacation homes, condominiums, and golf courses. The communities most impacted by this development are Little River, Murrells Inlet, Pawleys Island, and Georgetown, although the latter three are located in Georgetown County (Figure 3-16). The same is true of rapid developing Charleston County, and the cities and communities of McClellanville, Mt. Pleasant, Sullivans Island, Wadmalaw and Edisto Islands feel the impact of urban sprawl from the city of Charleston. Further south along the coast, the Hilton Head Island resort development has been the impetus for changing coastal landscapes in the small towns of Port Royal, Beaufort, St. Helena Island, and Bluffton.

For the purpose of this document, only Little River will be singled out as a community with a high concentration of both commercial and recreational fishing, along with other types of coastal oriented leisure pursuits. Other analyses will consider South Carolina as a whole.

Commercial Fishing

While pockets of commercial fishing activities remain in the state, most are being displaced by the development forces and associated changes in demographics. The number of unlimited commercial permits, however, increased from 74 in 1999 to 87 in 2004, while the number of limited commercial permits decreased by 75 percent from 12 to 4 (SAFMC 2006).

Recreational Fishing

Many areas that used to be dedicated to commercial fishing endeavors are now geared towards the private recreational angler and for hire sector. The number of federal charter/headboat permits held by South Carolina residents increased from 41 in 1999 to 111 in 2004. The majority of saltwater anglers fish for coastal pelagic species such as king mackerel, Spanish mackerel, tunas, dolphins, and billfish. A lesser number focus primarily on bottom fish such as snapper and groupers and often these species are the specialty of the headboats that run out of Little River, Murrells Inlet, and Charleston. There are 35 coastal marinas in the state and 34 sportfishing tournaments (SAFMC 2006).

3.4.2.2.2 *Little River*

A history of Little River detailing its settlement in the late 1600s, its popularity as a vacation destination in the 1920s, and the concurrent rise in charter fishing, can be found in SAFMC (2006).

Figure 3-19. Little River, South Carolina, and surrounding area.
Source: Yahoo Maps, http://www.yahoo.com.

Overview

Figure 3-17 shows Little River and the surrounding area. A detailed description of changes in land-use patterns in and near Little River can be found in SAFMC (2006). Nearby Murrells Inlet is gradually transforming into a residential community for Myrtle Beach, and SAFMC (2006) argues this is also true for Little River.

Census data indicate the Little River population more than doubled from 1990 (3,470 persons) to 2000 (7,027 persons) and became more ethnically diverse with more people of American Indian or Alaskan Native, and Hispanic or Latino ethnicities. Median income increased by over 40 percent, from nearly $29,000 to over $40,000. Median home value also increased by over 40 percent, and median rent increased by nearly 35 percent. The percentage of those completing high school and those with a Bachelor's degree remained about the same. The poverty level decreased by nearly two-thirds to 4.7 percent, and the percentage of the population unemployed decreased from 6.6 percent to 3.4 percent. The percentage of residents employed in farming, fishing, and forestry decreased from 3.6 percent to 0.9 percent.

Commercial Fishing

In 1998, 38 residents of Little River were employed in fishing related industry according to the U.S. Census, with 81 percent of those employed by the marina sector. The number of snapper grouper unlimited harvest commercial permits held by community residents remained about the same between 1999 and 2004, from 15 permits to 16 permits, and one resident still held a limited harvest commercial license. Twenty-four Little River residents held state permits, with the most being saltwater licenses (8 permits) or trawler licenses (5 permits) (SAFMC 2006).

Recreational Fishing

As observed in other coastal communities described herein, the number of charter/headboat permits held by community residents increased from nine in 1999 to 16 in 2004. Three headboats operated out of Little River, and this part of the for-hire industry has a long and storied past in the community. Recreational fishing, primarily as headboat effort, came about as a way for commercial fishermen to continue fishing in the summer months. A detailed account of how recreational fishing developed in Little River can be found in Burrell (2000). Most of the private recreational fishing effort in this area occurs out of marinas in North Myrtle Beach, Myrtle Beach, and Murrells Inlet.

3.4.2.3 Georgia

3.4.2.3.1 *Statewide*

Overview

Only one community in Georgia (Townsend) lands a substantial amount of the snapper grouper species addressed in this amendment. Other parts of the state involved in the commercial harvest of seafood are focused on penaeid shrimp, blue crabs, and other finfish such as flounder, shad, croaker, and mullet.

Brunswick, the other community that has a commercial fishing presence, was once a more thriving commercial fishing community but now tourism and other related activities are competing for waterfront in the town. The most commonly harvested species in Brunswick are blue crab and different species of penaeid shrimp. According to the ACCSP website, there have been no snapper grouper species landed in Brunswick in since 2001. Other parts of the state involved in the commercial harvest of seafood are focused on penaeid shrimp, blue crabs, and other finfish such as flounder, shad, croaker, and some mullet.

Commercial Fishing

Unlike the pattern observed in many other areas, the number of unlimited commercial permits and limited commercial permits held by Georgia residents did not decrease from 1999 to 2004, with eight permits and one permit, respectively. In 2002, 947 vessels were registered with the state as commercial fishing vessels, 612 full-time state commercial fishing licenses were held by Georgia residents, and 147 residents held part-time state commercial fishing licenses. Within the commercial fishing fleet, four hundred and eighty two vessels had shrimp gear on board in that year (SAFMC 2006).

Recreational Fishing

As observed in other areas, the number of charter/headboat permits held by Georgia residents increased markedly from five permits in 1999 to 27 permits in 2004 (SAFMC 2006). Recreational vessels are located at Tybee Island close to Savannah, on the barrier islands off Brunswick, and between Savannah and Brunswick.

3.4.2.3.2 *Townsend*

A history of the area, describing its economy before the Civil War, the rise and fall of lumbering, and the building of the railroad, can be found in SAFMC (2006).
Townsend is a small, rural community. In 2005, the fish house in this community was relocating inland. It is not known if this relocation was successful and whether that fish house will be handling domestically harvested fish in the future.

Overview

The population of Townsend increased by over 1,000 residents from 2,413 in 1990 to 3,538 in 2000. Although there was a large relative increase in the number of Hispanic or Latino residents, from 2 to 27, most of the new inhabitants were white (1,465 in 1990 and 2,437 in 2000). Median income increased from approximately $23,000 to $35,000. Median home value nearly tripled, from $33,000 in 1990 to $98,100 in 2000, and monthly rent nearly doubled, from $213 to $431. In 1990, 26.9 percent of residents had less than a 9th grade education, but by 2000, that number declined to 11.0 percent. The percentage of those completing high school increased by nearly 15 percent, while the percent receiving a bachelor's degree or higher remained about the same (8.4 percent to 8.9 percent). The percent of the population with an income below the poverty line deceased by four percent, but remained high at 14.6 percent. The percentage of the population unemployed increased from 3.4 percent to 6.5 percent. There has been a sizeable decline in the percentage of the population employed in manufacturing, from 29.0 percent to 16.2 percent, and the proportion of the population employed in farming, fishing, and industry remained unchanged at approximately three percent.

Commercial Fishing

A comprehensive description of the historic and current fish houses of coastal Georgia and how they operate, focusing on Phillips Seafood of Townsend, can be found in SAFMC (2006). For nearly a decade, only one fish house has consistently handled snapper grouper species. A fish house in Brunswick may have landed these species in the past, but has not reported landings since 2001.

Recreational Fishing

Offshore recreational anglers do not often target or harvest snapper grouper species in Georgia (http://www.st.nmfs.noaa.gov/st1/recreational/overview/overview.html).

Of the snapper grouper species harvested, black sea bass, sheepshead, and vermilion snapper are the most commonly harvested fish at five, seven, and two percent, respectively. As of 2004, residents of the Savannah area held 11 charter/headboat permits for snapper grouper, and many of these vessels are docked on Tybee Island. Residents of the area around the city of Brunswick, including Jekyll Island and Sea Island, held four snapper grouper charter/headboat permits. Interestingly, unlike the cities profiled in the Carolinas, the number of federally permitted for-hire vessels has declined dramatically. From 2003 to 2004, the number of snapper grouper permitted for hire vessels declined from 43 to 27 (NMFS 2004). The cause of this decline is unknown.

3.4.2.4 Florida

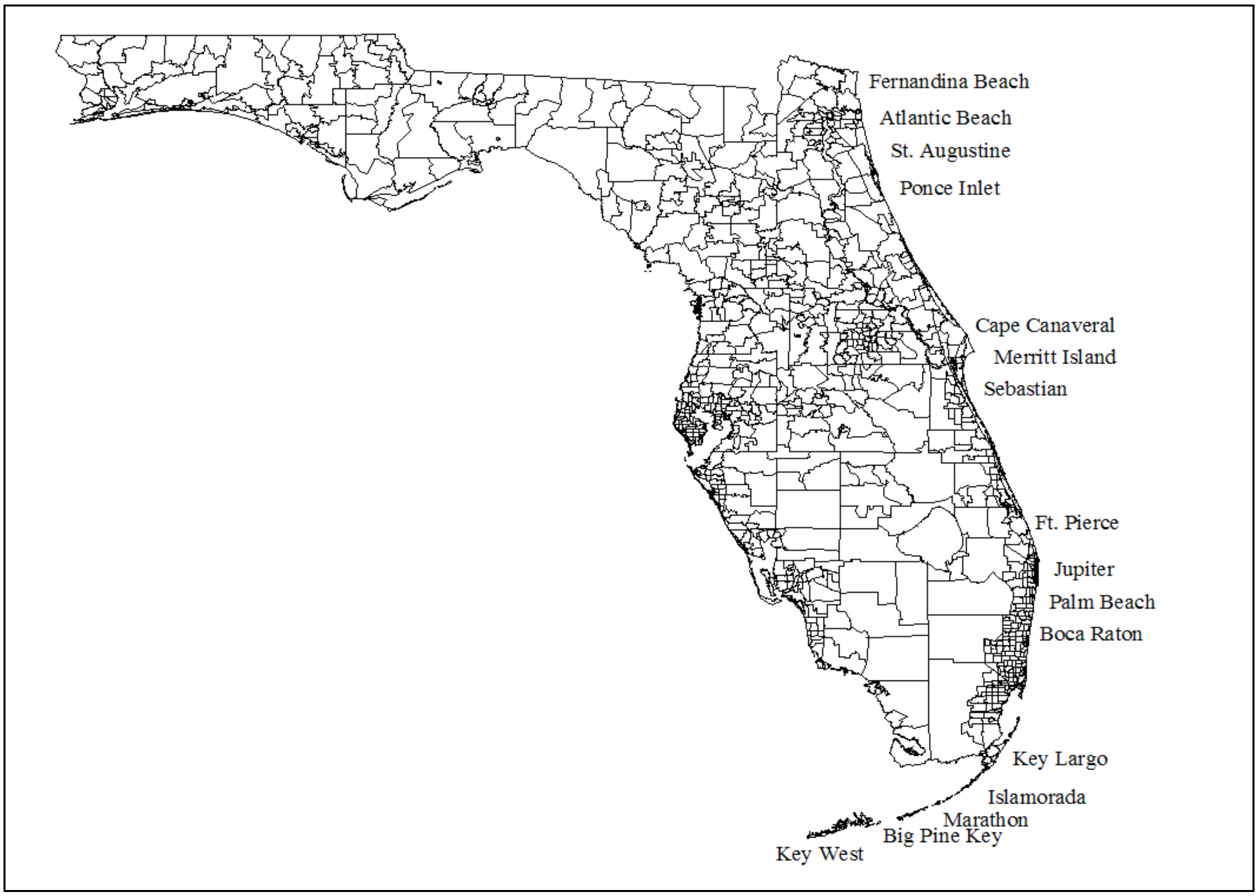


Figure 3-20. Florida communities with substantial fishing activity. Identified by South Atlantic Advisory Panels.
Source: Jepson *et al.* (2005).

3.4.2.4.1 *Statewide*

Overview

Florida stands apart from other states in the South Atlantic region in fishing behaviors, history, and demographics. Florida has one of the fastest growing populations in the United States, estimated to increase each day by 750 to 1,000 new immigrants. Twenty-five percent of all vacation homes in the United States are located in Florida's coastal counties (Coastal Ocean Resource Economics 2005).

Along with being heavily populated on land, coastal waters off Florida are also heavily used by recreational users of all kinds. This growth of a leisured class occupying coastal areas has led, in part, to conflicts over natural resource access and use-rights. One example of this type of struggle was the conflict over the use of gillnets in state waters. The conflict culminated in a state-wide ban on the use of gillnets, which dealt a resounding blow to many Florida fishermen, ending in the loss of many commercial fishing properties and the displacement of many fishermen. There have also been conflicts between the "environmental community" and commercial fishermen over the closing of the *Oculina* Bank off of Florida's central coast, and the creation of both the Florida Keys National Marine Sanctuary and the Tortugas Sanctuary, both in the Keys.

The natural geography of Florida also sets it apart from other South Atlantic states, particularly in the area from central Florida through the Keys. The weather is amenable to fishing almost year round, though hurricanes in 2004 were particularly devastating and took a toll on all fisheries in the state, both east and west coast. There was also a cold water event that started near West Palm Beach in 2003, which moved up the east coast causing a substantial decline in snapper grouper fishing that year. The continental shelf is much narrower in Florida than elsewhere in the region, allowing fishermen to access deep waters quickly and return the same day. Finally, the species of snapper grouper available to fishermen in southern Florida are different than further north, with yellowtail snapper, gag and black grouper, and other alternative species such as stone crab, spiny lobster, dolphin, kingfish, and billfish allow a greater variety of both commercial and recreational fishing opportunities. These fisheries are important to many Florida communities identified by the Snapper Grouper Advisory Panel as shown in Figure 3-18.

Commercial Sector

Considering the high population growth rates and emphasis on a tourism economy in Florida, the commercial fishing sector in Florida is still robust in some areas. Although total landings and dollar values of all species landed on the Florida East coast have decreased from 1998 to 2003 (from nearly 30 million pounds worth approximately $44 million to approximately 23 million pounds worth $33 million dollars; SAFMC 2006), there is still a considerable commercial fishing presence in east Florida.

Recreational Sector

While the commercial fishing industry, though still strong, may be in decline, the recreational sector appears to be stable. Excluding the headboat sector, although the number of participants declined in 2004 to approximately 1.9 million from 2.2 million in 2003 and from a high of 2.6 million in 2001, the number of trips taken in 2003 and 2004 remained at approximately 21 million. As may be recalled from Table 3-17, the headboat sector has exhibited a steady decline. In 2004, many homeports hosted at least one vessel holding both federal charter/headboat permits and federal unlimited commercial permits. Key West and Miami stand out, with 35 and 15 such vessels, respectively.

3.4.2.4.2 *Cape Canaveral*

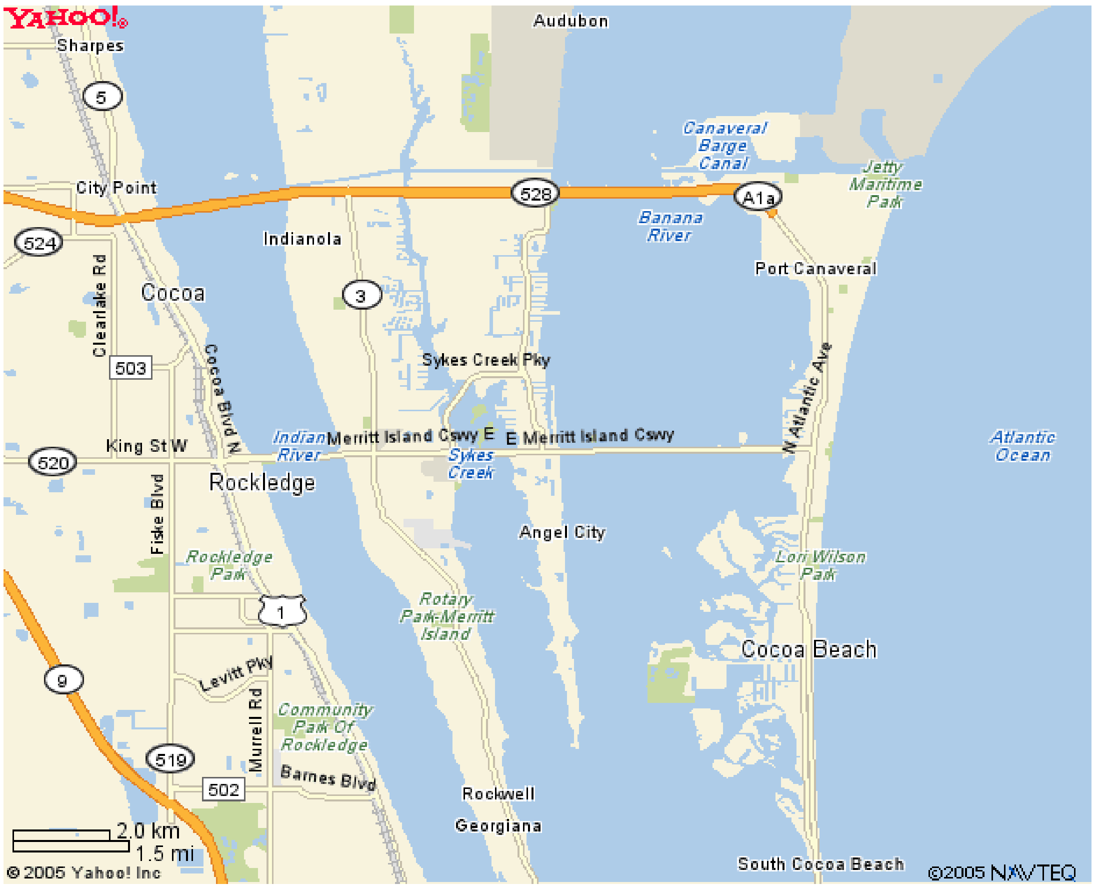


Figure 3-21. Area map of Cape Canaveral, Florida.

A detailed history of Cape Canaveral, Florida, from its first habitation 10,000 years ago, its settlement by the United States in the early 1800s, the establishment of the Banana River Naval Air Station in World War II, to NASA's arrival in 1952, can be found in SAFMC (2006). A map of the area is shown in Figure 3-19.

Overview

Cape Canaveral has a fairly homogenous, aging population, with those 65 years and older growing from 16.1 percent of the population to 23.1 percent since 1990. Overall, educational attainment has increased. The number of persons who speak a language other than English at home has increased 2.5 percent, and fewer people have incomes below the poverty line. Unemployment has decreased, but fewer people are in the labor force today than in 1990, perhaps due to an aging population. The percentage of persons in a service occupation has grown from 14.1 percent to 20.4 percent, while there has been a sizeable decline in the percent of residents employed in forestry, mining, and fishing, from 2.7 percent in 1990 to 0.4 percent in 2000.

Fisheries in central Florida generally operate in two different environments, inshore river or inlet fishing with associated lagoons, which primarily attracts recreational fishing, and offshore areas, where commercial fishing primarily occurs. Popular inshore areas include the Indian, St. Johns, and Banana Rivers and associated lagoons. Commercial exploitation of the rivers and lagoons declined after implementation of the Florida Net Ban of 1994.

Many commercial fish houses have gone out of business or have shifted to selling imported products to supplement their local supplies. At the same time, the number of businesses possessing federal dealer permits has increased from about 180 in 1999 to a little over 200 in 2001. There is some industry speculation that the increasing number of dealer permits reflects increased decentralization in the domestic fishing markets and the need to increase profits by self-marketing.

Commercial Fishing

Cape Canaveral draws fishermen from Cocoa/Cocoa Beach, Merritt Island, Melbourne, and Titusville. These fishermen target many snapper grouper species, as well as coastal migratory pelagics such as mackerel, highly migratory species such as sharks and swordfish, and shellfish such as oysters, quahogs, and shrimp. Snowy grouper and tilefish (particularly golden or sand tilefish) landings exceed 10,000 pounds per year. Total commercial landings decreased, however, from 8.9 million pounds to 6.0 million pounds from 1998 to 2004 (SAFMC 2006).

The number of unlimited commercial permits in this area increased from nine in 1999 to 16 in 2004. The number of limited commercial permits fluctuated over this period, but ultimately declined from four permits in 1999 to one in 2004 (SAFMC 2006).

The number of Florida Saltwater Products Licenses issued to residents of Brevard County (where Cape Canaveral is located) decreased from 872 in 1998/99 to 492 in 2004/05 (SAFMC 2006). This license is needed to sell marine species in the state. There have also been declines in license sales for various crustacean fisheries.

Recreational Fishing

In 2004, Brevard county supported 36 bait and tackle stores, with five in Cape Canaveral, and 70 marinas with over 3,000 wet slips, indicating the importance of recreational fishing to the area. Fourteen fishing tournaments consistently occur in the area. Additional details about these businesses and tournaments can be found in SAFMC (2006).

As in other coastal areas of Florida, there is a fairly heavy presence in Brevard County of charter boat businesses, private marinas, and other associated businesses catering to the recreational fishing sector. The number of federally permitted charter/headboat vessels in Cape Canaveral increased from zero to seven from 1999 to 2004. According to Holland *et al.* (1999), there were approximately 32 charter boats and 2 headboats in the Canaveral/Melbourne area. Current estimates from permit files show at least 38 for-hire vessels with Snapper grouper permits homeported in Cape Canaveral or Port Canaveral, which includes approximate four headboats. That is likely a low estimate for total the total number of for-hire vessels in the area since it does not include vessels in the nearby Merritt Island and in the Cocoa/Cocoa Beach areas.

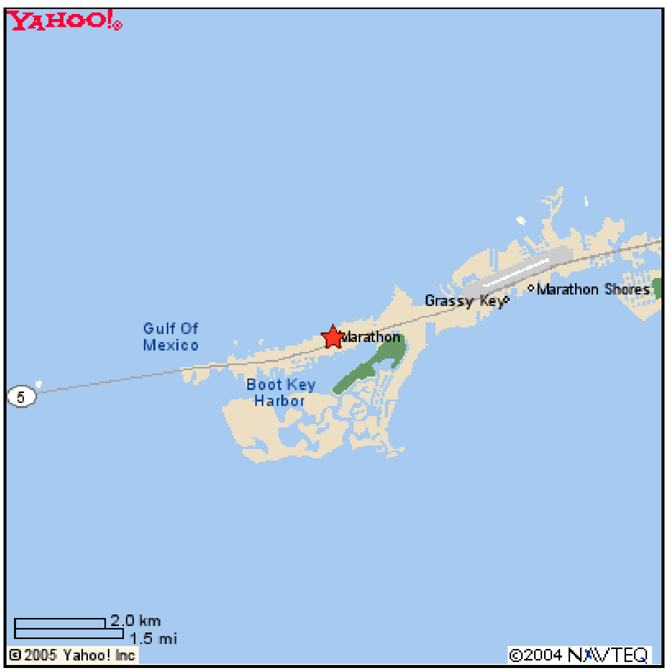


Figure 3-22. Marathon, Florida.
Source: Yahoo Maps, http://www.yahoo.com.

3.4.2.4.3 *Marathon*

A history of Marathon, detailing its settlement in the 1800s, the rise of industry, the effects of the Great Hurricane of 1935, the rise of tourism, and the importance of commercial fishing, can be found in SAFMC (2005). Figure 3-20 shows a map of Marathon, which lies in Monroe County.

Overview

Census data from 1990 and 2000 show there was an increase in overall population in Marathon from 8,857 in 1990 to 10,255 in 2000. During this period, the Hispanic population more than doubled, increasing from 1,040 to 2,095. This increase accounts for more than two thirds of the total population increase for the area. During this period of time, the median household income increased from approximately $25,000 to over $36,000.

Marathon has maintained a relatively high percentage of the total population, 4.1 percent in 2000, involved in farming, fishing, and forestry, though the percentage has declined from 8.7 percent in 1990. Since there is little commercial farming and forestry occurring in the area, the majority of percentage can be assumed to relate to fishing activities. The percentage of people that live below the poverty line decreased slightly from 15.1 percent in 1990 to 14.2 percent in 2000.

Commercial Fishing

In 1998, 184 Marathon residents were employed in fishing related industry according to the Census data, with 39 of those in the "fishing" category, 92 employed in "fish and seafood," and 47 employed by marinas (SAFMC 2006). The number of unlimited commercial permits held by community residents decreased from 65 permits to 44 permits between 1999 and 2004. Similarly, the number of limited commercial permits decreased from 43 permits to 31 permits.

Recreational Fishing

While most of the waters around Marathon are open to fishing, some areas have been set aside for eco-tourism and fish-viewing by divers and snorkelers. Sombrero Reef, said to be one of the most beautiful sections of North America's only living coral barrier reef, lies several miles offshore and is protected by the Florida Keys National Marine Sanctuary (http://www.fla-keys.com/marathon).

The importance of recreational boating and fishing to the economy of Marathon is shown by the businesses reliant upon it. As of 2004, there were at least 25 charter boat businesses, two party boat businesses, eight bait and tackle shops, and 27 marinas in the area. The number of vessels holding the federal charter/headboat permit increased from 16 in 1999 to 30 in 2004. In addition, there were seven fishing tournaments in Marathon. Most tournaments are centered on tarpon fishing. However, there are inshore and offshore fishing tournaments as well. These tournaments begin in February and run through June. Hotels and restaurants fill with participants and charters, guides and bait shops reap the economic benefits of these people coming to the area. These tournaments are positive economic pulses in the local economy, one that thrives on the existence of tourism and recreational fishing.

4 Environmental Consequences

4.1 Extend FMU

Alternative 1 (no action). Do not change the current management boundaries of the Snapper Grouper FMU.

Alternative 2. Extend the management boundaries for all species in the Snapper Grouper FMU northward to include the Mid-Atlantic Council's jurisdiction (except for black sea bass, golden tilefish, and scup).

Alternative 3. Extend the management boundaries for all species in the Snapper Grouper FMU northward to include the Mid-Atlantic and New England Council's jurisdiction (except for black sea bass, golden tilefish, and scup).

4.1.1 Biological Effects

The Reauthorized Magnuson-Stevens Act requires the Councils to set management measures to ensure total mortality (fish that are retained and mortality of fish that are discarded) is less than or equal to the Annual Catch Limit (ACL). The South Atlantic Council proposes to do this by specifying ACTs and keeping total mortality at or below the sector-specific Annual Catch Targets (ACTs). Available data do not support separate stocks in the Mid-Atlantic and New England Council's jurisdiction except for black sea bass, golden tilefish, and scup. Assessments conducted through the SEDAR process include data from the Mid-Atlantic and New England areas. Therefore, the South Atlantic Council must address harvest north of North Carolina. Alternatives are shown in Figure 4-1.

The Council is concerned about a northward expansion of a fishery for snapper and grouper species, resulting in large catches of tilefish and groupers. The Council's Snapper Grouper Advisory Panel (AP) presented information documenting increasing catches of blueline tilefish and snowy grouper off the coast of Virginia. In addition, Virginia reported state records of recreationally-caught blueline tilefish and snowy grouper in recent years. In response, the Virginia Marine Resources Commission has since established commercial and recreational limits on the harvest and landing of tilefish and grouper off the coast of Virginia (Table 4-1).

Table 4-1. Commercial and recreational limitations on the harvest and landings of tilefish and groupers in Virginia.

	Groupers	**Tilefish**
Commercial	175 pounds/vessel/day	300 pounds/vessel/day
Recreational	1 fish/person/day	7 fish/person/day
The following species are considered a grouper: black, gag, goliath, misty, Nassau, red, snowy, tiger, warsaw, yellowedge, yellowfin, and yellowmouth grouper; and coney, graysby, red hind, rock hind, scamp, speckled hind, wreckfish. The following species are considered a tilefish: blueline, golden, and sand tilefish.		

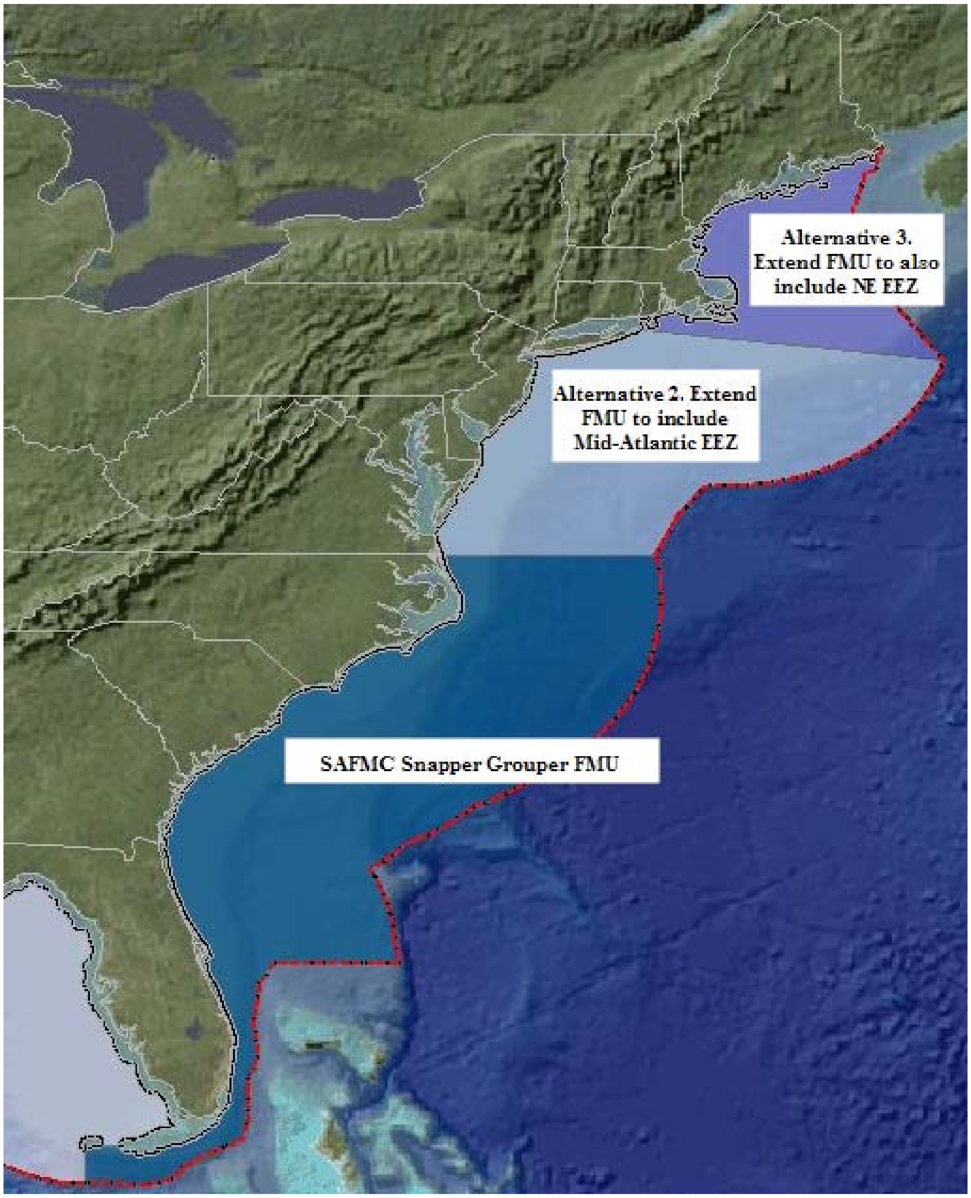


Figure 4-1. Fishery Management Unit (FMU) alternatives.
Source: Roger Pugliese.

The Council is considering extending the range of the snapper grouper fishery management plan for some species northward in order to conserve and manage these species. The current boundaries would not be changed for black sea bass, golden tilefish, and scup since these species are considered separate stocks north of Cape Hatteras, North Carolina. These species are currently covered by fishery management plans north of Cape Hatteras.

Alternative 1 would maintain the current management boundaries for species in the snapper grouper fishery management unit (FMU). Currently, a number of snapper grouper species are landed in the Mid-Atlantic region by commercial and recreational fishermen (Tables 4-2 and 4-

3). The low level of snapper grouper landings in the Mid-Atlantic and New England regions and information from available sources (http://search.msn.com/results.aspx?q=Fishbase&FORM=MSNH11&mkt=en-us) suggests the Mid-Atlantic and New England represent the northern part of the ranges for some of the snapper grouper species. It should be noted however that MRFSS uses dock side intercepts to estimate the catch rate of recreational fisheries. Recreational harvest is lower for certain species in the snapper grouper FMU caught in deeper water (e.g., snowy grouper and golden tilefish) compared to other species. As a result, sampling error is high for these species and there may be an underestimation of the recreational harvest.

It has been suggested snapper grouper species are becoming more common in the northern part of their range in response to increases in average water temperature due to global warming (Parker and Dixon 1998).

Two of the species (snowy grouper and red snapper) caught north of North Carolina are overfished and experiencing overfishing. As the number of fishermen increase and more regulations are imposed on species in the Mid-Atlantic region, it is possible snapper grouper species could experience increased fishing pressure. Furthermore, increased fishing pressure could be placed on species in the Mid-Atlantic region, such as snowy grouper, which have strict regulations in the South Atlantic. Snowy grouper and red snapper are extremely vulnerable to overfishing because they are long-lived and achieve large sizes (SEDAR 4 2004, SEDAR 15 2008). In addition, snowy grouper change sex and are found in aggregations over structure easily recognized on a fathometer. Blueline tilefish is also a long-lived species but its overfishing and overfished status is unknown. Harris *et al.* (2004) indicate heavy fishing pressures was likely responsible for significant decreases in the mean age of males and females from 1982-87 to 1996-99 (15 to 8.6 yr for males; 17.7 to 11.2 yr for females).

Alternative 2 would extend the management boundaries for all species in the Snapper Grouper FMU northward to include the Mid-Atlantic Council's jurisdiction (except for black sea bass, golden tilefish, and scup). Currently, recorded commercial and recreational landings of snapper grouper are very small (Tables 4-2a and 4-2b). Despite the low recorded landings of these species, there is information suggesting landings of species such as blueline tilefish and snowy grouper are increasing off the Mid-Atlantic states.

The South Atlantic snapper grouper fishery is a limited access fishery and vessel owners may only obtain a permit if they first purchase two snapper grouper permits. Due to the cost of snapper grouper federal permits and low occurrence of snapper grouper species in the Mid-Atlantic region, the action to extend management boundaries to the north is likely to keep commercial landings at current levels. Furthermore, recreational fishermen would have to adhere to bag and size limits for snapper grouper species. Therefore, this action would have positive biological effects for snapper grouper species in the mid-Atlantic region by restricting take of these species.

Table 4-2a. Recreational landings (pounds whole weight) of snapper grouper species (excluding black sea bass, golden tilefish, and scup) from Mid-Atlantic.

Year	Species	Pounds	PSE
2004	Gray Triggerfish	66,978	25.5
2004	Sheepshead	8,448	0
2004	Atlantic Spadefish	298,128	36.1
2005	Gray Triggerfish	182,038	40.4
2005	Sheepshead	121,233	74.6
2005	Atlantic Spadefish	314,147	38.1
2006	Gray Triggerfish	15,247	52.5
2006	Sheepshead	101,689	58.7
2006	Atlantic Spadefish	505,720	38.3
2007	Gray Triggerfish	140,041	20.2
2007	Sheepshead	17,782	36.8
2007	Atlantic Spadefish	757,900	15.9
2007	Blueline tilefish	4,220	78.8

Source: http://www.st.nmfs.noaa.gov/st1/recreational/queries/index.html

Alternative 3 would extend the management boundaries for all species in the Snapper Grouper FMU northward to include the Mid-Atlantic and New England Council's jurisdiction (except for black sea bass, golden tilefish, and scup). The beneficial biological effect of **Alternative 3** would be greater than **Alternative 2** since management measures for snapper grouper species would be applied to a larger area. However, since the actual abundance of snapper grouper species in New England is small (Table 4-3 and 4.4), the biological effect of **Alternative 2** would be similar to **Alternative 3**.

The recorded landings of snapper grouper species in the Mid-Atlantic and New England are small. Therefore, while the biological effect of extending management to these areas in **Alternatives 2 and 3** would be positive, the overall reduction in harvest of these species achieved through this action would likely be minor. However, if landings are actually larger than recorded for these species then the positive biological effects of this action would be more substantial.

Table 4-2b. Commercial landings (pounds whole weight) of snapper grouper species (excluding black sea bass, golden tilefish, and scup) in Mid-Atlantic.

Year	Species	Metric Tons	Pounds
2004	AMBERJACK	0.3	679
2004	GROUPER, SNOWY	0	70
2004	JACK, CREVALLE	0	65
2004	RUNNER, BLUE	0	26
2004	SHEEPSHEAD	0	33
2004	SNAPPER, RED	0.1	164
2004	SNAPPERS	1.1	2,397
2004	TILEFISH, BLUELINE	1.3	2,961
2004	TILEFISH, SAND	0	22
2004	TILEFISHES	1.1	2,337
2004	WRECKFISH	0	25
2005	AMBERJACK	0.1	148
2005	SHEEPSHEAD	0.1	114
2005	SPADEFISHES	0.1	139
2005	TILEFISH, SAND	0.3	559
2005	TILEFISHES	0	2
2006	SHEEPSHEAD	0.3	601
2006	SPADEFISHES	0	34
2006	TILEFISH, SAND	0.7	1,500
2006	TILEFISHES	0	13
2007	AMBERJACK	0	3
2007	GROUPER, YELLOWEDGE	0.2	421
2007	JACK, CREVALLE	0	9
2007	RUNNER, BLUE	0	15
2007	SHEEPSHEAD	0.2	392
2007	SNAPPER, RED	0.1	235
2007	SNAPPERS	1.6	3,470
2007	TILEFISH, SAND	0.4	880
2007	WRECKFISH	0	29

Source http://www.st.nmfs.noaa.gov/st1/commercial/landings/annual_landings.html

Table 4-3. Recreational landings (pounds whole weight) of snapper grouper species (excluding black sea bass, golden tilefish, and scup) from New England.

Year	Species	Pounds	PSE
2004	Gray Triggerfish	5,013	100
2007	Gray Triggerfish	5,939	99

Source: http://www.st.nmfs.noaa.gov/st1/recreational/queries/index.html

Table 4-4. Commercial landings (pounds whole weight) of snapper grouper species (excluding black sea bass, golden tilefish, and scup) in New England.

Year	Species	Metric Tons	Pounds
2004	GROUPER, YELLOWEDGE	0	2
2004	GROUPERS	1.4	3,194
2004	SHEEPSHEAD	0	8
2004	SNAPPER, RED	0	4
2004	SNAPPERS	0	75
2004	TILEFISH, BLUELINE	1	2,190
2004	TILEFISH, SAND	0	15
2004	TILEFISHES	70.2	154,753
2005	GROUPERS	0	49
2005	RUNNER, BLUE	0.1	165
2007	SNAPPERS	0.8	1,851
2007	TILEFISH, BLUELINE	0.9	1,924

Source http://www.st.nmfs.noaa.gov/st1/commercial/landings/annual_landings.html

The Magnuson-Stevens Act now requires the Council to ensure total mortality is below the ACL to prevent overfishing. Catches from the Mid-Atlantic and New England Council areas are included in the SEDAR stock assessments and must be counted towards the ACTs.

If the Council chooses Alternative 2 or 3, then Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern (EFH-HAPCs) would need to be specified for the areas north of North Carolina. Members of the IPT responsible for habitat issues have discussed this and agreed that it would be most efficient to consolidate the EFH review, update, and revision under the Comprehensive Ecosystem-Based Amendment II. This maximizes the efficiency of refining the designations as well as looking comprehensively at overlaps among species, gaps that need to be close, etc. Scoping for the CE-BA II will take place in January/February 2009 and completion is anticipated by the end of 2009. Therefore this works well with the timing for Snapper Grouper Amendment 17 with a target implementation date of January 1, 2010.

Extending the snapper grouper FMU will not directly affect protected species, because these parameters are not used in determining immediate harvest objectives.

4.1.2 Economic Effects

Alternative 1 maintains current management boundaries in the Snapper Grouper FMU. As mentioned above, increased fishing pressure could occur on overfished species like snowy grouper and red snapper. This could have negative long-term economic impacts on commercial fishermen in the South Atlantic. With the possibility of the northern movement of species, increased fishing pressure in areas north of the South Atlantic Council's jurisdiction could prevent the timely adherence to rebuilding schedules for overfished species. This would result in longer rebuilding periods and put off landings that would otherwise be made by South Atlantic fishermen.

Alternative 2 would extend the management boundaries for all species in the Snapper Grouper FMU northward to include the Mid-Atlantic Council's jurisdiction (except for black sea bass, golden tilefish, and scup). Such action would likely curb landings of snapper grouper species off of Mid-Atlantic states (but not the New England states) and result in positive economic benefits to South Atlantic fishermen. **Alternative 2** would contribute to rebuilding schedules being met in a timely manner which would in turn lead to higher landings than those that would occur under **Alternative 1**.

Alternative 3 would extend the management boundaries for all species in the Snapper Grouper FMU northward to include the Mid-Atlantic and New England Councils' jurisdiction (except for black sea bass, golden tilefish, and scup). This action would result in positive long-term economic benefits due to the larger management jurisdiction. **Alternative 3** would have greater long-term economic benefits compared to **Alternative 2**.

Under **Alternatives 2 and 3**, fishermen harvesting species in northern areas outside the South Atlantic Council's jurisdiction would be required to purchase two permits in order to continue fishing for species included in the Snapper Grouper FMU. This will have negative economic impacts on these fishermen.

Non-use values, like value of biodiversity of species and existence value, associated with alternatives are highest under **Alternative 3** because this alternative offers the greatest level of protection. Non-use values are lowest under **Alternative 1** because it poses the greatest risk to rebuilding stock levels.

4.1.3 Social Effects

Under **Alternatives 2 and 3**, fishermen harvesting species in northern areas outside the South Atlantic Council's jurisdiction will be required to purchase two permits in order to continue fishing for species included in the Snapper Grouper FMU. This will have negative social effects for fishermen because it is an additional regulation they will be required to adhere to. Due to the financial burden of purchasing two permits, it is not likely that people harvesting snapper grouper species in northern areas will make the required investment. This can result in feelings of being "shut out" of the fishery and increased tension between fishery managers and resource users. If permits are purchased, it is likely that the increased financial burden will have negative social impacts resulting from increased financial stress.

4.1.4 Administrative Effects

The **No Action Alternative** would not change the current FMU boundaries, and the expansion of a fishery for snapper grouper northward would not be addressed. Under this alternative, concern about the potential of large catches of tilefish and groupers north of the current FMU area would persist, and catch limits imposed by the Virginia Marine Resources Commission would remain the only management strategies for tilefish and grouper off the coast of Virginia.
Alternative 2 would incur significant administrative impacts since all vessel owners harvesting and/or possessing snapper grouper species in federal waters, with the exception of black sea bass, golden tilefish, and scup, would be required to obtain a federal snapper grouper permit. The South Atlantic snapper grouper fishery is a limited access fishery and vessel owners may only obtain a permit if they first purchase two snapper grouper permits. The permit database would need to be expanded to include those fishermen fishing in the Mid-Atlantic Council's area of jurisdiction. This process is expected to be quite cumbersome and time consuming.

Alternative 3 would incur the same administrative impacts as those described under **Alterative 2**; however, they would exist to a slightly higher degree since the area affected would be substantially larger. Impacts would only be marginally greater under **Alternative 3** than **Alternative 2** since the number of vessel owners seeking a South Atlantic Snapper Grouper Permit would likely not be significant in the northeast region due to climactic conditions, which make New England waters largely unsuitable for prolific snapper grouper populations. The permit data base would have to be extended to include the much larger geographic area between Virginia and Maine if **Alternative 3** were to be implemented. As stated earlier, the exact mechanism by which the South Atlantic permit system would absorb the snapper grouper vessel information of the Mid-Atlantic and North Atlantic permit databases is unknown, but is expected to entail significant coordination and database reconfiguration efforts.

4.1.5 Council's Conclusions

4.2 Specification of Optimum Yield

Note: The Council may specify more than one preferred alternative for this action as 10 species are under consideration.

Table 4-5. OY alternatives under consideration for the ten species undergoing overfishing.

Alternatives	OY equation	F_{OY} equals
Alternative 1 (no action).	For black sea bass, golden tilefish, and snowy grouper OY equals the yield produced by F_{OY}. F_{OY} equals (75%)(F_{MSY}). 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}. F_{OY} equals (75%)(F_{MSY}). For the other species, OY equals the yield produced by F_{OY}. $F_{40\%SPR}$ is used as the F_{OY} proxy.	Either (75%)(F_{MSY}) or $F_{40\%SPR}$ depending on the species.
Alternative 2.	OY equals the yield produced by $F_{OY.}$ 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}.	(55%)(F_{MSY})
Alternative 3.		(65%)(F_{MSY})
Alternative 4.	OY equals the sum of the sector ACTs.	**ZZZ** pounds (will be added after the Committee & Council specify ACTs.)

4.2.1 Biological Effects

At their June 2008 meeting, the SSC specified ABCs for the 6 SEDAR assessed species as being equal to the yield at 75% F_{MSY}. The SSC considered these ABC determinations to be "interim" until more robust approaches could be used. Given that the Council has set OY = 75% F_{MSY} for snowy grouper, black sea bass, golden tilefish, vermilion snapper, and gag in recent amendments, and due to changes in the reauthorized Magnuson-Stevens Act, the Council needs to reconsider their definition of OY.

Alternatives 1-4 are distinguished from one another by the level of risk (and associated tradeoffs) each would assume. **Alternative 1** would retain the OY definition (OY = yield at $F_{40\%SPR}$) established in Snapper Grouper FMP Amendment 11 for red snapper, red grouper, black grouper, speckled hind, and warsaw grouper; however, the value for OY was never specified due to data limitations. This SPR-based definition specified in Snapper Grouper Amendment 11, identified a fixed fishing mortality rate, which would reduce the spawning biomass per recruit to 40% of the unfished level. Not designating an OY value or designating one not based upon the best available science could have adverse, indirect effects on stocks. Furthermore, specification of OY is a required component of the FMP. If OY was not specified, there would be no benefits to the biological, ecological, economic, and social environments by influencing the development of fishery management measures.

Alternative 1 would also retain the OY definition (OY = yield at 75% F_{MSY}) and values specified for black sea bass and snowy grouper in Snapper Grouper Amendment 15A as well as golden tilefish in Snapper Grouper Amendment 15B. Snapper Grouper Amendment 16, which has been sent to the Secretary of Commerce for review, would set OY equal to the yield at 75% F_{MSY} for vermilion snapper and gag. Restrepo *et al*. (1998) state "that fishing at 75% of F_{MSY} would result in equilibrium yields at 94% of MSY or higher, and equilibrium biomass levels between 125% and 131% of B_{MSY} – a relatively small sacrifice in yield for a relatively large gain in biomass." A simple deterministic model described in Mace (1994) to evaluate the effects of fishing at 75% of F_{MSY} indicates the ratios between the yield fishing at 75% of F_{MSY} relative to fishing at F_{MSY} are consistent across a broad set of life history characteristics ranging from species such as snowy grouper and golden tilefish with low natural mortality rates to more productive species like vermilion snapper and black sea bass. Restrepo *et al*. (1998) determined the ratio of the yield of fishing at 75% of F_{MSY} relative to F_{MSY} would range from 0.949 to 0.983. Restrepo *et al*. (1998) also indicated fishing at this rate under equilibrium conditions is expected to reduce to the risk of overfishing by 20-30%. Therefore, the biological and ecological effects of this definition are still expected to be positive. However, under **Alternative 1**, the buffer between target (OY) and limit (MSY) for some species may be too small to account for management and implementation uncertainty when specifying ACLs and ACTs (Table 4-6).

Table 4-6. MSY and OY at equilibrium for recently assessed species in experiencing overfishing in Amendment 17.

SEDAR Assessed Species	Last year of data	MSY at equilibrium	OY at equilibrium (yield at 75% Fmsy)
Snowy grouper	2002	313,056 lbs ww	303,871 lbs ww
Golden tilefish	2002	336,425 lbs ww	326,554 lbs ww
Black sea bass	2004	2,777,825 lbs ww	2,742,551 lbs ww
Gag	2004	1,238,000 lbs gw	1,217,000 lbs gw
Vermilion snapper	2007	1,665,000 lbs ww	1,635,000 lbs ww
Red snapper (based on F40%)	2006	1,949,000 lbs ww	1,883,000 lbs ww

The more conservative the estimate of OY, the larger the sustainable biomass. The biomass of the population would be least when the rate of fishing mortality is equal to F_{MSY} and would be greatest when the fishing mortality rate was equivalent to 55% of F_{MSY}. Therefore, a larger sustainable biomass associated with a fishing mortality rate at 55% of F_{MSY} (**Alternative 2**) would benefit the stocks, but could have negative economic and social effects, in the short-term, because reductions in harvest would be needed to achieve larger sustainable biomass. **Alternative 2** and in some cases **Alternative 4** would create a greater separation between the target (OY) and the limit (MSY) than **Alternatives 1 or 3** and could offer a greater buffer due to management and implementation uncertainty. **Alternative 2** could represent the most precautionary management program of those considered for each species. **Alternative 2** could provide the largest buffer between MSY and OY relative to the other alternatives and, consequently, the greatest assurance that management measures designed to achieve OY would be effective in sustaining stocks over the long-term.

Alternative 4 would base OY on the sum of the ACTs specified for the sectors. Since Snapper Grouper Amendment 17 will set ACL and ACT at or below the ABC, **Alternative 4** could specify an OY that could less than the value specified in **Alternative 2** (55% F_{MSY}) or equal to the yield at the default 75%F_{MSY} identified for assessed species in **Alternative 1**. For some species **Alternative 4** might be the most conservative alternative and have the greatest biological benefit; whereas for other species where management and implementation uncertainty are small, the OY could be higher than the OY specified in **Alternatives 2 and 3** and might be closer to the yield at 75%F_{MSY}. Therefore, while **Alternative 4** might not set the most conservative OY of the alternatives considered for a species, the value would likely be appropriate for an individual species since it would take into consideration uncertainty associated with the effectiveness of management measures in achieving a target catch and constitute the necessary buffer to ensure a species did not experience overfishing.

Alternative 3 defines OY to equal the average yield associated with fishing at 65% of F_{MSY}. This is less conservative than **Alternative 2** and in some cases **Alternative 4** because it would further reduce the precautionary buffer between OY and MSY. Therefore, this definition would provide fewer indirect benefits to the biological and ecological environment, and could make it more difficult to sustain stocks over the long term.

Specifying OY for these species will not directly affect protected species, because these parameters are not used in determining immediate harvest objectives.

4.2.2 Economic Effects

Commercial Fishing

While specification of OY does not directly impact the economic environment, it will be used to determine the commercial quota. Because **Alternative 2** could represent the most precautionary management program for each species, it would therefore be expected to have the greatest long-term economic benefits. However, **Alternative 2** would likely lead to the largest short-term negative economic impacts because it would result in a lower commercial quota than other alternatives. However, as explained above, for some species, **Alternative 4** may be the most conservative alternative, have the greatest biological benefit, and result in the largest long-term economic benefits and short-term negative economic impacts. **Alternative 3** is less conservative than **Alternative 2** and in some cases, **Alternative 4** because it would reduce the precautionary buffer between OY and MSY, providing fewer benefits to the biological environment. This would make it more difficult to sustain stocks, and consequently economic benefits, in the long term.

Non-use values, like existence and bequest values, would be highest under **Alternative 2** and, for some species, **Alternative 4** because these alternatives support the most precautionary management approaches. Therefore, they help to ensure long-term biological and ecological benefits.

Recreational Fishery

While specification of OY does not directly impact the economic environment, it will be used to determine the recreational allocation. Subsequent decisions on specific management measures affecting the recreational sector would be conditioned by chosen OY and allocation. As with the commercial fishery, **Alternative 2** may be expected to have the greatest long-term economic benefits and largest short-term negative economic impacts because it would result in a lower recreational allocation than other alternatives. However, as explained above, for some species, **Alternative 4** may be the most conservative alternative, have the greatest biological benefit, and result in the largest long-term economic benefits and short-term negative economic impacts. **Alternative 3** is less conservative than **Alternative 2** and in some cases, **Alternative 4** because it would reduce the precautionary buffer between OY and MSY, providing fewer benefits to the biological environment. This would make it more difficult to sustain stocks, and consequently economic benefits, in the long-term

4.2.3 Social Effects

While long-term economic and social benefits are highest under **Alternative 2**, and for some species **Alternative 4**, short-term negative economic and social impacts will also be highest under these alternatives. Long-term sustainability of snapper grouper stocks is necessary to maintain fishing communities. However, it is argued that the trade-off of short-term negative economic and social impacts for long-term sustainability could result in collapse of the snapper grouper fishing industry. For those towns that are recognized as fishing communities by the general public, loss of fish houses, boat yards, and restaurants that serve locally caught fish could result in a loss of income from tourism. The economic impact is felt in terms of dollars going to restaurants, hotels, and other coastal businesses. Fishing families may experience increased stress due to financial difficulties and unemployment. This can contribute to an increase in domestic abuse, divorce rates, depression, and drug use, among other social ills. Community residents that are not part of fishing families can feel a loss of cultural and historical identity.

4.2.4 Administrative Effects

The **No Action Alternative** may conflict with the Council's ABC levels for species undergoing overfishing, and therefore make determining ACLs and ACTs for those species more difficult. **Alternatives 2**, **3**, and **4** under this action are not expected to directly affect the administrative environment; however, under National Standard 1 of the Magnuson-Stevens Act all U.S. fishery management measures are created with the ultimate objective of achieving OY while preventing overfishing. Should compliance with this Magnuson-Stevens Act national standard laspse, management measures would have to be changed, through the amendment process. Changing management measures through an amendment would incur a moderate administrative burden in the form of amendment development, outreach efforts, and coordination amongst the Council, and various divisions within NOAA Fisheries Service.

4.2.5 Council's Conclusions

4.3 Specification of Maximum Fishing Mortality Threshold for Red Snapper

The Maximum Fishing Mortality Threshold (MFMT) is a rate of fishing mortality above which a stock's capacity to produce MSY would be jeopardized. A stock is considered to be undergoing overfishing when the fishing mortality is greater than the MFMT.

The Council's definition of MFMT for red snapper, as established in Amendment 11 to the Snapper Grouper FMP, sets MFMT equal to F_{MSY}. Amendment 11 established a F30% static spawning potential ratio (SPR) as a proxy for F_{MSY}. However, uncertainty in the recent assessment of red snapper led the SEDAR 15 (2008) review panel to choose $F_{40\%\ SPR}$ as the F_{MSY} proxy for red snapper. Based on this recommendation, the Council is using $F_{40\%SPR}$ as a proxy for F_{MSY}. The assessment estimated $F_{40\%\ SPR}$ for red snapper to equal 0.104. This is not an action item in this amendment.

4.4 Annual Catch Limits

Note: The Council may specify more than one preferred alternative for this action as 10 species are under consideration.

Alternative 1 (no action). Do not specify ACLs for 10 species undergoing overfishing.

Alternative 2. ACL equals ABC.

Alternative 3. ACL equals 90% of the ABC.

Alternative 4. ACL equals 80% of the ABC.

4.4.1 Scientific and Statistical Committee Overfishing Level and Acceptable Biological Catch Recommendations

The Reauthorized Magnuson-Stevens Act requires the Councils to set management measures to ensure total mortality (fish that are retained and mortality of fish that are discarded) is less than or equal to the Annual Catch Limit (ACL). The South Atlantic Council proposes to do this by specifying Annual Catch Targets (ACTs) and keeping total mortality at or below the sector-specific ACTs. Analyses presented will discuss the reductions in fishing mortality necessary to end overfishing (i.e., management measures to keep catches less than the OFL) and the management measures necessary to keep total mortality at or below the sector-specific ACTs.

The Scientific and Statistical Committee (SSC) provides recommendations for OFL and ABC to the Council, and the Council then sets the ACL which cannot exceed the ABC. The SSC worked on determining these levels at several meetings in 2007 and 2008. At their June 2008 meeting, the SSC reviewed all available assessments and updated catch and commercial logbook CPUE data (through 2007) for all Snapper Grouper Amendment 17 species, including black grouper and red grouper (Amendment 17 Snapper-Grouper Species Overview, Potts *et al.* (1998), Potts and Brennan (2001), McGovern *et al.* (2002), and Collins *et al.* (2002)). The Report to Congress on the Status of U.S. Stocks indicates red grouper and black grouper have been experiencing overfishing since 1999 and their overfished status is unknown. Most recently, black grouper and red grouper were determined to be undergoing overfishing based on stock status from Potts and Brennan (2001). The SSC reviewed this report at their October 2005 meeting and concluded that in the absence of new SEDAR assessments, the existing determinations based on the 2001 report are based on the best available science. A report by Ault et al., (2008), indicates the current spawning potential ratios of red grouper and black grouper in the Florida Keys are 17.7 percent and 0.8 percent, respectively. According to Ault et al., (2005), recent fishery assessments indicate black grouper spawning stock biomass in the Florida Keys is less than 10 percent of it historical size. This research, though not yet reviewed through the SEDAR process, suggests that black grouper and red grouper populations have declined in South Florida, and illustrates the need to implement more protective measures to ensure their sustainability. NMFS has determined that this stock status determination cannot change until there is another stock assessment. Black grouper and red grouper are being assessed through SEDAR 19 beginning in 2009. The schedule is as follows:

1. Data workshop – June 22-26, 2009
2. Assessment workshop – October 5-9, 2009
3. Review workshop – January 25-29, 2010
4. SAFMC SSC review – June 6-8, 2010
5. Council review and action – June 7-11, 2010

Therefore the earliest the determination about overfishing could change would be the 2010 Report to Congress. As a part of their discussion about OFL and ABC for black grouper and red grouper, the SSC reviewed more recent data (i.e., since Potts and Brennan 2001).

The SSC also reviewed the draft options paper for Snapper Grouper Amendment 17 at their June 2008 meeting. They presented their written report documenting their conclusions to the Snapper Grouper Committee and Council during their June 2008 meeting. The following is taken directly from the written SSC report and only minor grammatical corrections and notes of clarification have been added.

> "Without the time to vet this process, the SSC was compelled to adopt an ad-hoc approach. Until NMFS or the Council provides the SSC with guidance on a process for establishing ABCs, the SSC is willing only to offer interim recommendations, since we cannot capture the uncertainty in factors such as stock assessment results, time lags in updating assessments, the degree of retrospective revision of assessment results, or projections.
>
> The SSC chose to tackle those species with the most information first. Given that a probabilistic approach had been applied to the data in the recent gag assessment, and that the approach has been peer-reviewed, confidence in its use for determining the OFL and ABC levels was high. [Note: Based on the probabilistic analyses conducted for gag, a fishing mortality rate (F) of 75%F_{MSY} results in a 30% chance of overfishing.] For those species that have been assessed but do not have probabilistic analyses associated with them, a motion was made by the SSC for the SAFMC to request that those analyses be run and that these analyses be included as part of the terms of reference in future SEDAR assessments. These analyses are critical to the determination of ABCs in accounting for uncertainty.
>
> <u>For those assessed species</u>, the SSC developed an interim approach which set the OFL equal to the yield at MFMT (as outlined in the current ACL proposed rule) and the ABC equal to the yield at 75% F_{MSY} (the current proxy for F_{OY}). Assuming the Council was to set the ACL equal to ABC, future management actions would be status quo.
>
> <u>For those data poor species</u> identified in Snapper Grouper Amendment 17, landings were available. The SSC attempted to develop an overarching procedure to be used for the four species; however, information from SSC members indicated that fishery-independent projects indicated that speckled hind and Warsaw grouper were conspicuously absent from historical areas of catch. The SSC then decided to address the ABCs and OFL for the individual species.

Speckled Hind and Warsaw Grouper
Because the OFL could not be determined, the incredibly small biomass for speckled hind and Warsaw, and the high degree of uncertainty associated with these species, the SSC felt that any catch would likely result in overfishing of these stocks and therefore felt an ABC of zero was warranted.

Black and Red Grouper
Black and red groupers are not necessarily data-poor. The identified problem with these species was the lack of assessment. Because anecdotal evidence indicates that red grouper are probably in a healthy state, the SSC used average landings over five years (2003-2007) as a proxy for the OFL, setting the ABC slightly below the OFL (ABC = 95% OFL) was to account for uncertainty. There was less information relative to anecdotal status of black grouper and as such, the ABC was set lower than that of red grouper (black grouper ABC = 90% OFL).

There was considerable debate about these recommendations and a motion was drafted to rescind the motions for only the data-poor species. Concerns were expressed that the measures were inconsistent and/or were not conservative enough. After further debate and discussion, the motion failed from lack of support.

OFLs and ABCs were not recommended for the deep water or shallow water groups because of the lack of scientific basis for the groupings.

The SSC discussed and recommended a future meeting time for a more in-depth discussion with the goal being the development of guidelines for establishing controls rules for setting OFLs and ABCs. Unfortunately, scheduling conflicts within the SSC did not allow for this. A motion was made to request that the Council allow for the SSC to have an additional day at the December meeting for further discussion."

Results of the SSC's actions on OFLs and ABCs is shown in Table 4-7.

Table 4-7. Overfishing Level (OFL) and Acceptable Biological Catch (ABC) recommendations from the SSC and ACL values under each alternative. Values are in lbs whole weight.

Species	SSC Recommendations ABC		Corresponding Value for 2010 and Onwards Until Modified	
	OFL	ABC	OFL	ABC
Golden tilefish	Yield at MFMT	75%(F_{MSY})	336,425	326,554
Snowy grouper	Yield at MFMT	75%(F_{MSY})	116,845	102,960
Speckled hind	unknown	0	unknown	0
Warsaw grouper	unknown	0	unknown	0
Black grouper	Average landings over last 5 years (2003-2007)	90%(OFL)	208,552	187,697
Black sea bass	Yield at MFMT	75%(F_{MSY})	912,713	847,000
Gag	Yield at MFMT	75%(F_{MSY})	1,065,540	818,920
Red grouper	Average landings over last 5 years (2003-2007)	95%(OFL)	783,214	704,893
Vermilion snapper	Yield at MFMT	75%(F_{MSY})	789,602	628,459
Red snapper	Yield at MFMT	75%(F_{MSY})	55,000	42,000
Note: The SSC recommended the following OFLs and ACLs. For speckled hind and warsaw grouper, ABC=0 and OFL=unknown. For black and red grouper, OFL=average landings over last 5 years (2003-2007). For black grouper and red grouper, ABC=90% of OFL and 95% of OFL, respectively. For the remaining species undergoing overfishing, OFL=yield at MFMT and ABC=yield at 75% of F_{MSY}.				

4.4.2 Biological Effects

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 Annual Catch Limits (ACLs) at a level that prevents overfishing and does not exceed the recommendations of the respective Council's SSC or other established peer review processes. These FMPs also are required to establish within this time frame measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements.

Proposed NMFS guidelines defines the following terms:

- Overfishing limit (OFL) means "the annual amount of catch that corresponds to the estimate of MFMT applied to a stock or stock complex's abundance and is expressed in terms of numbers or weight of fish.

- Catch includes fish that are retained for any purpose, as well as mortality of fish that are discarded. For fisheries where bycatch estimates are not available in a timely enough manner to manage annual catch, targets may be specified for landings, so long as an estimate of bycatch is accounted for such that total of landings and bycatch will not exceed the stock's ACL.

- Acceptable biological catch (ABC) means "a level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and should be specified based on the ABC control rule.

- Annual catch limit (ACL) means "the level of annual catch of a stock or stock complex that serves as the basis for invoking accountability measures." Setting the ACL provides an opportunity to divide the total ACL into sector-specific ACLs.

- Annual catch target (ACT) means "an amount of annual catch of a stock or stock complex that is the management target of the fishery. A stock or stock complex's ACT should usually be less than its ACL and results from the application of the ACT control rule. If sector-ACLs have been established, each one should have a corresponding sector-ACT."

- Accountability measures (AMs) means "management controls that prevent ACLs or sector-ACLs from being exceeded (in-season AMs), where possible, and correct or mitigate overages if they occur."

The Council is employing a step-wise decision-making process in setting ACLs, ACTs, allocations, management measures to ensure total mortality is below the ACL and overfishing does not occur, and accountability measures (Figure 4-1). The SSC provided OFL and ABC recommendations in terms of pounds of fish at their June 2008 meeting (Table 4-7) and a comparison to 2007 landings is shown in Table 4-8 The SSC did not have an ABC control rule to assist them with estimating ABC and indicated that they considered the values to be "interim" until more robust methods for estimating these parameters could be made available. However, for SEDAR-assessed species the SSC did in fact utilize a process that could be considered an "ABC Control Rule" in that they set OFL = MFMT = F_{MSY} and ABC = 75%F_{MSY} which results in a 30% chance of overfishing. For stock and stock complexes required to have an ABC, NMFS recommends that each Council should establish an ABC control rule based on scientific advice from its SSC. On the other hand, the Magnuson-Stevens Act indicates that the SSC is to develop the ABC and does not include wording that would have the Councils developing a method (ABC Control Rule) for the SSC to calculate the ABC. In December 2008, the SSC will review their estimates of ABC. Furthermore, a new assessment has been completed for vermilion snapper and assessment information was updated for red snapper, so the SSC will consider this new information as they review their determinations of OFL and ABC for these species.

The Council, using the SSC's ABC as an upper-bound, will develop ACL and ACT alternatives. The ACL is the annual catch limit expressed in pounds or numbers of fish and the ACT is the target specified in pounds or numbers of fish. Catch includes fish that are retained for any purpose, as well as mortality of fish that are discarded. For fisheries where bycatch estimates are not available in a timely enough manner to manage annual catch, targets may be specified for landings, so long as an estimate of bycatch is accounted for such that total of landings and bycatch will not exceed the stock's ACL. Several of these elements have been previously established for various species in past Snapper Grouper Amendments 13C, 15A, and 16; however, they were not referred to as ACLs, ACTs, and OFLs. These amendments specify the yield at F_{MSY}, which the SSC has set as the OFL and a total allowable catch based on the yield at 75% of F_{MSY} for snowy grouper, black sea bass, vermilion snapper, and gag, which the SSC has set as the ABC. TAC levels could be considered to be equivalent to an ACT if the Council concluded there was no implementation uncertainty. Measures have been taken to reduce the chances that overfishing occurs by closing all commercial fishing for black sea bass, snowy grouper, vermilion snapper, gag, and golden tilefish when a quota is reached. Furthermore, Snapper Grouper Amendment 16 specifies no commercial fishing would take place for black grouper, red grouper, and other shallow water grouper species when the commercial quota for gag is reached. Therefore a type of commercial, in-season AM has been specified for some Snapper Grouper Amendment 17 species when a catch limit has been reached. However, no post-season AMs have been specified to deal with situations when a quota may be exceeded.

Alternative 1 would not specify ACLs for some or all of the 10 species undergoing overfishing. The ACL serves as a catch limit for a species which triggers some sort of accountability measure to ensure overfishing of a species does not occur. Therefore, without an ACL, the chances a species' catch could exceed the ACT would be increased since no safety mechanism would be triggered to keep harvest in check.

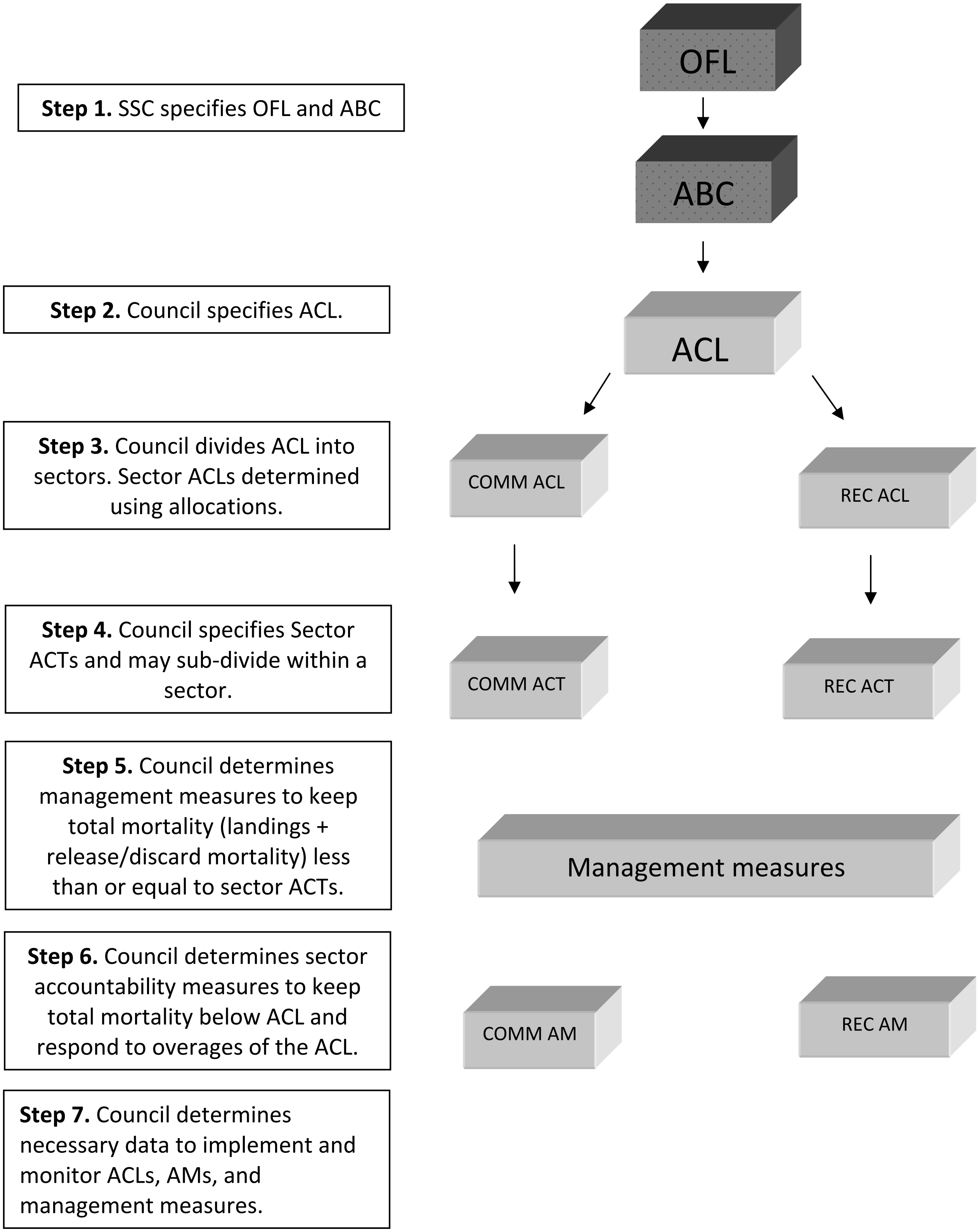


Figure 4-2. The tiering process employed in Snapper Grouper Amendment 17.

Alternative 2 would set ACL equal to ABC (Table 4-8). The relationship between the terms listed above would be OFL≥ABC≥ACL≥ACT. The proposed guidelines suggest that a good approach to management is to have OFL>ABC and ACL>ACT. The ABC would be lower than the OFL to address scientific uncertainty in the estimate of OFL, and ACT would be lower than the ACL to address uncertainty in accounting for catch and degree to which management measures can control catch to the target level. If ACL was equal to the ABC, the catch level would be allowed to reach the ABC specified by the SSC before some sort of corrective measure (AM) was triggered to ensure overfishing did not occur. Landings for 2007 indicate the likelihood of sector-specific ACLs to be reached (Table 4-9). This would be the least conservative of the three action alternatives but a reasonable approach since ABC would likely be an adjustment to OFL to account for scientific uncertainty. The proposed guidelines suggest ACL may typically be equal to the ABC.

Table 4-8. Overfishing Level (OFL) and Acceptable Biological Catch (ABC) recommendations from the SSC and ACL values under each alternative. Values are in pounds whole weight.

Species	Total Landings (2007)	OFL (from SSC)	ABC (from SSC)	ACL		
				Alt. 2; ACL=ABC	Alt. 3; ACL=90%(ABC)	Alt. 4; ACL=80%(ABC)
Golden tilefish	337,255	336,425	326,554	326,554	293,899	261,243
Snowy grouper	156,014	116,845	102,960	102,960	92,664	82,368
Speckled hind	3,315	unknown	0	0	0	0
Warsaw grouper	20,662	unknown	0	0	0	0
Black grouper	166,042	208,552	187,697	187,697	168,927	150,158
Black sea bass	1,161,662	912,713	847,000	847,000	762,300	677,600
Gag	1,272,482	1,065,540	818,920	818,920	737,028	655,136
Red grouper	1,129,231	783,214	744,053	744,053	669,648	595,242
Vermilion snapper	1,952,403	789,602	628,459	628,459	565,613	502,767
Red snapper	446,659	55,000	42,000	42,000	37,800	33,600
Note: The SSC recommended the following OFLs and ACLs. For speckled hind and warsaw grouper, ABC=0 and OFL=unknown. For black and red grouper, OFL=average landings over last 5 years (2003-2007). For black grouper and red grouper, ABC=90% of OFL and 95% of OFL, respectively. For the remaining species undergoing overfishing, OFL=yield at MFMT and ABC=yield at 75% of Fmsy.						

Alternative 3 would set ACL equal 90% of the ABC (Table 4-8). This would set the limit to invoke accountability measures at a lower level than in **Alternative 2** and therefore be more precautionary. **Alternative 4** would define ACL as 80% of the ABC and therefore be the most precautionary of the alternatives considered. Therefore, **Alternative 4** would have the greatest positive biological benefit since catch levels would be set at the lowest levels before AMs would be invoked.

Table 4-9. Landings (pounds whole weight) for 2007.
Source: Commercial landings are from ALS and include the Atlantic portion of Monroe County. Headboat landings are from the NMFS Headboat survey and include landings from the Atlantic portion of Monroe County. MRFSS data are from the Web and do not include Monroe County. For-hire includes MRFSS charter and headboat.

Species	Commercial	Recreational	Total
Golden Tilefish	332,473	4,782	337,255
Snowy Grouper	132,620	23,394	156,014
Speckled Hind	1,917	1,398	3,315
Warsaw Grouper	608	20,054	20,662
Black grouper	104,697	61,345	166,042
Black sea bass	379,512	782,150	1,161,662
Gag	712,970	559,512	1,272,482
Red grouper	506,020	623,211	1,129,231
Vermilion snapper	1,074,761	877,642	1,952,403
Red snapper	115,653	331,006	446,659

Alternative 1 would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. **Alternatives 2-4** are unlikely to have adverse affects on ESA-listed *Acropora* species. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect these species. Establishing an ACLs is unlikely to alter fishing behavior in a way that would cause new adverse affects to *Acropora*. The impact of **Alternatives 2-4** on sea turtles and smalltooth sawfish is uncertain. If the establishment of ACLs perpetuates the existing amount of fishing effort, but causes effort redistribution, any potential effort shift is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. If implementation of ACLs causes are reduction in fishing effort, the risk of interaction between ESA-listed species and the fishery will likely decrease.

4.4.3 Economic Effects

Long-Term

Alternatives 1-4 vary in the level of precaution they propose to avoid exceeding the ACL which could lead to overfishing if the OFL were to be exceeded. The most conservative alternatives have the largest negative short-term economic impact. However, they also have the largest positive long-term economic impact due to the increased ability to maintain harvest levels within a sustainable range. **Alternative 4** is the most conservative alternative, specifying ACLs at 80% of the ABC, and therefore has the greatest chance of maintaining sustainable harvest levels which are required for long-term economic viability. **Alternative 1** is the least conservative alternative and does not specify ACLs, thereby increasing the chances of ABC being exceeded and placing individuals and communities at risk for long-term negative economic impacts. **Alternative 2** specifies ACLs equal to the ABC while **Alternative 3** specifies ACLs at 90% of the ABC, a more conservative and sustainable approach in the long term economically. However, it is a valid argument that the short-term negative economic impacts from adoption of the more conservative alternatives could eliminate the existence of commercial fishing operations and there would therefore be no fishing operations left to benefit in the long term.

Short-Term

With the exception of speckled hind and warsaw grouper (whereby **Alternatives 2, 3, and 4** have equal short-term negative economic impacts), **Alternative 4** will have the largest short-term negative economic impacts and **Alternative 1**, the smallest short-term negative economic impacts. Depending on the ACT and allocation alternatives chosen for each species, it is likely that some fishing operations will be severely negatively impacted under **Alternatives 3 and 4**. Red snapper, vermilion snapper, and red grouper ACL alternatives indicate the greatest decreases from 2007 landings will be required to achieve their ACLs (Table 4-9). Black grouper and golden tilefish indicate the smallest decreases in poundage will be required to achieve their ACLs compared to 2007 levels. Appendix E provides a breakdown of potential impacts to commercial and recreational sectors by creating bundled alternatives of ACT and allocation alternatives. In the absence of those alternatives at this time, the economic impacts are described in a general manner.

In the case of golden tilefish, under **Alternative 2**, commercial and recreational sectors will be limited to 10,701 (3%) less pounds of golden tilefish compared to what was caught in 2007. Under **Alternatives 3 and 4**, the fishery will be limited to 43,356 (13%) and 76,012 (22%) less pounds of golden tilefish, respectively.

Snowy grouper landings will need to decrease by 53,054 (34%) pounds to obtain the landings indicated in **Alternative 2**, 63,350 (41%) to obtain **Alternative 3** landings levels, and 73,646 (47%) to achieve **Alternative 4** levels compared to 2007 landings.

Speckled hind and warsaw grouper landings will be required to decrease by 100% under **Alternatives 2, 3, and 4**. However, there will be no negative economic impacts on the commercial side since speckled hind and warsaw groper cannot be sold. Those that use the fish to supplement their diet, will be negatively impacted. However, these impacts are expected to be minor given the small amount allowed to be kept for consumption.

Black grouper landings can increase by 21,655 pounds (13%) to obtain the level indicated in **Alternative 2** or 2,885 pounds (1.7%) to obtain the level in **Alternative 3** compared to 2007 landings. Landings will need to fall by 15,884 pounds (9.5%) to obtain the **Alternative 4** ACL.

Black seabass landings need to decrease by 314,662 pounds (27%), 399,362 pounds (34%), and 484,062 pounds (42%) to reach the levels indicated in **Alternatives 2, 3, and 4**, respectively.

Gag landings would need to decrease by 484,062 pounds (36%) to reach the ACL indicated in **Alternative 2**. **Alternatives 3 and 4** would require decreases of 535,454 pounds (42%) and

617,346 pounds (49%) to obtain levels indicated in **Alternatives 3 and 4** compared to 2007 landings.

Red grouper landings will need to decrease by 424,338 pound (38%) to reach the ACL indicated in **Alternative 2**, 494,824 pounds (44%) to reach **Alternative 3**, and 565,317 pounds (50%) to reach **Alternative 4** compared to 2007 harvest levels of red grouper.

Vermilion snapper landings would be required to decrease by about 1.32 million pounds (68%) under **Alternative 2**, 1.38 million pounds (71%) under **Alternative 3**, and 1.45 million pounds under **Alternative 4**.

Red snapper landings would need to decrease by 404,659 pounds (90.5%) under **Alternative 2**, 408,859 pounds (91.5%) under **Alternative 3**, and 413,059 pounds (92.4%) under **Alternative 4**.

Non-Use Values

Existence, biodiversity, bequest, and other non-use values are highest under **Alternative 4** because it offers the greatest biological benefits in that it allows for the greatest level of precaution.

4.4.4 Social Effects

The short-term negative economic impacts resulting from **Alternatives 3 and 4**, in particular, will likely have very significant negative social impacts. It is expected that some fishing operations will leave the fishery. The stress that comes with unemployment will contribute to financial stress and, in the current economic environment, could result in an increase in domestic abuse, divorce rates, depression, and drug use among other social ills. The fishing operations that remain in the fishery will likely experience financial difficulties that are more severe than in the past.

4.4.5 Administrative Effects

The **No Action Alternative** would cause the agency to fall out of compliance with mandates set forth in the reauthorized Magnuson-Stevens Act which requires the establishment of a mechanism for establishing ACLs for all species subject to overfishing. Administratively, the implications of such non-compliance would be great since the risk of litigation may be high. A large amount of time and coordination is needed to generate and gather documents required to defend a legal charge. There is only a marginal difference between administrative impacts of **Alternatives 2** through **4** since they only differ in their degree of conservativeness. The more conservative an ACL level is set, the more likely the chance is that it will be exceeded and AMs would be triggered. Therefore, it may be assumed that **Alternative 2** would have the potential of inuring the lowest administrative burden in the form of outreach, division coordination, and enforcement, should it be exceeded; while impacts of **Alternative 3** may be slightly higher, and impacts of **Alternative 4** would be the highest of all the alternatives.

4.4.6 Council's Conclusions

4.5 Allocations

Note: The Council's selection of the preferred alternative could vary for the four species experiencing overfishing. In other words, the same preferred alternative does not have to be chosen for all four species

Alternative 1 (no action). Do not define allocations for black grouper, golden tilefish, red grouper, and red snapper. Note: interim allocations have been specified for the black sea bass and snowy grouper and are proposed for gag and vermilion snapper.

Alternative 2. Define allocations based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 1986-2007.

Alternative 3. Define allocations based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 2005-2007.

Alternative 4. Define allocations based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:
Sector apportionment = (50% * average of long catch range (lbs) 1986-2007) + (50% * average of recent catch trend (lbs) 2005-2007)

Allocations under **Alternative 1** (no action) are shown in Table 4-10. Allocation alternatives under consideration for golden tilefish, black grouper, red grouper, and red snapper are shown in Table 4-11. Once the Council chooses preferred ACLs and allocation alternatives, then the sector specific ACLs will be calculated and shown in Tables 4-12 and 4-13.

Table 4-10. Allocations for species in the Snapper Grouper FMU currently specified by the Council.

Species	Allocations	
	Commercial	Recreational
Snowy grouper[1]	95%	5%
Black sea bass[1]	43%	57%
Gag[2]	51%	49%
Vermilion snapper[2]	68%	32%
[1]Specified through Amendment 13C [2]Proposed in Amendment 16		

[1]Specified through Amendment 13C.
[2]Propsoed in Amendment 16.

Table 4-11. Percent allocations from allocation alternatives for four species undergoing overfishing. CM = Commercial, RC = Recreational, NS = Not specified.

Species	Alt. 1. No Action		Alt. 2. 1986-2007		Alt. 3. 2005-2007		Alt. 4. Equation	
	CM	RC	CM	RC	CM	RC	CM	RC
Golden tilefish	NS	NS	98%	2%	89%	11%	94%	6%
Black grouper	NS	NS	56%	44%	34%	66%	45%	55%
Red grouper	NS	NS	55%	45%	41%	59%	48%	52%
Red snapper	NS	NS	30%	70%	26%	74%	28%	72%
Note: Allocations have been specified for black sea bass (43 % commercial/57% recreational) and snowy grouper (95% commercial/5% recreational). Amendment 16 will specify allocations for gag (51% commercial/49%) and vermilion snapper (68% commercial/32% recreational).								

Table 4-12. The commercial sector ACL that results from each of the allocation alternatives. Values are in lbs whole weight.
Note: This table will be completed once the Council chooses the preferred ACL alternative.

Species	Preferred Entire ACL	Commercial Sector ACL		
		Allocation Alt. 2. 1986-2007	Allocation Alt. 3. 2005-2007	Allocation Alt. 4. Equation
Golden Tilefish				
Snowy grouper				
Speckled hind	0	0	0	0
Warsaw grouper	0	0	0	0
Black grouper				
Black sea bass				
Gag				
Red grouper				
Vermilion snapper				
Red snapper				

Table 4-13. The recreational sector ACL that results from each of the allocation alternatives. Values are in lbs whole weight.
Note: This table will be completed once the Council chooses the preferred ACL alternative.

Species	Preferred Entire ACL	Recreational Sector ACL		
		Allocation Alt. 2. 1986-2007	Allocation Alt. 3. 2005-2007	Allocation Alt. 4. Equation
Golden Tilefish				
Snowy grouper				
Speckled hind	0	0	0	0
Warsaw grouper	0	0	0	0
Black grouper				
Black sea bass				
Gag				
Red grouper				
Vermilion snapper				
Red snapper				

4.5.1 Biological Effects

Alternative 1 would not specify a commercial or recreational allocation for golden tilefish, black grouper, red grouper, or red snapper. If allocations were not specified then it would not be possible to identify the allowable catch and ensure each sector is limited to their portion of the ACL.

The allocations that would be implemented by **Alternatives 2-4** are outlined in Table 4-11b. **Alternative 2** represents the longest time series of data (1986-2007). For all four species, this would give the greatest percentage of harvest to the commercial sector. **Alternative 3** represents percent harvest over the most recent time period and would provide the greatest allocation to the recreational sector. **Alternative 4** gives equal weight to both time periods.

In order to determine the biological effects to the stocks from transferring allowable catch from one sector to another, it is important to investigate the release mortality rates and the level of discards (Table 4-14).

Table 4-14. The amount of discards and release mortality rates for golden tilefish, red snapper, black grouper, and red grouper.

	Release mortality rates		Discards		Source[1]
	Commercial	Recreational	Commercial	Recreational	
Golden tilefish	100%	100%	GET	259[2,3]	SEDAR 4 (2004) Commercial logbook and MRFSS
Red snapper	90%	40%	1,440 fish[3]	7,330 fish[4]	SEDAR 15 (2008) Commercial logbook and MRFSS
Black grouper	Not estimated	Not estimated	GET	14,458 fish[2]	Commercial logbook and MRFSS
Red grouper	Not estimated	Not estimated	GET	101,298 fish[2]	Commercial logbook and MRFSS

[1]SEDAR is the source for the mortality rate. Commercial logbook and MRFSS are the sources for the number/level of discards
[2]Annual average 2004-2007
[3]Only golden tilefish recreational discards reported in 2005 with a PSE of 100
[4]Annual average 2004-2006

SEDAR 15 (2008) indicated release mortality for red snapper was higher for the commercial sector (90%) than the recreational sector (40%). Therefore, one might expect alternatives that allocate a greater percentage of harvest to the commercial sector could result in a greater number of dead discards. However, the SEDAR 15 (2008) assessment indicated the number of red snapper discarded was much lower for the commercial sector (average annual 1,440 individuals 2004-2006) compared to the recreational sector (average annual 7,330 individuals 2004-2006). Therefore, **Alternative 2** which would allocate a greater percentage of the catch to the commercial sector would probably not increase the magnitude of dead discards unless fishermen incidentally caught red snapper when harvesting co-occurring species. Commercial fishermen may be able to avoid red snapper by modifying their method of fishing and where they deploy gear. The greatest difference in allocation percentages between **Alternatives 2-4** is only 4%; as a result, the expected biological difference between the alternatives would be difficult to measure.

SEDAR 4 (2004) indicated release mortality for golden tilefish was 100% for both the commercial and recreational sectors. The number of golden tilefish discarded is much greater for the commercial sector (average annual XXXX individuals 2004-2006) compared to the recreational sector (average annual 259 individuals 2004-2007). Therefore, one might expect alternatives that allocate a greater percentage of harvest to the commercial sector could result in a greater number of dead discards. This would result in greater adverse effect to the resource compared to the other alternatives but would maintain the relatively same degree of impacts as the no action alternative.

Alternative 3 uses data from 2005-2007and results in a 66% commercial and 34% recreational black grouper allocation and includes landings data before the regulations from Amendment 9 were implemented in xxxx. **Alternative 2** represents the longest time series of data including the time period prior to Amendment 9 when commercial landings were dominant to more recent years when landings have been fairly evenly split between sectors.

ADD DISCUSSION OF RED AND BLACK GROUPER ONCE GET LOGBOOK DISCARDS

Defining allocations for these species will not directly affect the biological or ecological environment, including protected species, because these parameters are not used in determining immediate harvest objectives.

4.5.2 Economic Effects

Commercial Fisheries

Defining allocations for these species will affect the economic environment in that they will be used to determine annual catch targets (ACTs), trip limits, and other management regulations that directly impact fishermen. Appendix E displays bundled alternatives of allocations and ACLs and associated economic impacts.

Recreational Fishery

The general case about allocations is that, given reduced overall harvest, whatever alternative is chosen would generally reduce the economic benefits of one sector more than the other. A "neutral" allocation is probably difficult to achieve given the varying harvest performance of either or both the commercial and recreational sectors. At any rate, certain general statements may be made about the current allocation alternatives. It may be instructive to start with the statement that the sources of harvest data for allocation purposes appear to be comprehensive, assuming ALS data includes logbook information and possibly state trip ticket information.

Alternative 1, which would not provide for allocation of allowable catch for the four species, could allow the recreational fishery to operate as in the past. But given the required overall harvest reductions, this alternative would make very difficult to control harvest to be within the limits set by the chosen overfishing parameters, including ABCs and ACLs. It may be noted that the recreational sector is not controlled by quota closures, so recreational harvests could readily go over what is required to arrest overfishing. Although this could happen even if an allocation ratio is chosen, the absence of an allocation ration would simply make it difficult to tailor management measures that could effectively control recreational harvest. In addition, this alternative would tend to defeat the purpose of establishing ACLs and subsequent accountability measures on a sectoral basis.

Alternative 2, which is based on the longest time series, would favor the commercial sector, while **Alternative 3**, which is based on more recent time period, would favor the recreational sector. These allocation scenarios may imply that the fishery has changed over time, with possibly increased economic importance of the recreational sector over time. Although more information is needed here, but if this were the case a potentially more economic rationale can be attached to the allocation based on more recent performance of the two sectors. **Alternative 4** would consider both time periods, with equal weight given to each time period for allocation purposes. This could slightly favor the commercial sector and may be adjudged more equitable than the other alternatives, although it would possibly mean lower overall economic benefits may be derived from the fishery.

4.5.3 Social Effects

Defining allocations for these species will affect the social environment through changes in the commercial quota and management regulations. Appendix E displays bundled alternatives of allocations and ACLs and associated economic and social impacts.

4.5.4 Administrative Effects

If not setting allocations (**No Action Alternative**) were to cause AMs to be triggered when the proposed ACTs and/or ACLs are exceeded, the administrative environment would be adversely affected. **Alternatives 2, 3**, and **4** would increase the administrative burden on NOAA Fisheries Service, as landings would need to be monitored in relation to the commercial and recreational portion of the allocation for overages and commercial quota purposes. However, there would be no measurable difference amongst **Alternatives 2, 3** and **4** in the degree to which the administrative burden would increase. Each allocation alternative, with the exception of the status-quo alternative, would require the establishment of a more sophisticated quota/allocation monitoring mechanism.

4.5.5 Council's Conclusions

4.6 Annual Catch Targets

4.6.1 Commercial Sector

Note: The Council may specify more than one preferred alternative for this action as 10 species are under consideration.

Alternative 1 (no action). Do not specify commercial sector ACTs for 10 species undergoing overfishing.

Alternative 2. The commercial sector ACT equals the commercial sector ACL.

Alternative 3. The commercial sector ACT equals 90% of the commercial sector ACL.

Alternative 4. The commercial sector ACT equals 80% of the commercial sector ACL.

Once the Council chooses preferred ACL and allocation alternatives, then the sector specific ACL will be calculated and shown in Table 4-15.

Table 4-15. The commercial sector ACT that results from each of the alternatives. Values are in lbs whole weight.
Note: This table will be completed once the Council chooses the preferred ACL alternative.

Species	Preferred Commercial ACL	Commercial Sector ACT		
		ACT Alt. 2; ACT=ACL	ACT Alt. 3; ACT=90%(ACL)	ACT Alt. 4; ACT=80%(ACL)
Golden Tilefish				
Snowy grouper				
Speckled hind	0	0	0	0
Warsaw grouper	0	0	0	0
Black grouper				
Black sea bass				
Gag				
Red grouper				
Vermilion snapper				
Red snapper				

4.6.1.1 Biological Effects

As indicated in Section 4.4, revisions to the Magnuson-Stevens Act in 2006 require that by 2010, 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 SSC or other established peer review processes. The Council is employing a step-wise decision-making process in setting ACLs, ACTs, allocations, and management measures to ensure catches are below the ACL, and overfishing does not occur (Figure 4-2). Section 4.4 specified ACLs for various species and discussed the relationship between the ACL and the ABC specified by the SSC. Setting the ACL provides the opportunity to divide the total ACL into sector-specific ACLs, which was accomplished through setting allocations in Section 4.5. Section 4.6 will specify ACTs based on sector specific ACLs identified in Section 4.5. The ACT is an amount of annual catch of a stock or stock complex that is the management target of the fishery.

Alternative 1 (**no action**) would not specify commercial sector ACTs for the 10 species undergoing overfishing. In some cases, the Council could decide that action to set TAC for recently assessed species at the yield at 75% F_{MSY} satisfies the reauthorized Magnuson-Stevens Act requirement of setting a target level catch below an overfishing level but this would require that the SSC raise their ABC recommendations above the yield at 75%F_{MSY}. Amendment 15A specified rebuilding strategies for snowy grouper and black sea bass that hold total allowable catch (TAC) constant at the F_{OY} in 2009 and F would decrease below F_{OY} as the stock rebuilds (Table 4-16). A complete listing of what is currently in place, or specified through Snapper Grouper Amendment 16, is shown in Table 4-17.

Table 4-16. Yield at F_{MSY}, yield at Foy, total allowable catch (TAC), amendment implementing regulation. All values in pounds whole weight.

Species	OFL (Yield at F_{MSY})	ACT (Yield at F_{OY})	Current TAC	Amendment	AM
Golden Tilefish	336,425	326,554	336,425	Amend 13C	Commercial (quota)
Snowy Grouper	116,845	102,960	102,960	Amend 15A	Commercial (quota)
Speckled Hind	unknown				Commercial (gag quota)
Warsaw Grouper	unknown				Commercial (gag quota)
Black grouper[1]	208,552[3]	187,960		Amend 16	Commercial (quota)
Black sea bass	912,713	847,000	847,000	Amend 15a	Commercial (quota)
Gag	1,065,540	818,920	818,920	Amend 16	Commercial (quota)
Red grouper[1]	783,214[3]	704,893		Amend 16	Commercial (gag quota)
Vermilion snapper[2]	TBD	TBD	TBD	Amend 16	Commercial (quota)
Red snapper[2]	TBD	TBD	TBD	Amend 17	TBD
1. Amendment 16 would close red grouper and black grouper during Jan-Apr (comm/rec) and close commercial fishery when gag quota is met. It would also reduce the bag limit.					
2. These values will change based on new assessment for vermilion snapper and addendum to assessment for red snapper.					
3. Based on average 2003-2007 landings from June 2008 SSC meeting. Yield at F_{OY} is estimated to be 90% of yield at F_{MSY}.					

Table 4-17. Total allowable catch, commercial quotas, recreational allocations, and allocations currently in place for ten species in the Snapper Grouper Fishery Management Unit undergoing overfishing, including overfishing level and allowable biological catch recommendations from the Scientific and Statistical Committee.

Species	F Level That Limits Are Based Upon	TAC	Allocations	Commercial Quota	Recreational Allocation	SSC Specifies		Council Specifies		
						OFL	ABC	ACL	Comm. ACT	Rec. ACT
Golden tilefish	F_{MSY}	Not designated	Not designated	331,000 lbs ww 295,000 lbs gw (13C)	Not designated	Yield at MFMT (336,425 lbs ww)	Yield at 75%F_{MSY} (326,554 lbs ww)			
Snowy grouper	Initially F_{MSY}, transitioning to F_{OY}[1]	102,960 lbs ww 87,254 lbs gw (15A)	95% commercial 5% recreational (15B)	97,882 lbs ww 82,900 lbs gw (15B)	523 fish 4,400 lbs gw (15B)	Yield at MFMT (116,845 lbs ww)	Yield at 75%F_{MSY} (102,960 lbs ww)			
Speckled hind	n/a	Not designated	Not designated	Not designated	Not designated	unknown	0			
Warsaw grouper	n/a	Not designated	Not designated	Not designated	Not designated	unknown	0			
Black grouper	n/a	Not designated	Not designated	Not designated	Not designated	Average landings over last 5 years (2003-2007) (208,552 lbs ww)	ABC=90% of OFL (187,697 lbs ww)			
Black sea bass	Initially F_{MSY}, transitioning to F_{OY}[2]	847,000 lbs ww 718,000 lbs gw (13C, 15A)	43% commercial 57% recreational (13C)	364,000 lbs ww 309,000 gw (13C)	483,000 lbs ww 409,000 lbs gw (13C)	Yield at MFMT (912,713 lbs ww)	Yield at 75%F_{MSY} (847,000 lbs ww)			
Gag	F_{OY}	818,920 lbs ww 694,000 lbs gw (16)	51% commercial 49% recreational (16)	417,469 lbs ww[3] 353, 940 lbs gw (16)	401,271 lbs ww 340,060 lbs gw (16)	Yield at MFMT (1,065,540 lbs ww)	Yield at 75%F_{MSY} (818,920 lbs ww)			
Red grouper	n/a	Not designated	Not designated	Not designated	Not designated	Average landings over last 5 years (2003-2007) (783,214 lbs ww)	ABC=95% of OFL (744,053 lbs ww)			
Vermilion snapper[4]	F_{OY}	628,459 lbs ww 566,179 lbs gw (16)	68% commercial 32% recreational (16)	427,352 lbs ww[3] 385,002 lbs gw (16)	201,107 lbs ww 181,177 lbs gw (16)	Yield at MFMT (789,602 lbs ww)	Yield at 75%F_{MSY} (628,459 lbs ww)			

Species	F Level That Limits Are Based Upon	TAC	Allocations	Commercial Quota	Recreational Allocation	SSC Specifies		Council Specifies		
						OFL	ABC	ACL	Comm. ACT	Rec. ACT
Red snapper	n/a	Not designated	Not designated	Not designated	Not designated	Yield at MFMT (55,000 lbs ww)	Yield at 75%F_{MSY} (42,000 lbs ww)			

[1]The TAC in 2008 is established at the yield when fishing at MSY. However, the TAC for 2009 (102,960 lbs whole weight) approximates the yield at F_{OY}. In addition, as the preferred rebuilding strategy is a constant catch strategy, the TAC for 2009 remains in effect beyond 2009 until modified. Holding catch at constant levels as the stock rebuilds would be expected to gradually reduce the fishing mortality rate below F_{OY} as the stock rebuilds.

[2]The TAC in 2008 is established at the yield when fishing at MSY. However, the TAC for 2009 (847,000 lbs whole weight) approximates the yield at F_{OY}. In addition, as the preferred rebuilding strategy is a constant catch strategy, the TAC for 2009 remains in effect beyond 2009 until modified. Holding catch at constant levels as the stock rebuilds would be expected to gradually reduce the fishing mortality rate below F_{OY} as the stock rebuilds.

[3]The directed quota is lower than this amount in order to account for Post Quota Bycatch Mortality.

[4]These values will change based on the latest assessment for vermilion snapper.

Snapper Grouper Amendment 16, under Secretarial review, would specify TACs for gag and vermilion snapper based on the yield at F_{OY} (Table 4-17). Furthermore, Snapper Grouper Amendments 13C, 15A, and 16 specified commercial quotas based on the percentage of the catch harvested by the commercial sector for black sea bass, snowy grouper, gag, and vermilion snapper. As the TACs and commercial quotas for black sea bass, snowy grouper, gag, and vermilion snapper would approximate the yield at F_{OY} in 2009, they would meet the requirements of the reauthorized Magnuson-Stevens Act and specify a target below an OFL based on the yield at F_{MSY} as long as the SSC changed their ABC recommendation. Furthermore, since the biomass of all four species is less than B_{MSY}, holding catch at constant levels would be expected to result in fishing mortality rates less than F_{OY} after 2009.

While actions were taken in recent amendments to end overfishing of snowy grouper, black sea bass, gag, vermilion snapper, and golden tilefish, recent management measures have not been implemented for red snapper, speckled hind, and warsaw grouper. Red snapper, recently through SEDAR 15 (2008), is overfished and experiencing overfishing. Very large reductions in harvest are needed to end overfishing and rebuild the stock. Projections indicate that prohibiting all harvest and retention is not sufficient to rebuild the stock. Speckled hind and warsaw grouper have been listed as experiencing overfishing since the first Report to Congress on the Status of U.S. Fisheries was published in 1999. The Council received reports suggesting overfishing of these species has been occurring many years prior to publication of the report (See Sections 3.2.2.9 & 3.2.2.10). Furthermore, a recent study conducted by Ziskin (2008) suggests fishing mortality has increased for speckled hind since management measures were put into place in 1994 to limit the commercial and recreational take of speckled hind to 1 fish per person per trip. Failure to specify ACTs for these species could allow elevated fishing mortality rates of these species to continue and further compromise the status of these stocks.

Alternative 2 would set the commercial sector ACT equal to the commercial sector ACL. The proposed ACL guidelines suggest that an ACT should usually be less than its ACL to account for management and implementation uncertainty. However, when uncertainty can be accounted for, particularly in commercial fisheries, it may be appropriate to set the ACT close to the ACL. In many situations, it may be more difficult to track commercial landings due to delays in dealer reporting, inaccuracies in reports, problems with species identification, etc. In these situations, it may be more appropriate to set the ACT at some level below the ACL to account for this uncertainty. **Alternative 3** would set the ACT at 90% of the ACL, while the ACT in **Alternative 4** would be at 80% of the ACL. Therefore, **Alternative 4** would represent the greatest biological benefit and provide the greatest assurance overfishing does not occur of the alternatives considered by allowing the least amount of harvest. For some species, it is not possible to estimate scientific or management uncertainty. However, the OFL≥ABC≥ACL≥ACT should be considered as a system of terms whose purpose is designed to ensure overfishing does not occur.

Alternative 1 would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. **Alternatives 2-4** are unlikely to have adverse affects on ESA-listed *Acropora* species. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect these species. Establishing an ACTs is unlikely to alter fishing behavior in a way that would cause new adverse affects to *Acropora*. The impact of **Alternatives 2-4** on sea turtles and smalltooth sawfish is uncertain. The establishment of ACTs is likely to perpetuate the existing level of fishing effort or decrease it; an increase in fishing effort is not anticipated from these alternatives. If fishing effort remains the same, the level of risk for interaction between sea turtles and smalltooth sawfish and the fishery is likely to be unchanged. A reduction in fishing effort would likely reduce the risk of interactions between ESA-listed species and the fishery.

4.6.1.2 Economic Effects

Commercial Fishery

Annual Catch Targets (ACTs) will indirectly impact the commercial fishery since ACTs will act similar to a commercial quota. In general, **Alternative 1** provides the smallest long-term economic benefits and the smallest short-term negative economic impacts to commercial fishermen while **Alternative 4** provide the most precautionary approach ith the largest long-term economic benefits and the largest short-term negative economic impacts. Appendix E displays bundled alternatives of allocations and ACLs to generate ACTs and associated economic impacts.

Non-use values, like existence and bequest values are highest under **Alternative 4** and lowest under **Alternative 1**.

4.6.1.3 Social Effects

Alternative 4 would have the largest short-term negative social impacts compared to the other alternatives. Appendix E displays bundled alternatives of allocations and ACLs to generate ACTs and associated economic and social impacts.

4.6.1.4 Administrative Effects

Under the **No Action Alternative** ACTs would not be set for the commercial sector, and therefore there would be no target harvest level. As a result the chance of exceeding proposed ACLs would most likely increase, causing AMs to be triggered, and ultimately negatively impacting the administrative environment. There is only a marginal difference between the administrative impacts of **Alternatives 2** through **4** since they only differ in their degree of conservativeness. The more conservative an ACT level, the more likely it will be exceeded and AMs would be triggered. Therefore, it may be assumed that

Alternative 2 would have the potential of inuring the lowest administrative burden in the form of outreach, division coordination, and enforcement, should it be exceeded; while the impact of **Alternative 3** may be slightly higher, and impacts of **Alternative 4** may be the highest of all the alternatives.

4.6.1.5 Council's Conclusions

4.6.2 Recreational Sector

Note: The Council may specify more than one preferred alternative for this action as 10 species are under consideration.

Alternative 1 (no action). Do not specify recreational sector ACTs for 10 species undergoing overfishing.

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

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

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

Once the Council chooses preferred ACL and allocation alternatives, then the sector specific ACL will be calculated and shown in Table 4-18. The proportional standard errors (PSEs) for the 10 species in Snapper Grouper Amendment 17 are shown in Table 4-19.

Table 4-18. The recreational ACT that results from each of the alternatives. Values are in lbs whole weight.
Note: This table will be completed once the Council chooses the preferred ACL alternative.

Species	Preferred Private Recreational Sector ACL	Recreational Sector ACT		
		ACT Alt. 2; ACT=85%(ACL)	ACT Alt. 3; ACT=75%(ACL)	ACT Alt. 4; ACT equals sector ACL[(1-PSE) or 0.5, whichever is greater]
Golden Tilefish				
Snowy grouper				
Speckled hind	0		0	0
Warsaw grouper	0		0	0
Black grouper				
Black sea bass				
Gag				
Red grouper				
Vermilion snapper				
Red snapper				

Table 4-19. Proportional Standard Errors (PSEs) for the ten species in Amendment 17 from numbers estimates.
Source: Obtained from http://www.st.nmfs.noaa.gov on 09.08.08.

Species	2003	2004	2005	2006	2007	3 year average (2005-2007)	5 year average (2003-2007)
Golden tilefish	40.8	37.8	39.2	45.4	59.8	48.1	44.6
Snowy grouper	62.3	36.9	60.3	31.5	44.4	45.4	47.1
Speckled hind	n/a	46.7	63.4	33.6	59.1	52.0	50.7*
Warsaw grouper	44.9	76.5	89	38.5	62.7	63.4	62.3
Black grouper	35.3	38.5	48.0	57.9	44.0	50.0	44.7
Black sea bass	11.4	11.3	9.4	11.2	10.8	10.5	10.8
Gag	16.0	17.0	19.1	16.7	16.2	17.3	17.0
Red grouper	18.9	24.6	20.7	21.1	27.3	23.0	22.5
Vermilion snapper	16.6	14.3	10.6	14.2	10.6	11.8	13.3
Red snapper	16.5	14.1	17.9	19	19.9	18.9	17.5
*Represents average of last 4 years as there were no reported landings of speckled hind in 2003 from MRFSS.							

4.6.2.1 Biological Effects

Alternative 1 (**no action**) would not specify recreational sector ACTs for the 10 species undergoing overfishing. In some cases, the Council could decide that action to set TAC for recently assessed species at the yield at 75% F_{MSY} satisfies the reauthorized Magnuson-Stevens Act requirement of setting a target level catch below an overfishing level but this would require that the SSC raise their ABC recommendations above the yield at 75%F_{MSY}. Snapper Grouper Amendments 13C, 15A, and 16 set allocations and TACs for black sea bass, snowy grouper, gag, and vermilion snapper. As the TACs and recreational portion of the TAC (calculated but not specified through an amendment) for black sea bass, snowy grouper, gag, and vermilion snapper approximate the yield at F_{OY} in 2009, they could meet the requirements of the reauthorized Magnuson-Stevens Act and specify a target below an OFL based on the yield at F_{MSY} as long as the SSC modified their current ABC recommendation.

While actions were taken in recent amendments to end overfishing of snowy grouper, black sea bass, gag, vermilion snapper, and golden tilefish, recent management measures have not been implemented for red snapper, speckled hind, and warsaw grouper. Failure to specify ACTs for these species could allow elevated fishing mortality rates of these species to continue and further compromise the status of these stocks.

Alternative 2 is the least conservative of the action alternatives and would set the recreational sector ACT to 85% of ACL. A greater biological benefit would be attained through **Alternative 3**, which would set the ACT to 75% of ACL. There is greater uncertainty with recreational catch data than commercial data. Quota monitoring systems can accurately track commercial landings data but this is not possible for the recreational sector. Recreational data are based on samples, which are expanded to account for effort. Therefore, there can be tremendous uncertainty for recreational data, particularly for those species which are infrequently encountered. Therefore, recreational data for frequently encountered species such as black sea bass and vermilion snapper are more reliable than for infrequently taken species such as golden tilefish, warsaw grouper, and snowy grouper.

Alternative 4 captures the difference in uncertainty associated with different species by incorporating the PSE in the estimate of ACT (Table 4-19). Therefore, the ACT for species such as vermilion snapper and black sea bass would be higher than the ACT for species with high estimates of PSE, which are infrequently encountered. This approach uses the best available data on the uncertainty around estimates of the recreational catch to set the ACT.

The impacts to ESA-listed species from implementing **Alternatives 1-4** for the recreational sector are anticipated to be the same as those described for the commercial sector (see Section 4.6.1.1).

4.6.2.2 Economic Effects

Recreational Fishery

Given a chosen allocation ratio between the commercial and recreational sectors and ACLs, ACTs will act similar to a recreational allocation and thus will condition the type of specific management measures for the recreational fishery. The short-term adverse economic effects on the recreational fishery would be inversely related to the long-term economic benefits from the fishery. **Alternative 1** would be associated with smallest short-term adverse economic effects and smallest long-term economic benefits whereas **Alternative 4** would be associated with the largest short-term adverse impacts and largest long-term benefits. **Alternatives 2 and 3** would fall in between these two extremes. One beneficial advantage of **Alternative 4** is giving consideration to the uncertainty surrounding recreational harvest estimates particularly of species infrequently caught by recreational anglers.

4.6.2.3 Social Effects

Alternative 4 would have the largest short-term negative social impacts compared to the other alternatives. Appendix E displays bundled alternatives of allocations and ACLs to generate ACTs and associated economic and social impacts.

4.6.2.4 Administrative Effects

Under the **No-Action Alternative** ACTs would not be set for the recreational sector, and therefore there would be no target harvest level. As a result the chance of exceeding proposed ACLs would most likely increase, causing AMs to be triggered, and ultimately negatively impacting the administrative environment. There is only a marginal difference between the administrative impacts of **Alternatives 2** through **4** since they only differ in their degree of conservativeness. The more conservative an ACT level is set the more likely the chance is that it will be exceeded and AMs would be triggered. Therefore, it may be assumed that **Alternative 2** would have the potential of inuring the lowest administrative burden in the form of outreach, division coordination, and enforcement, should it be exceeded; while the impact of **Alternative 3** may be slightly higher, and impacts of **Alternative 4** may be the highest of all the alternatives.
impacts of **Alternative 4** may be the highest of all the alternatives.

4.6.2.5 Council's Conclusions

4.7 Management Measures for Deepwater Species

4.7.1 Regulations to Limit Landings of Speckled Hind and Warsaw Grouper to the ACTs

Alternative 1 (no action). Retain existing regulations for speckled hind and warsaw grouper.
Alternative 2. Prohibit all commercial and recreational possession and retention of speckled hind and warsaw grouper.

Alternative 3. Prohibit all commercial and recreational fishing for, possession and retention of all deepwater species.

Alternative 4. Prohibit all commercial and recreational fishing for, possession and retention of all deepwater species. Allow harvest for golden tilefish in a specified area or allow golden tilefish harvest by those with golden tilefish endorsements without any speckled hind and warsaw grouper mortality.

For speckled hind, the ABC = 0 pounds and the ACT = 0 pounds. For warsaw grouper, the ABC = 0 pounds and the ACT = 0 pounds. The Council's goal is to keep total mortality (landings + discard/release mortality) less than or equal to ACT. Therefore, there cannot be any fishing that results in any mortality of speckled hind and/or warsaw grouper.

Current regulation for species in the deepwater fishery are shown in Tables 4-20 and 4-21.

Table 4-20. Current commercial regulations for deepwater species.

	COMMERCIAL REGULATIONS					
SPECIES	SIZE LIMIT	LIMITED ACCESS	GEAR RESTRICTIONS	ANNUAL QUOTA (gutted weight)	TRIP LIMITS	AREA CLOSURES
Snowy Grouper		√	√	84,000 lbs	100 lbs	√
Golden Tilefish		√	√	295,000 lbs	4,000 lbs until 75% of quota taken; after 75%, trip limit reduced to 300 lbs. Do not adjust trip limit downwards unless percent specified is captured on or before September 1.	√
Blueline Tilefish		√	√			√
Yellowedge Grouper		√	√			√
Warsaw Grouper		√	√		1 per vessel per trip. No sale, trade, or transfer at sea	√
Speckled Hind		√	√		1 per vessel per trip. No sale, trade, or transfer at sea	√
Misty Grouper		√	√			√
Queen Snapper	12" TL	√	√			√
Silk Snapper	12" TL	√	√			√

Table 4-21. Current recreational regulations for deepwater species.

	RECREATIONAL REGULATIONS				
SPECIES	SIZE LIMIT	GEAR RESTRICTIONS	POSSESSION LIMIT	TRIP LIMITS	AREA CLOSURES
Snowy Grouper		√	1 per person per day. Included in 5 grouper per person per day.		√
Golden Tilefish		√	1 per person per day. Included in 5 grouper per person per day.		√
Blueline Tilefish		√	Included in 5 grouper per person per day.		√
Yellowedge Grouper		√	Included in 5 grouper per person per day.		√
Warsaw Grouper		√	Included in 5 grouper per person per day.	1 per vessel per trip. No sale, trade, or transfer at sea	√
Speckled Hind		√	Included in 5 grouper per person per day.	1 per vessel per trip. No sale, trade, or transfer at sea	√
Misty Grouper		√	Included in 5 grouper per person per day.		√
Queen Snapper	12" TL	√	Included in 10 snapper per person per day.		√
Silk Snapper	12" TL	√	Included in 10 snapper per person per day.		√

4.7.1.1 Biological Effects

Alternative 1 (no action) would retain existing regulations for speckled hind and warsaw grouper, which were implemented in 1994. These regulations include a 1 fish per vessel per trip limit for the recreational and commercial sectors, inclusion within the 5 grouper per person per day aggregate bag limit and a prohibition on the sale, trade, or transfer at sea. Note: Snapper Grouper Amendment 16 reduces the 5 grouper aggregate bag limit to 3. The 2007 Report to Congress on the Status of U.S. Fisheries indicates both species are experiencing overfishing but the overfished status is unknown.

Warsaw grouper and speckled hind are extremely vulnerable to overfishing because they are slow growing, long-lived, and change sex from female to male with increasing size and age. Furthermore, speckled hind is believed to form spawning aggregations, which can increase it vulnerability to fishing pressure. Assessment information is dated for both species. Warsaw grouper was assessed by catch curve analysis using data from 1988 and 1990 (Huntsman *et al.* 1992). Static SPR values for warsaw grouper were 0.2% and 6% for 1988 and 1990 fishing years, respectively. Speckled hind was assessed for the 1988, 1990, 1996, and 1999 fishing years (NMFS 1991; Huntsman *et al.* 1992; Potts and Brennan 2001). SPR values were 25%, 12%, 8%, and 5% for 1988, 1990, 1996, and 1999 fishing years, respectively. A study conducted by Ziskin (2008) indicated that total mortality and fishing mortality of speckled hind had increased since 1977-1993 suggesting that speckled hind continues to be overexploited, despite the 1994 regulation, and may not be reproductively resilient enough to recover from depressed population levels.

Discard mortality also can limit the amount by which fishing effort and mortality is reduced by limited access systems, trip limits, and minimum size limits, if fishermen catch and discard speckled hind and warsaw grouper when targeting co-occurring species. The snapper grouper ecosystem includes many species, which occupy the same habitat at the same time. While speckled hind and warsaw grouper are considered to be deep water species, they occupy a broad depth zone and commonly co-occur with mid-shelf species such as vermilion snapper and gag as young fish. Warsaw grouper is usually found at depths from 55 to 525 m (180-1,722 ft) (Heemstra and Randall 1993) and juveniles are sometimes observed in inshore waters (Robins and Ray 1986), on jetties and shallow reefs. The speckled hind is found in depths from 25 m (98 ft) (Heemstra and Randall 1993) to 400 m (1,312 ft) (Bullock and Smith 1991) and juveniles commonly occur in shallower waters. Therefore, while speckled hind and warsaw grouper are not often targeted due to regulations, they are likely to be caught and suffer some mortality when regulated since they will be incidentally caught when fishermen target other co-occurring species. This incidental catch of speckled hind and warsaw grouper may be responsible for continued overfishing of these species. At their June 2008 meeting, the SSC recommended an ABC = 0 for speckled hind and warsaw grouper.

Alternative 2 would prohibit all possession and retention of speckled hind and warsaw grouper. This alternative would have a greater biological effect than **Alternative 1** if there is some targeting of these species. However, if all catch of speckled hind and warsaw grouper is incidental to targeting co-occurring species, then the biological effect would be similar to **Alternative 1** with the exception that the magnitude of discards would be increased. Since most speckled hind and warsaw grouper are generally caught at depths of 160 feet (49 m) and greater, the release mortality would be expected to be high. McGovern *et al.* (2005) estimates release mortality rates of about 50% for gag caught at depths of 50 m.

Alternative 3 would prohibit all fishing for, possession, and retention of all deepwater species. Analysis of logbook data indicates shallow water groupers such as red grouper and gag as well as deepwater species like snowy grouper and golden tilefish were taken on commercial trips with warsaw grouper during 2004-2006 (Table 4-22). In contrast, mid-shelf species such as vermilion snapper, scamp, red grouper, black grouper, and gag were much more commonly taken on commercial trips with speckled hind than deep water species (Table 4-23). In the recreational sector, deep water species were very rarely taken on trips when either warsaw grouper or speckled hind were caught (Tables 4-24 to 4-27). Therefore, prohibiting possession of all deepwater species is not likely to provide much reduction in incidental catch of warsaw grouper and speckled hind. Measures to limit catch of mid-shelf species such as those proposed in Section 4.8 would be more likely to have a greater biological benefit in reducing mortality of warsaw grouper and speckled hind. Therefore, the biological benefit of **Alternative 3** for reducing mortality of speckled hind and warsaw grouper would be slightly greater than **Alternative 2**.

Table 4-22. Species taken on commercial trips during 2004-2006 when at least 1 pound of warsaw grouper was caught.

COMMON	Obs	% Trip	% Wt
GROUPER,RED	23	52.27%	17.32%
SHARK,SANDBAR	12	27.27%	14.49%
GROUPER,YELLOWEDGE	20	45.45%	10.39%
HIND,SPECKLED	23	52.27%	7.72%
GROUPER,BLACK	17	38.64%	6.35%
TILEFISH,BLUELINE	24	54.55%	5.03%
SNAPPER,MUTTON	16	36.36%	4.76%
SNAPPER,SILK	26	59.09%	4.75%
AMBERJACK,GREATER	19	43.18%	4.64%
GROUPER,SNOWY	23	52.27%	4.35%
GROUPER,GAG	13	29.55%	4.31%
SHARK,BLACKTIP	3	6.82%	3.60%
SCAMP	19	43.18%	2.84%
GROUPER,WARSAW	44	100.00%	2.82%
TILEFISH	2	4.55%	1.56%
SNAPPER,BLACKFIN	8	18.18%	0.72%
SNAPPER,QUEEN	7	15.91%	0.44%
SNAPPER,RED	4	9.09%	0.35%
SNAPPER,VERMILION	3	6.82%	0.35%
28 others	7,782		3.21%

Table 4-23. Species taken on commercial trips during 2004-2006 when at least 1 pound of speckled grouper was caught during 2004-2006.

COMMON	Obs	% Trip	% Wt
SNAPPER,VERMILION	167	78.40%	23.18%
SCAMP	167	78.40%	11.74%
GROUPER,RED	161	75.59%	10.61%
GROUPER,BLACK	76	35.68%	7.13%
TRIGGERFISH,GRAY	131	61.50%	4.82%
GROUPER,GAG	74	34.74%	4.64%
GRUNTS	86	40.38%	4.29%
HIND,SPECKLED	213	100.00%	3.71%
AMBERJACK,GREATER	74	34.74%	3.63%
JACK,ALMACO	97	45.54%	3.38%
TILEFISH	4	1.88%	2.37%
KING MACKEREL	78	36.62%	1.96%
SEA BASSE,ATLANTIC,BLACK,UNC	109	51.17%	1.51%
SNAPPER,RED	72	33.80%	1.48%
PORGY,RED,UNC	110	51.64%	1.45%
GRUNT,WHITE	58	27.23%	1.42%
GROUPER,SNOWY	24	11.27%	1.41%
DOLPHINFISH	73	34.27%	1.13%
SNAPPER,YELLOWTAIL	24	11.27%	1.05%
PORGY,JOLTHEAD	77	36.15%	0.96%
GROUPER,YELLOWEDGE	10	4.69%	0.88%
HOGFISH	64	30.05%	0.86%
TILEFISH,BLUELINE	17	7.98%	0.63%
GROUPER,YELLOWFIN	13	6.10%	0.53%
SNAPPER,MUTTON	30	14.08%	0.49%
BANDED RUDDERFISH	31	14.55%	0.49%
MARGATE	18	8.45%	0.47%
BLACK BELLIED ROSEFISH	2	0.94%	0.45%
45 others	9,550		3.35%

Table 4-24. Species taken on headboat trips during 2004-2006 when at least 1 warsaw grouper was caught.

Species	species	Obs	Sum	% Trips	% Number
Vermilion snapper	10	58	14972	58.00%	39.64%
Black sea bass	33	72	4627	72.00%	12.25%
Gray triggerfish	77	70	2814	70.00%	7.45%
White grunt	50	44	2170	44.00%	5.75%
Tomtate	51	39	1869	39.00%	4.95%
Banded rudderfish	123	31	1652	31.00%	4.37%
Red porgy	1	38	1395	38.00%	3.69%
Scamp	30	39	1230	39.00%	3.26%
Bank sea bass	34	27	602	27.00%	1.59%
Scup	8	7	575	7.00%	1.52%
Bluefish	79	13	564	13.00%	1.49%
Knobbed porgy	3	23	468	23.00%	1.24%
Graysby	88	21	444	21.00%	1.18%
Whitebone porgy	2	28	377	28.00%	1.00%
Red snapper	11	60	357	60.00%	0.95%
Greater amberjack	60	32	350	32.00%	0.93%
Yellowtail snapper	15	13	349	13.00%	0.92%
Sharpnose shark	230	39	349	39.00%	0.92%
Almaco jack	62	26	335	26.00%	0.89%
Bigeye	98	25	298	25.00%	0.79%
Spottail pinfish	4	9	265	9.00%	0.70%
Gag	29	59	181	59.00%	0.48%
Warsaw grouper	23	100	166	100.00%	0.44%
51 others			1,360		3.60%

Table 4-25. Species caught on headboat trips during 2004-2006 when at least 1 speckled hind was caught.

Species	species	Obs	Sum	% Trip	% Wt
Vermilion snapper	10	245	108474	80.33%	49.73%
Red porgy	1	219	13008	71.80%	5.96%
White grunt	50	222	12473	72.79%	5.72%
Tomtate	51	167	11902	54.75%	5.46%
Black sea bass	33	178	10923	58.36%	5.01%
Scamp	30	216	9301	70.82%	4.26%
Banded rudderfish	123	147	9241	48.20%	4.24%
Gray triggerfish	77	257	6825	84.26%	3.13%
Graysby	88	179	3950	58.69%	1.81%
Knobbed porgy	3	176	3250	57.70%	1.49%
Almaco jack	62	190	2982	62.30%	1.37%
Scup	8	31	2725	10.16%	1.25%
Whitebone porgy	2	158	2358	51.80%	1.08%
Bank sea bass	34	81	2232	26.56%	1.02%
Bigeye	98	159	2118	52.13%	0.97%
Yellowtail snapper	15	67	1478	21.97%	0.68%
Sharpnose shark	230	144	1254	47.21%	0.57%
Greater amberjack	60	173	1207	56.72%	0.55%
Speckled hind	20	305	1196	100.00%	0.55%
Dolphin	117	140	1035	45.90%	0.47%
72 others			10,205		4.68%

Table 4-26. Species taken on MRFSS trips during 2004-2006 when at least 1 warsaw grouper was caught. (Represents sample, not total catch)

COMMON	obs	Sum	% Trips	% Number
vermilion snapper	3	107	23.08%	50.000%
red snapper	5	17	38.46%	7.944%
almaco jack	3	13	23.08%	6.075%
greater amberjack	5	13	38.46%	6.075%
dolphin	3	11	23.08%	5.140%
warsaw grouper	13	10	100.00%	4.673%
gag	5	9	38.46%	4.206%
gray triggerfish	2	6	15.38%	2.804%
red porgy	3	6	23.08%	2.804%
king mackerel	1	4	7.69%	1.869%
scamp	3	3	23.08%	1.402%
little tunny	2	2	15.38%	0.935%
queen triggerfish	2	2	15.38%	0.935%
snowy grouper	2	2	15.38%	0.935%
tomtate	1	2	7.69%	0.935%
amberjack genus	1	1	7.69%	0.467%
banded rudderfish	1	1	7.69%	0.467%
blue runner	1	1	7.69%	0.467%
red grouper	1	1	7.69%	0.467%
wahoo	1	1	7.69%	0.467%
yellowedge grouper	1	1	7.69%	0.467%
yellowtail snapper	1	1	7.69%	0.467%

Table 4-27. Species taken on MRFSS trips during 2004-2006 when at least 1 speckled hind was caught. (Represents sample, not total catch)

COMMON	Obs	Sum	% Trips	% Number
vermilion snapper	11	89	44.00%	20.55%
black sea bass	6	66	24.00%	15.24%
dolphin	8	51	32.00%	11.78%
snowy grouper	2	34	8.00%	7.85%
herring family	1	30	4.00%	6.93%
red porgy	6	21	24.00%	4.85%
gray triggerfish	7	19	28.00%	4.39%
red snapper	5	17	20.00%	3.93%
speckled hind	25	17	100.00%	3.93%
white grunt	3	12	12.00%	2.77%
gag	5	11	20.00%	2.54%
king mackerel	4	11	16.00%	2.54%
spottail pinfish	2	11	8.00%	2.54%
scamp	4	8	16.00%	1.85%
greater amberjack	2	7	8.00%	1.62%
banded rudderfish	1	5	4.00%	1.15%
atlantic sharpnose shark	2	4	8.00%	0.92%
jolthead porgy	1	4	4.00%	0.92%
almaco jack	1	3	4.00%	0.69%
amberjack genus	1	2	4.00%	0.46%
great barracuda	2	2	8.00%	0.46%
little tunny	2	2	8.00%	0.46%
tilefish	1	2	4.00%	0.46%
cero	1	1	4.00%	0.23%
margate	1	1	4.00%	0.23%
skipjack tuna	1	1	4.00%	0.23%
spanish mackerel	1	1	4.00%	0.23%
yellowtail snapper	2	1	8.00%	0.23%

Alternative 4 would prohibit all fishing for, possession, and retention of all deepwater species but would allow harvest for golden tilefish in areas where speckled hind and warsaw grouper are not caught. Examination of logbook and MRFSS reveals that warsaw grouper and speckled hind are very rarely taken on trips with golden tilefish during 2004-2006 (Table 4-28). However, since sale of warsaw grouper and speckled hind is prohibited, logbook data might not accurately reflect the actual catch of these species.

Table 4-28. Species taken of commercial trips during 2004-2006 when at least 1 pound of golden tilefish was caught.

COMMON	Obs	Mean	Sum
GOLDEN TILEFISH	1065	980	1,044,019
GROUPER,SNOWY	425	571	242,719
BLACK BELLIED ROSEFISH	176	788	138,643
SHARK,SANDBAR	64	1,499	95,957
TILEFISH,BLUELINE	256	356	91,137
GROUPER,YELLOWEDGE	171	257	43,872
DOLPHINFISH	213	117	24,947
SHARK,HAMMERHEAD	36	481	17,333
GROUPER,RED	42	372	15,623
AMBERJACK,GREATER	72	202	14,518
KING MACKEREL	103	138	14,183
SNAPPER,VERMILION	59	205	12,102
HAKE,ATLANTIC,RED & WHITE	110	82	8,984
GROUPER,BLACK	22	377	8,294
SPANISH MACKEREL	22	322	7,082
SHARK,SILKY	13	389	5,061
SHARK,ATLANTIC SHARPNOSE	20	246	4,929
SCAMP	28	169	4,731
SNAPPER,MUTTON	31	152	4,721
HIND,SPECKLED	15	283	4,244
SHARK,BLACKTIP	12	336	4,034
GROUPER,GAG	21	189	3,977
SNAPPER,YELLOWTAIL	33	118	3,898
TRIGGERFISH,GRAY	29	127	3,696
AMBERJACK,LESSER	29	118	3,420
TUNA,YELLOWFIN	9	357	3,210
BARRELFISH	26	118	3,079
EELS,UNC	81	35	2,856
SCORPIONFISH-THORNYHEADS	57	49	2,783
SNAPPER,SILK	22	114	2,507
SHARK,BULL	5	400	1,999
SNAPPER,RED	23	84	1,938
COD,ATLANTIC,UNC	8	238	1,901
JACK,ALMACO	28	58	1,633
SNAPPER,QUEEN	12	125	1,500
FINFISHES,UNC FOR FOOD	29	44	1,286
WRECKFISH	1	1,232	1,232
WAHOO	28	38	1,078
SHARK,LEMON	1	974	974
SHARK,TIGER	8	121	972
BARRACUDA	22	38	840
SHARK,UNC,FINS	13	62	806
EEL,CONGER	16	45	712
SEA	17	40	688

COMMON	Obs	Mean	Sum
BASSE,ATLANTIC,BLACK,UNC			
TUNA,BLACKFIN	6	111	666
BLUE RUNNER	37	17	616
SHARK,FINETOOTH	2	288	577
SHARK,GREAT HAMMERHEAD	2	285	570
PORGY,RED,UNC	21	25	523
SNAPPER,MANGROVE	14	36	508
LOBSTER,SPINY	5	97	485
BANDED RUDDERFISH	11	42	458
SHARK,MAKO UNC	5	91	456
GROUPER,YELLOWFIN	4	112	450
PORGY,JOLTHEAD	16	27	435
COBIA	10	43	432
SQUIRRELFISHES	7	60	418
GRUNTS	8	51	408
BLUEFISH	6	66	398
AMBERJACK	1	374	374
GROUPER,WARSAW	2	165	330
35 others			2,447

Table 4-29. Species taken on MRFSS trips during 2004-2006 when at least 1 golden tilefish was caught.

common	Percent
golden tilefish	61.03%
black sea bass	15.05%
dolphin	11.36%
snowy grouper	5.08%
king mackerel	1.39%
unidentified fish	0.92%
little tunny	0.83%
tautog	0.83%
blueline tilefish	0.74%
red porgy	0.65%
redtail scad	0.55%
vermilion snapper	0.37%
amberjack genus	0.18%
blackfin tuna	0.18%
bigeye	0.09%
cero	0.09%
cobia	0.09%
mutton snapper	0.09%
red grouper	0.09%
sailfish	0.09%
scamp	0.09%
speckled hind	0.09%
tripletail	0.09%

Golden tilefish are usually caught over mud habitat in depths of 180 to 300 m (Low *et al.* 1983; Able *et al.* 1993) but most commonly occur at depths of 200 m (Dooley 1978). Speckled hind and warsaw grouper prefer rocky habitats and are not found over mud (Heemstra and Randall 1993). Longline gear is sometimes set over rocky bottom in 180 to 300 m where snowy grouper, blueline tilefish, and blackbelly rosefish are caught. On these sets, golden tilefish are also caught in areas where longline gear crosses over mud habitat. While few speckled hind and warsaw grouper are taken on trips with golden tilefish, there is a chance catch of these species could occur when fishing gear is set over rocky habitat. Therefore, restriction of fishing gear for golden tilefish to large expanses of mud habitat where rocky habitat is not present would reduce the chance that warsaw grouper or speckled hind would be caught when fishing for golden tilefish. Low *et al.* (1983) identified areas of strictly mud habitat off of South Carolina and Georgia where golden tilefish occur (Figure 4-3). Sampling conducted by the MARMAP survey in the mud habitat identified by Low *et al.* (1983) has never yielded any speckled hind or warsaw grouper (unpublished MARMAP cruise reports). Able *et al.* (1993) has identified areas of tilefish mud habitat off the east coast of Florida.

Since speckled hind and warsaw grouper are more commonly taken with mid-shelf species and measures to prohibit take of deep water species in **Alternatives 3 and 4** might have little effect on reducing fishing mortality of these species.

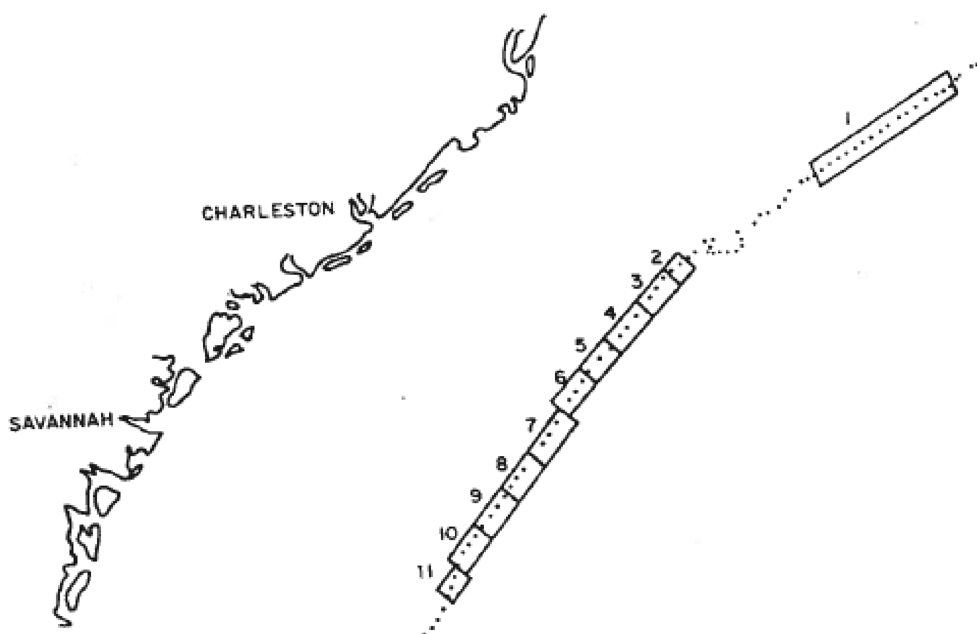


Figure 1.—Areas surveyed: The dotted line represents the 200 m (100-fathom) curve (not drawn to scale).

Figure 4-3. Locations off SC and GA where golden tilefish are taken. Areas 2 through 11 represent mud habitat.
Source: Figure 1 from Low *et al.* (1983).

None of the alternatives by themselves would keep total mortality less than the ACT of zero for speckled hind and warsaw grouper. **Alternatives 2 and 3** would come the closest as far as mortality from the deepwater fishery is concerned.

4.7.1.2 Economic Effects

Commercial Fishery

Alternative 1 will not encourage fishermen to take avoidance measures to catch speckled hind and Warsaw grouper whereas **Alternatives 2-4** may.

Alternative 3 is expected to have the greatest negative economic impact, amounting to a $1.1 million loss annually based on the 2007 value of harvested deepwater species. **Alternative 2** is expected to have the smallest negative economic impact. **Alternative 4** is expected to have a negative impact of at least $348,076 annually but no more than that under **Alternative 3**. This estimate is based on the 2007 value of all harvested deepwater species except golden tilefish.

Fishermen that currently retain the one speckled hind and warsaw grouper per vessel per trip as a way to supplement their diet or others (by giving it away), will not be able to do so under **Alternative 2**. This is expected to have minor impacts on fishermen’s food budgets given that much of the speckled hind and warsaw grouper is taken by longline vessels that take over 90% of the tilefish commercial quota. The trips taken by longline vessels are typically 5 days or more. In addition, **Alternative 2** may result in efforts by commercial fishermen to avoid catch of speckled hind and warsaw grouper. Golden tilefish fishermen have noted that they are able to avoid these species when they conduct their fishing over muddy substrate (Personal communication, Robert Preston 2008). Those fishermen that do not make efforts to avoid the two species will experience minor economic losses associated with extra time spent discarding speckled hind and Warsaw grouper.

Alternative 3 would prohibit targeting of all deepwater species. However, it is unlikely that species other than golden tilefish have been targeted since before 2006 given the small trip limit on snowy grouper and small annual landings of the other species. However, these bycatch species can supplement fishermen’s income significantly. Table 4-30 shows landings and ex-vessel value from 2007 of all deepwater species. The value of deepwater species caught in 2007 totals $1,101,876. This would be the expected annual negative economic impact from **Alternative 3**.

Table 4-30. Landings and Ex-Vessel Value of Deepwater Species, 2007.

Species	Landings (gutted weight)	Ex-Vessel Value
Snowy Grouper	79,607	$247,970
Golden Tilefish	308,700	$753,800
Blueline Tilefish	59,875	$88,102
Yellowedge Grouper	2,162	$7,202
Misty Grouper	-	-
Queen Snapper	-	-
Silk Snapper	1,781	$4,802
TOTAL	**452,125**	**$1,101,876**

ALS data, 2007.

A prohibition of fishing for, possession, and retention of all deepwater species would eliminate the golden tilefish fishery under **Alternative 3**. Approximately 308,700 pounds of golden tilefish were harvested in 2007 by longline and hook and line fishermen. Longline fishermen historical take 90% of the golden tilefish total landings while hook and line fishermen take 10%. In 2007, golden tilefish landings were valued at about $753,800. In past years, the longline fishermen fished for golden tilefish and shark species. With the decrease in allowable catch of several shark species, **Alternative 3** would likely result in longline fishermen exiting the South Atlantic fishery or focusing their efforts on species that can be caught with hook and line gear. Hook and line fishermen will likely be unable to shift to other fisheries. Hook and line fishermen typically fish for deepsea species during September and October when other fisheries are not available. Therefore, an inability to fish the deepsea fishery during those months will result in financial losses estimated as at least 10% of ex-vessel value of golden tilefish or $75,380. At this time, bycatch of the other deepsea species taken by hook and line vessels has not been estimated.

Alternative 4 prohibits fishing for, possession and retention of all deepwater species but allows for limited harvest of golden tilefish. The annual negative economic impact of **Alternative 4** totals at least $348,076. This is an aggregation of the 2007 value of all deepwater species with the exception of golden tilefish. At this time, estimates have not yet been made regarding which areas can remain open for harvest of golden tilefish. However, according to logbook data, almost 55% of the golden tilefish harvested in 2007 was taken in areas with no bycatch of warsaw grouper of speckled hind. The implied poundage can serve as a proxy of the amount of golden tilefish that can be harvested without bycatch of warsaw grouper or speckled hind. Using this approach, 169,479 pounds of golden tilefish were harvested in 2007 without bycatch of warsaw grouper or speckled hind. This amount has an ex-vessel value of $413,095 and is an estimate of what can be harvested by fishermen under **Alternative 4** if they harvest over muddy substrate. The annual negative economic impact from restrictions on harvest of golden tilefish is estimated at $340,705. The total annual negative economic impact from **Alternative 4** is therefore $688,781, which is an aggregate of the 2007 value of the portion of golden tilefish caught in areas where warsaw grouper and speckled hind were also caught and the value of all other deepsea species.

Alternative 4 could also result in an intensified race to fish for golden tilefish by traditional golden tilefish fishermen. If other non-deepwater fisheries were restricted through this amendment, those fishermen may choose to enter the golden tilefish fishery and further intensify the race to fish. This would result in shorter seasons, a lack of opportunity for hook and line participation (since hook and line vessels typically participate later in the year when the fishery is close to meeting its quota), and a decreased opportunity for participation by fishermen from the Carolinas where the weather prohibits them from fishing for golden tilefish until April or May. Another consequence of a race to fish would be a lower ex-vessel price (resulting in foregone profits) than what is currently received due to a temporarily increased supply of golden tilefish.

Alternative 1 will perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. **Alternatives 2-4** are unlikely to have adverse affects on ESA-listed *Acropora* species. Most of these snapper grouper species occur at depth outside the range where *Acropora* are found. Additionally, these alternatives are unlikely to alter fishing behavior in a way that would cause new adverse affects to *Acropora*. The impacts from **Alternatives 2-4** on sea turtles and smalltooth sawfish are unclear. If the prohibitions on retention of these snapper grouper species perpetuates the existing amount of fishing effort, but causes effort redistribution, any potential effort shift is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. If these retention prohibitions reduce the overall amount of fishing effort in the fishery, the risk of interaction between sea turtles and smalltooth sawfish will likely decrease.

Non-use values, like existence and bequest values, would likely be highest under **Alternative 3** because this alternative offers the greatest level of protection for deepwater species.

Recreational Fishery

Alternative 1 would provide the least short-term economic effects on the recreational fishery, but it would also tend to reduce potentially in a substantial way the long-term economic benefits derivable from the fishery. The overall impacts of Alternative 2 would be relatively small as only about 17,000 pounds of speckled hind and Warsaw grouper were harvested by the recreational sector. It is possible, though, that some of the for-hire vessels may be more dependent on the two species than others. The Warsaw grouper prohibition would tend to affect charterboats more than headboats while the reverse is true for speckled hind. **Alternative 3** would bring about larger adverse economic impacts considering the larger number of species being subject to the ban on retention and possession of the subject species. Charterboats would tend to be affected by this alternative more than headboats. **Alternative 4**, by allowing harvest of golden tilefish in certain areas, would provide lower negative economic effects than **Alternative 3**, especially that golden tilefish accounts for a relatively large proportion of recreational harvests. Naturally, this would depend on whether the areas selected to be open for recreational fishing would be those frequented by recreational anglers more than commercial fishermen.

4.7.1.3 Social Effects

Alternative 3, which restricts fishing for all deepwater species, results in the greatest negative economic and social impacts to fishermen and fishing communities. In 2006, 9 longline and 11 hook and line fishermen harvested over 400 pounds of golden tilefish. While longline fishermen typically participate in golden tilefish and shark fisheries each year, when available, hook and line fishermen participate in several fisheries throughout the year. **Alternative 3** would likely result in exit of at least some of the longline fishermen. This is likely to result in unemployment and financial stress for some fishing families.

Alternative 4 restricts fishing for deepwater species but allows for fishing for golden tilefish in certain areas where bycatch of warsaw grouper and speckled hind can be avoided. This could result in a race to fish by traditional golden tilefish fishermen, increasing safety concerns and stress on the water.

Fishermen restricted from fishing for other non-deepwater species that have not fished for golden tilefish in the past may decide to enter the fishery under **Alternatives 1-4**. This could increase safety concerns for traditional golden tilefish fishermen and newcomers due to possible congestion on the water and the pressure to fish in bad weather before the commercial golden tilefish ACT is met. In addition, golden tilefish fishermen from the Gulf of Mexico and Mid-Atlantic areas may try to enter the fishery. Limited access privilege (LAP) programs are being implemented in the Gulf of Mexico and Mid-Atlantic golden tilefish fisheries. The management programs are not structured to maintain year-round fishing. Therefore, those holding LAPs and those that do not receive LAPs may look to begin participating in the South Atlantic golden tilefish fishery.

4.7.1.4 Administrative Effects

Under the **No Action Alternative**, administrative impacts would likely be negative if the result of not implementing more restrictive measures now were to require additional and more drastic amendment actions in the future. **Alternatives 2** and **3** would both create an adverse impact on the administrative environment since regulations would need to be updated, outreach materials would need to be developed, and coordination with the Office of Law Enforcement would be necessary. **Alternative 4** would incur a slightly higher level of administrative burden due to the area exemption for golden tilefish. Under **Alternative 4**, Enforcement efforts would need to be focused on both a defined region as well as illegal takes, where **Alternatives 2** and **3** would only require enforcement concerning illegal takes.

4.7.1.5 Council's Conclusions

4.7.2 Regulations to Limit Landings of Snowy Grouper and Golden Tilefish to the ACTs

Alternative 1 (no action). Retain regulations for deepwater species.

~~**Alternative 2.** Implement a recreational limit of one snowy grouper per vessel per day.~~

~~**Alternative 3.** Divide the commercial quota for snowy grouper by region/state. Allocate 60.29% (50,645 pounds gutted weight) to states in the MAFMC's jurisdiction, North Carolina, and South Carolina and 39.71% to Georgia and Florida (33,355 pounds gutted weight). Each region's directed quota (after adjustment for PQBM) would be tracked by dealer reporting. After the commercial quota is met in either region, all purchase and sale is prohibited in that region and harvest and/or possession is limited to the bag limit in that region.~~

Note: states in MAFMC's jurisdiction include New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina.

Council staff recommends that alternatives 2 and 3 be moved to the considered but rejected appendix as staff does not believe that it will be possible to target snowy grouper without bycatch of speckled hind and warsaw grouper. The SSC's ABC recommendation both these species is zero.

Alternative 4. Adjust golden tilefish management measures.

Sub-alternative 4A. Change the start of the golden tilefish fishing year September 1st.
Sub-alternative 4B. Change the start of the golden tilefish fishing year August 1st.
Sub-alternative 4C. Change the start of the golden tilefish fishing year May 1st.
Sub-alternative 4D. Remove the 300 lb. trip limit when 75% of the quota is taken.

Alternative 5. Distribute golden tilefish gear specific endorsements for snapper grouper permit holders that qualify under the eligibility requirements stated below. Only snapper grouper permit holders with a golden tilefish longline endorsement or a golden tilefish hook and line endorsement associated with their snapper grouper permit will be allowed to target golden tilefish. The commercial quota would be allocated as 10% to those holding golden tilefish hook and line endorsements and 90% to those holding golden tilefish longline endorsements. Also, change the start date to August 1st. *Logbooks to check catch history and trip tickets to verify.*

Golden Tilefish Hook and Line Endorsement Eligibility Requirements

Sub-alternative 5A. To receive a golden tilefish hook and line endorsement, the individual must have a average harvest of 1,000 pounds when the individual's best three of five years from 2001-2005 are estimated.

Sub-Alternative 5B. To receive a golden tilefish hook and line endorsement, the individual must have a average harvest of 500 pounds when the individual's best three of five years from 2001-2005 are estimated.

Golden Tilefish Longline Endorsement Eligibility Requirements

Sub-Alternative 5C. To receive a golden tilefish longline endorsement, the individual must have a total of 2,000 pounds golden tilefish caught between January 2005 and November 2007.

For snowy grouper, the ABC = 102,425 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). For golden tilefish, ABC = 326,554 pounds whole weight; the commercial ACT = XX pounds (Council to specify) and the recreational ACT = YY pounds (Council to specify). The Council's goal is to keep total mortality (landings + discard/release mortality) less than or equal to ACT.

The current regulations for the species in the deepwater fishery are shown in Tables 4-20 and 4-21.

4.7.2.1 Biological Effects

Alternative 1 (no action) would retain regulations for golden tilefish and snowy grouper established through Snapper Grouper Amendments 13C and 15A. Snowy grouper is experiencing overfishing and is overfished. Golden tilefish is also experiencing overfishing but it is not overfished. Note: The Council has taken action to end overfishing but the determination about overfishing will not be changed until an assessment update is completed in 2010/2011. Regulations for snowy grouper set the commercial quota at 84,000 pounds gutted weight and limited the recreational catch to 1 fish per person per day within the 5 fish grouper aggregate. Note: Snapper Grouper Amendment 16 reduces the 5 fish aggregate to 3. The quota was based on applying a commercial allocation of 95% to a TAC established through Snapper Grouper Amendment 15B that would approximate the yield at 75% F_{MSY} and OY in 2009. Since catch would be held at constant levels as biomass rebuilds, fishing mortality would decrease below 75% F_{MSY} after 2009.

Regulations for golden tilefish established a commercial quota of 295,000 pounds gutted weight with a 4,000 lb trip limit that is reduced to 300 pounds gutted weight if 75% of the quota is met on or before September 1. In addition, regulations limited recreational catch to 1 fish per person per day. The commercial catch was based on historic landings during 1999-2003, where 98% of the total catch was captured by commercial fishermen. The commercial portion (98%) was applied to the yield at F_{MSY} to determine the commercial quota.

These regulations were intended to end overfishing of both species and rebuild the snowy grouper stock. Therefore, retention of status quo management measures would not likely have negative biological impacts on the stock if management measures established through Snapper Grouper Amendments 13C and 15A have ended overfishing. If the Council specifies an ACT at a level below the current management measures then additional measures proposed in **Alternatives 2 through 4** might be necessary.

Alternative 2 would reduce the snowy grouper bag limit from 1 fish per person within the 5 fish grouper aggregate to one fish per vessel. Implementation of the 1 fish per person bag limit in October 2006, appears to have been effective in reducing recreational harvest of snowy grouper since recreational landings decreased from approximately 13,500 fish in 2006 to 3,800 fish in 2007 (Table 4-31). Data through August (Wave 4) suggests snowy grouper landings have remained at low levels in 2008. Snowy grouper stocks could benefit from this action in the long-term if recreational fishing effort increases in the South Atlantic. Since release mortality is considered to range from 90-100% for snowy grouper, a smaller bag limit would provide little reduction in fishing mortality if fishermen continued to target snowy grouper because the vast majority of released fish would likely die from the trauma of capture. However, the smaller bag limit implemented through Snapper Grouper Amendment 13C may have provided fishermen an incentive to avoid snowy grouper. Further reduction in the bag limit to a 1 fish per vessel limit might provide additional incentive to avoid snowy grouper.

Table 4-31. Recreational landings (numbers) of snowy grouper from the South Atlantic during 2001 – 2008.

Year	HARVEST (TYPE A + B1)	PSE	RELEASED ALIVE (TYPE B2)	PSE
2001	9,603	47.1	651	100
2002	1,643	55.2	505	100
2003	3,090	62.3	1,059	100
2004	13,079	36.9	612	89.3
2005	10,935	60.3	2,866	52.3
2006	13,487	31.5	58	100.8
2007	3,771	44.4	1,019	44.2
2008	1,118	55.8	576	100.1

Alternative 3 would allocate 60.29% of the commercial portion of the ACT to Mid-Atlantic states, North Carolina, and South Carolina and 39.71% of the commercial portion of the ACT to Georgia and Florida. Each region's directed quota would be tracked by dealer reporting. After the commercial quota is met in either region, all purchase and sale is would be prohibited in the region and harvest and/or possession would be limited to the bag limit. However, there is a chance that harvest could continue in a particular region and snowy grouper would be landed in the region where harvest is still allowed. This could result in some localized depletion but would not be expected to negatively affect the population.

The rationale for having regional quotas is that fishermen off Georgia and Florida could have an advantage and catch part of the quota early in the year when bad weather would prevent fishermen from catching snowy grouper off the Mid-Atlantic, North Carolina, and South Carolina. However, as the trip limit is only 100 pounds gutted weight and the quota is very small, early closure of the snowy grouper fishery might not occur. In 2006 and 2007, the magnitude of landed snowy grouper was much less than the quota. As of October 2008, only 54% of the 84,000 pound gutted weight quota had been met. The trip limit has probably reduced targeting to some degree where only snowy grouper taken as incidental catch are retained when fishermen seek co-occurring species.

The Council has not picked a Preferred Alternative ACT in Section 4.4. If the commercial portion of the ACT becomes less than 84,000 pounds gutted weight, it may not be reasonable to further divide a small quota among states. The Council considered but rejected an alternative in Snapper Grouper Amendment 13C to divide snowy grouper quota among states because of concerns about accurately tracking the small snowy grouper quotas. There is the potential that the ACT specified in Section 4.4 could result in a quota smaller than 84,000 pounds gutted weight, which would be even more difficult to accurately track. The smaller the quota, the more likely the ACL would be met and AMs would be triggered.

The impacts of **Alternative 3** on protected resources are uncertain. If fishermen continue to fish after the quota has been met, or if effort simply shifts from a closed region to an open region, then the alternative is unlikely to reduce the risk of adverse affects to protected species from interactions with the fishery. However, if regional quotas are effective in limiting the fishing effort after the quota is met, then the risk of interactions between protected resources and the fishery will likely be reduced for the closed region.

Alternative 4 would change the fishing year for golden tilefish. Public testimony on Snapper Grouper Amendment 13C (SAFMC 2006) indicated some Florida based commercial hook-and-line fishermen are concerned an early closure could prevent them from harvesting golden tilefish from September through November, which is the time they have historically participated in the fishery. As the golden tilefish quota was met in summer of 2007 and 2008, this concern has been realized. Additionally, commercial longline fishermen are concerned a 300 pound gutted weight trip will not be profitable given the size of their operations. Consequently, the Council is considering in this amendment modifying the start date of the fishing year and the stepped trip limit strategy, as appropriate, to ensure the golden tilefish regulations imposed in October 2006 through Snapper Grouper Amendment 13C (SAFMC 2006) do not unnecessarily disproportionately impact select fishermen.

Alternative 1 would retain the January 1 fishing year start date and allow the trip limit to be reduced from 4,000 lbs gutted weight to 300 lbs gutted weight if 75% of the quota was met on or before September 1. Although the commercial hook and line catch of golden tilefish is minor (~8% during 1999-2004), 35% of the catch occurred during September and October 1999-2004. During 2007 and 2008 the quota was met before September and the fishery closed before the period of time when the greatest commercial hook and line catches of golden tilefish have historically occurred. The expected biological effects of retaining or modifying the fishing year is expected to be minimal because hook and line landings are so small and total mortality is constrained by a commercial quota. A change in the fishing year would affect how and when fishing effort (longline versus hook and line) is applied to the stock throughout the year.

The Council's **Sub-alternative 4a** would begin the fishing year for golden tilefish in September, the period of time when the greatest commercial hook and line catches of golden tilefish have historically occurred. Sub-a**lternative 4b** would begin the fishing year in August and also allow hook and line fishermen to fish during the period of time when their catches have been greatest. **Sub-alternative 4c** would start the fishing year in May but would still allow hook and line fishermen to fish for golden tilefish in the fall but there is a greater chance the quota would met sometime during September through November.

Sub-alternatives 4a, 4b, and 4c would not reduce the trip limit from 4,000 lbs gutted weight to 300 lbs gutted weight when 75% of the quota was met. Based on data from 2006 and 2007, the fishery would not remain open all year even when the trip limit is reduced 300 lbs gutted weight. Reducing the 4,000 lbs gutted weight trip limit to 300 lbs gutted weight when 75% of the quota is met was originally intended to allow the fishery to remain open all year and allow for commercial hook and line fishermen to target golden tilefish in the fall.

In the commercial fishery, most golden tilefish (92%) are taken with longline gear deployed by large vessels that make long trips and depend on large catches (> 3,000 pounds) to make a trip economically feasible. Therefore, a 300 pound gutted weight trip limit when 75% of the quota is met would shut down commercial longline sector, and might reduce their potential annual catch. The commercial hook and line catch of golden tilefish is small (~8%). Therefore, changing the fishing year is not likely to substantially increase the commercial hook and line catch. Furthermore, a change in the fishing year probably will not alter the number of months the commercial longline fishery operate as the percentage of golden tilefish landed was evenly distributed among all months before more restrictive regulations were implemented.

The Council's **Sub-alternative 4d** could increase the chance that the quota would be exceeded because the harvest rate would not be slowed through a reduction in the trip limit to 300 pound gutted weight. However, if the quota monitoring system is operating properly, annual harvest in excess of the quota should be minor. In addition, the 300 pound gutted weight quota is not keeping the golden tilefish fishery open all year. Therefore, if the fishing year was changed and the quota monitoring system was operating properly, a 300 pound gutted weight trip limit would not be necessary. Even though the fishery has closed before the end of the year in 2007 and 2008, it is unlikely that golden tilefish would be taken incidentally as bycatch since the majority of the catch is with longline gear. Furthermore, golden tilefish do not occupy the same habitat of other deep water species (i.e., snowy grouper, blueline tilefish, blackbelly rosefish, etc.). Golden tilefish prefer a mud habitat; whereas the other deep water species occur in a rocky habitat.

Changing the fishing year could result in more effort targeting golden tilefish and could also result in a higher bycatch of speckled hind and warsaw grouper. This could result in mortality exceeding the ACT which is zero. **Alternative 5** would establish a hook and line and longline endorsement system that would reduce the number of vessels targeting golden tilefish and thereby reduce any potential bycatch. A reduce number of vessels also increases the likelihood that observers could be placed on vessels to ensure there is no bycatch of speckled hind or warsaw grouper.

The biological effects of **Sub-alternatives 4a through 4d** would be very similar. There would be little difference in the biological or ecological environment since the commercial longline catch has historically been evenly distributed through the year and the hook and line catch is minor. **Alternative 1** would maintain the status quo. The status quo would perpetuate the existing level of risk for ESA-listed species interactions with the South Atlantic snapper grouper fishery noted in section 3.2.4.3. The effects of **Alternative 4** and its sub-alternatives on ESA-listed species are uncertain. Sea turtle abundance in the South Atlantic changes seasonally and the impact of fishing effort shifts, if any, resulting from these alternatives is difficult to predict. Current monitoring programs will allow NOAA Fisheries Service to track and evaluate any increased risk to ESA-listed species. If necessary, an ESA consultation can be re-initiated to address any increased levels of risk.

Alternative 1 will perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. **Alternatives 2-4** are unlikely to have adverse affects on ESA-listed *Acropora* species. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect these species. These alternatives are unlikely to alter fishing behavior in a way that would cause new adverse affects to *Acropora*. The impacts from **Alternatives 2-4** on sea turtles and smalltooth sawfish are unclear. If they perpetuates the existing amount of fishing effort, but causes effort redistribution, any potential effort shift is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. If these alternatives reduce the overall amount of fishing effort in the fishery, the risk of interaction between sea turtles and smalltooth sawfish will likely decrease.

4.7.2.2 Economic Effects

Under **Alternative 3**, the commercial quota for snowy grouper would be divided by region/state. Once the directed quota for each region is met, harvest or possession would be limited to the bag limit.

It is possible that people with the ability to do so will fish in the neighboring region's waters when the snowy grouper quota is met in the other region. However, the snowy grouper trip limit is small and it is unlikely that fishermen are targeting snowy grouper. It is most likely a bycatch when fishing for other species.

Alternative 4 deals with changing management measures in the golden tilefish fishery. Under current regulations, the golden tilefish fishing year begins on January 1st with a 4,000 pound trip limit. Once 75% of the quota is taken, a 300 pound trip limit goes in to place. The current golden tilefish fishery is characterized by a race to fish, a small number of longline participants taking the majority of the catch, and a larger number of hook and line participants. Longline participants begin fishing in January in Florida. By April or May when the weather improves, Carolina longliners begin fishing. In September and October, hook and line fishermen begin to fish for golden tilefish. This is the time of year when they are not participating in other fisheries.

With regards to **Alternative 4, Sub-alternatives 4A, B, and C** would all benefit hook and line golden tilefish fishermen in Florida allowing them to fish for golden tilefish in the fall months when they are not participating in other fisheries. In recent years, hook and line fishermen have not been able to fish for golden tilefish, as they have in the past, in the months of September and October due to earlier closures. Likewise, Carolina fishermen may be able to fish for more months of the year under these alternatives because they will be able to fish at the beginning of the season when weather is amendable to fishing. In past years when the season began in January, Carolina fishermen were not able to begin fishing until April or May. They could only fish for a couple of months sometimes before the 4,000 pound trip limit dropped. A May start date (**Sub-alternative 4C**) would benefit Carolina longline fishermen most compared to **Sub-alternatives 4A and 4C**. A September 1st start date (**Sub-alternative 4A**) would perhaps benefit them the least. Under current regulations, the fishery starts January 1st. Carolina fishermen may be able to start fishing May 1st and then fish for four months. A September 1st start date (**Sub-Alternative 4A**) may not even provide four months of fishable weather (personal communication, Matt Ruby 2008).

Sub-alternative 4D would eliminate the 300 pound trip limit that goes into place once 75% of the quota is met. This would allow longline fishermen, who may need the 4,000 pound trip limit to make a trip cost effective, to fish until the end of the season. It would also allow hook and line fishermen who are restricted to the 300 pound trip limit under Alternative 1 to fish for larger amounts.

Regarding the proposed Golden Tilefish Hook and Line Endorsement, **Sub-alternative 5A** would result in distribution of 11 endorsements. If the Council were to allocate 10%

of the commercial allocation to the hook and line gear sector and 276,265 pounds of golden tilefish was chosen as the commercial ACT, this results in 27, 700 pounds being allocated to Golden Tilefish Hook and Line Endorsement holders. This is similar to the total amount harvested by these individuals in each year 2001-05. This commercial ACT implies an average catch of about 2,512 pounds annually (27,627 pounds/11 endorsements).

Sub-alternative 5B under the Golden Tilefish Hook and Line Endorsement eligibility requirements would result in 21 endorsements. Again, supposing that 10% of the commercial allocation would go to the hook and line gear sector and that 276,265 pounds of golden tilefish are chosen as the commercial ACT, this results in 27,700 pounds being allocated to Golden Tilefish Hook and Line Endorsement holders. Similar or lower total catches were made by these individuals in 2001-05. This commercial ACT implies an average catch of about 1,316 pounds annually (27,627 pounds/21 endorsements).

Regarding the proposed Golden Tilefish Longline Endorsement, **Sub-alternative 5C** would result in about 10 endorsements. Supposing the commercial ACT for golden tilefish is 276,265, this results in 249,639 being allocated to Golden Tilefish Longline Endorsement holders. This amount is similar to the 2005 total landings for the individuals given endorsements. This commercial ACT implies an average catch of about 24,964 pounds annually (249,639 pounds/10 endorsements).

Under the Golden Tilefish Hook and Line Endorsement, **Sub-alternative 5A** and Longline Endorsement **Sub-alternative 5C**, a total of 21 people would receive endorsements while approximately 220 people that harvested 1 or more pounds of golden tilefish on average from 1999-2006 would not receive an endorsement. Under the Hook and Line Endorsement **Sub-alternative 5B** and Longline Endorsement **Sub-alternative 5C**, a total of 31 people would receive endorsements while approximately 210 people that harvested at least 1 pound of golden tilefish on average from 1999-2006 would not receive an endorsement.

Alternative 1 would maintain the short-term economic status of the recreational fishery, but the potential long-term effects would be negative. **Alternative 2** would impose a vessel trip limit presumably in addition to the current 1 fish bag limit per day as part of the 5-fish aggregate bag limit. If a uniform vessel trip limit is imposed across all segments of the recreational sector, this alternative would impose more short-term adverse effects on headboats than charterboats, possibly resulting in fewer angler trips through the headboat fishing mode. The impacts of **Alternative 4** on the recreational sector would be distributive in nature, and likely would not alter the overall economic effects of other management measures on the entire recreational sector. Under this alternative, fishers from certain areas being granted first opportunity to harvest snowy grouper before the species ACT is reached.

Non-use values would not differ between the various alternatives since the alternatives do not differ in their biological impacts.

4.7.2.3 Social Effects

Alternative 3 would divide the snowy grouper quota by region/state. These efforts at regional management will help some fishermen feel that there is an improvement in equity in distribution of quota. **Alternative 4** may have the same effect on hook and line and Carolina longline fishermen that have been unable, in recent years, to participate in the golden tilefish fishery.

4.7.2.4 Administrative Effects

Under the **No Action Alternative**, administrative impacts would likely be negative if the result of not implementing more restrictive measures now were to require additional and more drastic amendment actions in the future. **Alternative 2** would not increase or decrease the administrative burden or associated costs since there is already a retention limit on snowy grouper in place. The number of allowed fish would simply apply to the entire vessel rather than each person onboard the vessel. **Alternative 3** would incur significant adverse effects on the administrative environment since dividing the commercial quota by region or state would require the creation of regional permits or endorsements, and thus change to the permit system in order enable enforcement of regional/state quotas. Without the requisite regional permits/endorsements enforcement of each regions quota would be difficult since many snapper grouper fishermen would likely travel to adjacent areas where the quota has not yet been reached. **Alternative 4** would adjust golden tilefish management measures to change the start date of the fishing year and/or remove the 300 lb trip limit when 75% of the quota is taken. Implementing either/or both of these measures would incur minor adverse administrative impacts in the form of developing outreach materials such as fishery bulletins, and monitoring the quota with a focus on the 75% quota mark. In summation, **Alternatives 2** and **4** would likely result in the lowest level of adverse impacts on the administrative environment, while Alternative **3** would result in the most significant level of administrative impacts.

4.7.2.5 Council's Conclusions

4.8 Management Measures for Shallow Water and Mid-Shelf Species

4.8.1 Regulations to Limit Landings of Red Snapper to the ACT

Note: The Council may specify more than one preferred alternative for this action.

Alternative 1 (no action). This would continue the 20 inch size limit (commercial & recreational) and the recreational 2 fish bag limit.

Alternative 2. Prohibit all commercial and recreational harvest, possession, and retention of red snapper year-round in the South Atlantic EEZ.

Alternative 3. Prohibit commercial and recreational harvest, possession, and retention of species in the snapper grouper FMU in an area that includes commercial logbook grids 2880, 2980, 2981, 3179, 3080, 3081, 3180, 3181, 3278, 3279, 3280, 3378, and 3379.

Alternative 4. Prohibit commercial and recreational harvest, possession, and retention of species in the snapper grouper FMU in an area that includes commercial logbook grids 2880, 2980, 2981, 3179, 3080, 3081, 3180, 3181, 3278, 3279, 3280, 3378, and 3379. Allow commercial black sea bass pots and commercial harvest of golden tilefish by vessels with a hook-and-line or longline endorsement.

Rationale: Commercial black sea bass pots do not have a bycatch of red snapper, speckled hind, and warsaw grouper. Commercial golden tilefish fishing can be conducted in a manner such that there is no bycatch of red snapper, speckled hind, and warsaw grouper. If the Council were to allow recreational harvest of black sea bass there would be a bycatch of red snapper, speckled hind, and warsaw; the same would apply for recreational harvest of golden tilefish - bycatch of speckled hind and warsaw grouper.

Alternative 5. Prohibit commercial and recreational harvest, possession, and retention of species in the snapper grouper FMU in an area that includes commercial logbook grids 2880, 2980, 2981, 3179, 3080, 3081, 3180, 3181, 3278, 3279, 3280, 3378, and 3379 between 30 and 50 m depth. Allow commercial and recreational harvest, possession, and retention of black sea bass and golden tilefish. Allow commercial black sea bass pots and commercial harvest of golden tilefish by vessels with a hook-and-line or longline endorsement.

Alternative 6. Modify the bag and/or size limit.

> **Sub-alternative 6A.** Remove the existing commercial and recreational 20 inch size limit.
> **Sub-alternative 6B.** Reduce the bag limit to 1.

Potential Additional Allowance to Alternatives 3 and 5:
The Council should discuss allowing recreational and/or commercial spearfishing in such a closure given that divers can determine the species of fish before it is harvested. Therefore, fishing can take place without a bycatch of red snapper, speckled hind, or warsaw grouper.

For red snapper, the ABC = 42,000 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). The Council's goal is to keep total mortality (landings + discard/release mortality) less than or equal to ACT.

Alternatives 3, 4, and 5 are shown in Figure 4-4. Note: The captions on the Figure show Alternatives 2 & 3 but it should be Alternative 3 & 4. Alternative 4 shown should be Alternative 5. This will be corrected before public hearings.

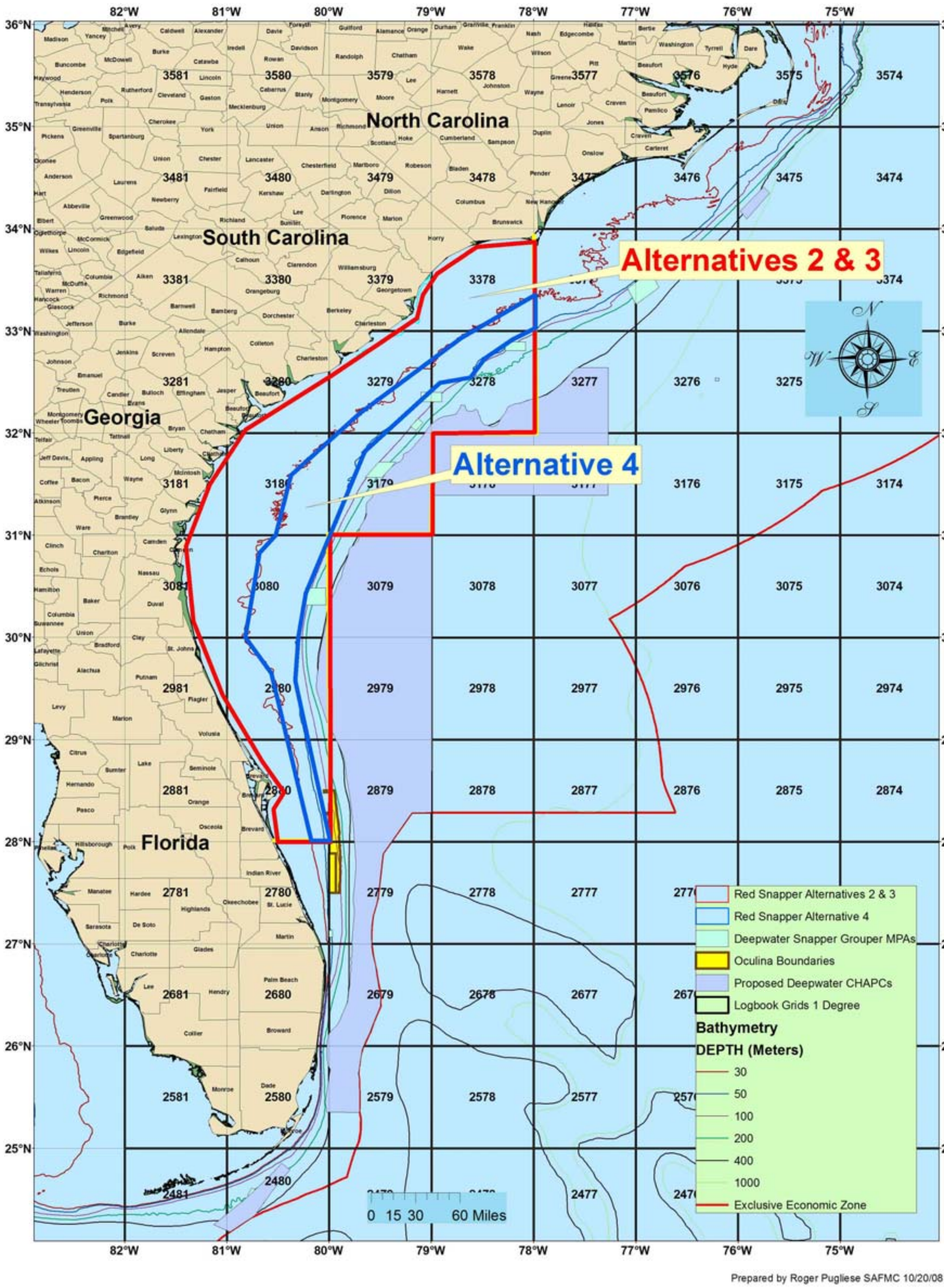


Figure 4-4. The area closures as specified in Alternatives 3, 4, and 5.

4.8.1.1 Biological Effects

Alternative 1 (no action) would retain the current regulations used to manage catches of red snapper. In general, regulations include a commercial limited access system, a 20" total length (TL) commercial and recreational minimum size limit, and a 2 recreational fish bag limit. Minimum size limits are generally used to maximize the yield of each fish recruited to the fishery and to protect a portion of a stock from fishing mortality. The idea behind maximizing yield is to identify the size that best balances the benefits of harvesting fish at larger, more commercially valuable sizes against losses due to natural mortality. Protecting immature and newly mature fish from fishing mortality provides them increased opportunities to reproduce and replace themselves before they are captured. If the size limit chosen is larger than the size at first reproduction for the species in question, then a sufficient pool of spawners could be retained even if fishing pressure is heavy.

These types of measures are generally expected to benefit the environment in the short term and long term by limiting the extent to which a stock is targeted. However, the extent to which such benefits are realized depends on the appropriateness of a measure when applied to a specific stock, as well as if and to what extent fishing effort changes or shifts in response to the select management measure.

Discard mortality also can limit the amount by which fishing effort and mortality is reduced by limited access systems, trip limits, and minimum size limits, if fishermen catch and discard red snapper when targeting co-occurring species. 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.

Amendment 4 (SAFMC 1991) increased the size limit of red snapper taken by recreational fishermen from 12 inches TL to 20 inches TL. SEDAR 15 (2008) suggests the increased size limit many not have had the intended effect of enhancing stock status since release mortality rates are estimated to be 40% for the recreational sector and 90% for the commercial sector. Since the recreational and commercial size limit is 20 inches TL and the recreational bag limit is 2 fish per person, many more red snapper are being released by the recreational sector than are retained (Tables 4-32a and 4-32b).

Table 4-32a. MRFFS landings (number A+B1) of red snapper by state, 2001-2006.

State	2001-2006	Avg ww	Avg GW	Percent
FL	206,489	34,415	31,004	86.05%
Georgia	10,591	1,765	1,590	4.41%
SC	9,526	1,588	1,430	3.97%
NC	13,363	2,227	2,006	5.57%
Total	239,969			

Table 4-32b. MRFSS number of red snapper released alive (B2) among states, 2001-2006.

MRFSS	2001-2006	avg	percent
FL	623,153	124,631	89.62%
GA	5,878	1,176	0.85%
SC	24,128	4,826	3.47%
NC	42,161	8,432	6.06%
Total	695,320		

To determine the actual environmental effects of the **Alternative 1** no action management alternative on red snapper, one must first examine current trends in harvest levels, stock biomass levels, and life history characteristics, then predict the direction of future trends under status quo management. The bulk of landings of red snapper come from the recreational fishery, which have exceeded the landings of the commercial fishery by 2-3 fold over the assessment period. Total landings were variable, with a downward trend through the 1990s. The recent SEDAR assessment determined the red snapper stock in the South Atlantic is undergoing overfishing and is overfished (SEDAR 15 2008). The fishing mortality (F) is compared to what the fishing mortality would be if the fishery were operating at the proxy level for maximum fishing ($F_{40\%SPR}$). The ratio of $F/F_{40\%SPR}$ suggests a generally increasing trend from the 1950s through the mid-1980s, and since 1985 has fluctuated at about 9 times the sustainable level, with the 2006 estimate of $F/F_{40\%SPR}$ at 7.65 (Figure 4-5a).

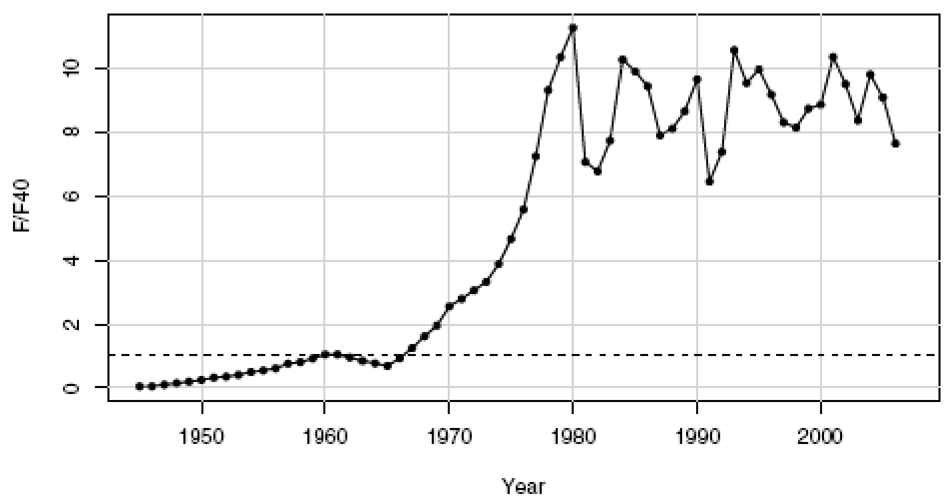


Figure 4-5a. Estimated time series of full fishing mortality rate (F) relative to the F_{MSY} proxy ($F_{40\%}$) for red snapper.
Source: Red Snapper Addenda and Updates, Figure 1.43.

Recruitment, as measured by the number of fish, has declined from the early years (1950s-early 1970s) to a low in the mid-1990s (Figure 4-5b). There have been several moderately good year classes in 1998, 1999, and 2000 and then another decline through 2003 with a slight increase through 2007. These moderately good year classes (1998-2000) have grown and entered the fishery over the last couple of year and are responsible for the higher catches being reported by recreational and commercial fishermen. However, if these fish are caught and killed, then the age/size composition and biomass will not continue to improve over time.

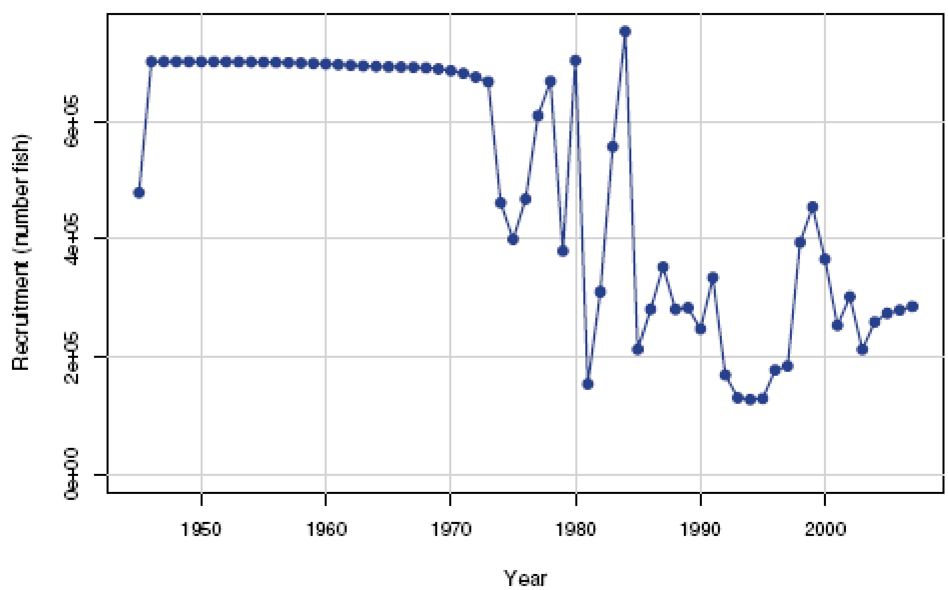


Figure 4-5b. Estimated recruitment of age-1 red snapper.
Source: Red Snapper Addenda and Updates, Figure 1.23.

The average age is currently fairly stable between 4 and 5 years of age with an increase in recent years. Again moderately good recruitment in 1998-2000 appears to be responsible for the recent increase in the mean age and increases in catches. As shown in Figure 4-5c (Figure 5 from Section I of the stock assessment), 99% of the population is age 10 or younger, and it has been that way since 1976. This is based on ages from over 7,000 fish. Since red snapper live for at least 57 years, heavy fishing pressure is likely responsible for the truncation in the age structure. Evidence indicates most of the older fish were removed in the 1950s and 1960s and the population has not recovered.

Figure 5. Age structure of the population (standardized to year-1 biomass).

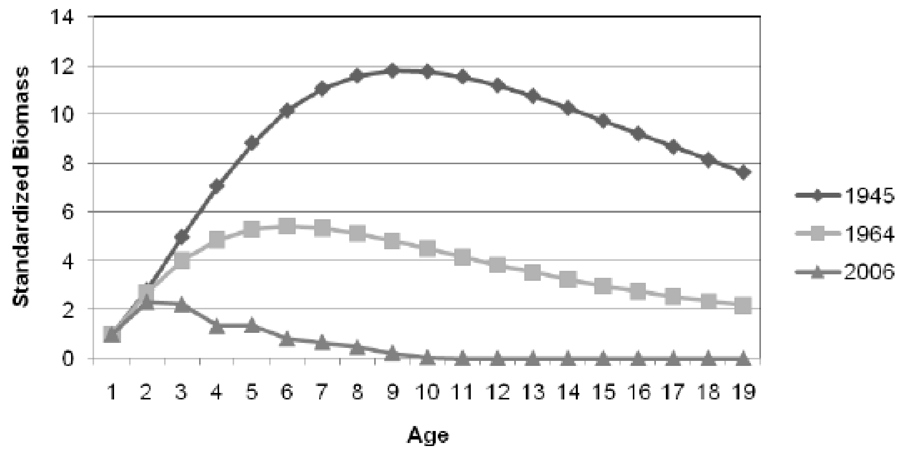


Figure 4-5c. Age structure of the red snapper population.
Source: SEDAR 15 (2008).

Examination of Table 1.11 from the SEDAR 15 (2008) addendum indicates the mean age of the South Atlantic red snapper population has been less than 10 years since the 1970s. A plot of mean age data since 1966 from Table 3.11 shows a steady decline mean age to 3 years in 1985 (Figure 4-6a). Mean age increased to almost 5 years of age in 1997 and 2005 following good recruitment (survival of young) in 1988 and 1998-2001. In addition, the biomass of red snapper has changed dramatically over time (Figure 4-6b); the Spawning Potential Ratio (SPR) has followed a similar pattern (Figure 4-6c). Therefore, **Alternative 1**, which retains the status quo management strategy, would be expected to adversely impact the red snapper stock.

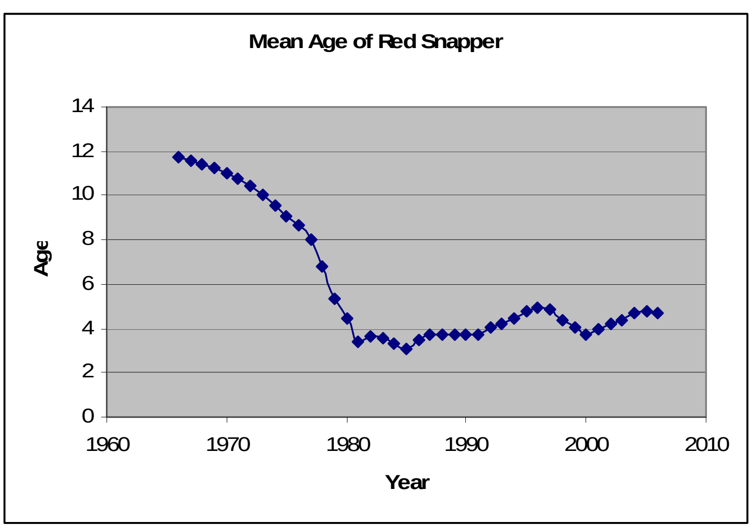


Figure 4-6a. Mean age of red snapper.
Source: Plot of data from Table 3.11, SEDAR 15 (2008).

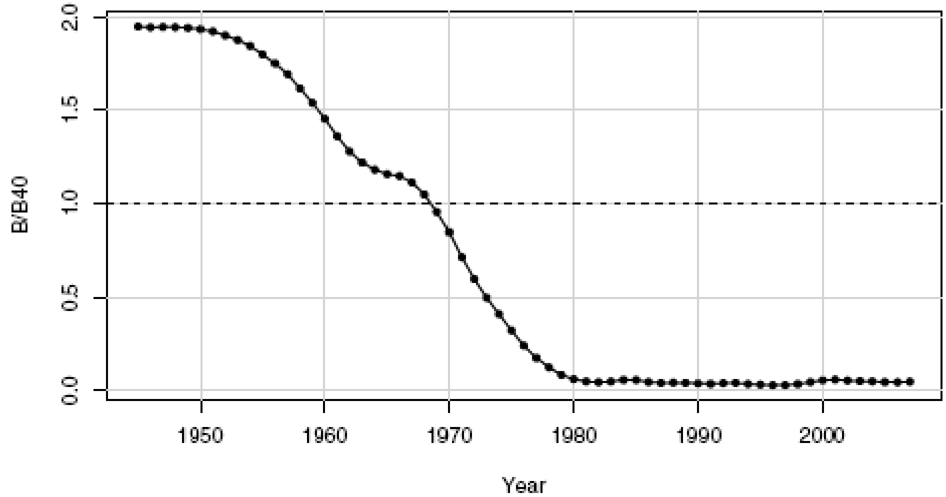


Figure 4-6b. Estimated time series of red snapper biomass relative to B_{MSY} proxy.
Source: Red Snapper Addenda and Updates, Figure 1.42.

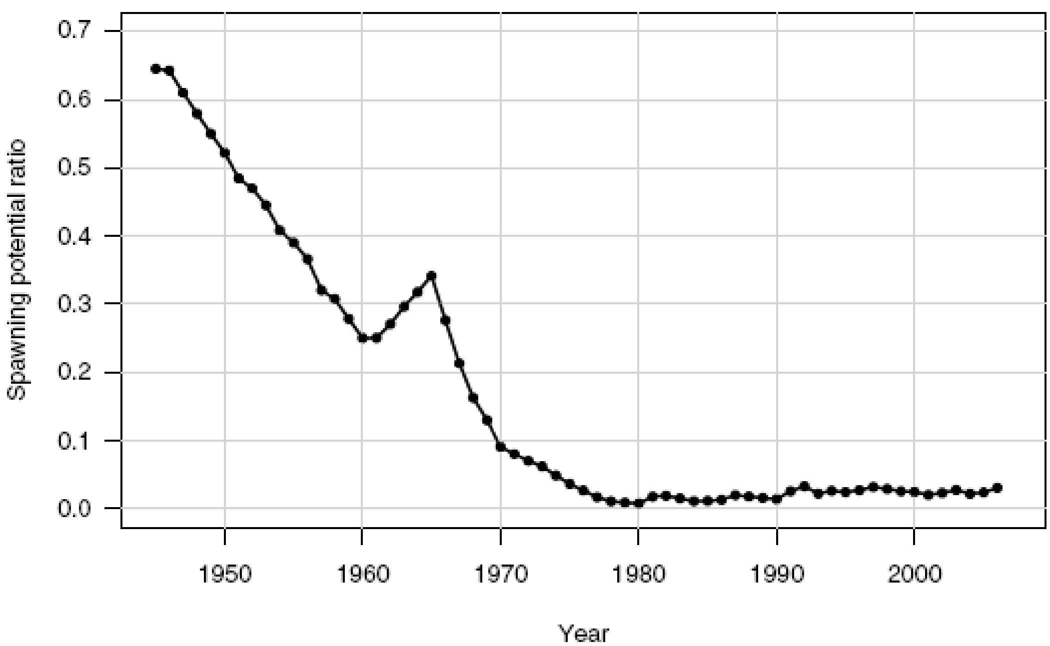


Figure 4-6c. Estimated time series of red snapper static spawning potential ratio, the annual equilibrium spawners per recruit relative to that at the unfished level of total biomass (metric tons) of red snapper at start of year.
Source: Red Snapper Addenda and Updates, Figure 1.38.

Alternative 2 would prohibit all commercial and recreational harvest, possession, and retention of red snapper year-round in the South Atlantic EEZ. Fishing mortality in 2007 (F_{CURR}) is estimated as 0.797 and the proxy for F_{MSY} ($F_{40\%SPR}$) is estimated as 0.104. Using the Baranov equation, an 82% reduction in total removals would be needed to end overfishing. Under the old approach, an 86% reduction in total removals would be needed to achieve the yield at 75% of the proxy for F_{MSY} (0.078). However, projections from the assessment indicate a total prohibition on harvest, possession, and retention of red snapper would not rebuild the stock. Under the reauthorized Magnuson-Stevens Act, total mortality must be kept below the ACL and **Alternative 2** would not accomplish such a reduction (Table 4-32c).

If there was no reduction in effort and all current landings were discarded, only an 18% in total removals (landings and dead discards) would be expected (Table 4-32). Total removals are determined by applying 40% and 90% release mortality rates to the recreational and commercial sectors, respectively.

Table 4-32c. Current landings and dead discards (numbers of individuals) for 2004-2006 from SEDAR 15 (2008).

Item	Comm	MRFSS	HB	Total
Current landings	11,525	33,207	8,565	53,296
Current discards	16,000	150,113	38,557	204,670
Current landings and dead discards (total removals)	25,924	93,252	23,987	143,164
Total removals if no harvest of red snapper	24,772	73,328	18,849	116,948
Reduction in harvest	4.45%	21.37%	21.42%	18.31%

Although a large number of red snapper are probably taken when targeting co-occurring species, there is probably some degree of targeting. If one assumes that during a closure red snapper are only taken when targeting major co-occurring species, some trips will not be taken during a seasonal closure for gag/vermilion snapper, and fishermen have some ability to avoid red snapper by avoiding locations then the reduction provided by closing red snapper year-round in the South Atlantic could be considerably greater.

Eight steps were taken to determine the reduction in total removals that could occur by closing red snapper year-round in the South Atlantic.

STEP 1 - Determine landings in numbers for red snapper during 2004-2006 using information from SEDAR 15 (2008).

STEP 2 – Determine average landings in pounds from logbook and average sampled landings from Headboat and MRFSS in numbers for 2004-2006.

STEP 3 - Identify most common species taken with red snapper.

- Logbook data from 2004-2006 were examined to identify species most commonly caught on trips with red snapper by restricting trips to those that caught at least 1 lb of red snapper.

- Headboat and MRFSS data from 2004-2006 were examined to identify species most commonly caught on trips with red snapper by restricting trips to those that caught at least 1 red snapper.

STEP 4 – Identify trips that target co-occurring species.

STEP 5 - Determine incidental catch.

- For the commercial sector, incidental catch during a seasonal closure was determined by identifying trips that targeted (caught at least 100 lbs) of co-occurring species; and calculating the catch of red snapper on those trips. Trips targeting red snapper were removed from analyses assuming that targeting would not occur in the future. A trip would be considered to be targeting red snapper if greater than 300 lb whole weight of the landings on a trip included the species. [Note: 300 lbs ww (270 lbs gw) was chosen as the cut-off because when the trip limit analysis was done, there seemed to be a good break for landings greater than 300 lbs ww (270 lbs gw). If one examines the table for the trip limit analysis, one can see that the number of trips drops sharply for those that caught > 300 lbs ww (270 lbs gw). On average, 103 trips caught 300 lbs or greater; whereas, only 43 trips caught red snapper at levels greater than 300 lbs. A similar break is seen in the % reduction in harvest when the trip limit is > 300 lbs ww (270 lbs gw).] In addition, trips that employed diving gear, were not considered in analyses since fishermen can recognize a species before it is captured.
- For the recreational sector, incidental catch during a seasonal closure was determined by identifying trips that caught co-occurring species; and calculating the catch of red snapper on those trips.

STEP 6 – Determine total removals for reduced trips and behavior after quota. This step assumes that fishermen could have the ability to avoid red snapper by fishing differently.

STEP 7 – Compare estimate of total removals in Step 6 to landings for database in Step 2.

STEP 8 – Apply reduction in total removals to landings and discards in Step 1.

If one assumes the proposed actions in Snapper Grouper Amendment 16 would not be imposed, red snapper are only caught when fishermen target co-occurring species, and there is no ability to reduce red snapper catch by fishing differently or avoiding hot spots, then a 58% reduction in harvest could be expected (Table 4-33a). If there is some ability to avoid red snapper, then the harvest reduction would be closer to 66%.

Table 4-33a. Reduction in harvest of red snapper (RS) assuming: (1) no shallow water grouper SWG) closure; (2) a four month SWG closure; and (3) and SWG and VS closure.

Action	**No trip reduction or ability to avoid RS**	**20% reduction in trips during closure of SWG and or VS**	**20% trip reduction and 20% ability to avoid RS***
Scenario 1: Jan-Dec RS closure with no Jan-Apr SWG closure or rec VS closure	57.71%	No SWG or VS closure	66.16%
Scenario 2: Jan-Dec RS closure with Jan-Apr closure for SWG species	58.66%	65.00%	72.00%
Scenario 3: Jan-Dec RS closure with Jan-Apr closure for SWG species & Nov-March closure for vermilion snapper	58.93%	68.01%	74.40%

* No reduction in trips are assumed for the first scenario.

If the January through April closure for shallow water grouper was imposed (Snapper Grouper Amendment 16), and the commercial quota was met for gag in November, thereby shutting down commercial grouper harvest in December, then the reduction in harvest is estimated as 59%. If 20% of the trips were not made during January to April, and there was a 20% ability to avoid red snapper, the expected reduction in harvest would be 72%.

The third scenario considers that there could also be a recreational seasonal closure for vermilion snapper during November through March. If 20% of the trips were not made during the shallow water grouper and vermilion snapper seasonal closures, and there was a 20% ability to avoid red snapper, the expected reduction in harvest would be 74%. Red snapper are commonly caught with vermilion snapper in the commercial and recreational sectors. However, most red snapper are taken by the recreational sector during the summer months. Therefore, a greater reduction in harvest for red snapper would occur if there were seasonal closures of co-occurring species during summer months.

Closing all fishing for red snapper along with closures of shallow water grouper species and vermilion snapper in Snapper Grouper Amendment 16 is not estimated to provide the 82 to 86% reduction in harvest needed to end overfishing and/or achieve the yield at 75% F_{MSY}. However, the analysis does not take into consideration a potential reduction in harvest that could occur from decreases in effort associated with increases in fuel prices and associated economic conditions. Anecdotal information from the public suggest there has been an decrease in fishing effort, particularly in the recreational sector, due to increasing fuel prices. The Council has examined trends in effort and landings through 2007 and noted no decrease in effort. It is possible that the declines might not yet be realized in the available data, however, recent gas prices have declined while the economic conditions have worsened.

Snapper Grouper Amendment 16, which has been submitted for Secretarial review, would require the use of venting and dehooking devices for all snapper grouper species. As these devices are expected the increase the survival rates of released fishes including red snapper, it is expected the magnitude of total removals would decrease. Venting, when properly executed, is believed to increase survival of released fish. The use of venting tools may also reduce predation on reef fish species by allowing rapid return to depth making them less vulnerable to predators. Discarded fish stranded at the surface become prey for marine mammals, sea birds, and large predators such as amberjack, barracuda, and sharks (Burns *et al.* 2002).

Collins *et al.* (1999) determined that venting of black sea bass provided significant reductions in mortality and benefits of deflation increased with depth. Swim bladder deflation of vermilion snapper also had positive effects but to a lesser extent (Collins *et al.* 1999). The benefits of releasing air from the swim bladder of released fishes was supported by McGovern *et al.*(2005) who conducted a tagging study of gag and greater amberjack. McGovern *et al.* (2005) stated if swim bladders of gag had not been deflated prior to the release of fish, it is likely mortality would have been higher and tag recapture rates would have been lower. The recapture of a gag tagged in depths of 73 m (240 feet) further supports the benefits of swim bladder deflation and indicates at least a portion of degassed fish survive the trauma of capture even in deep water (McGovern *et al.* 2005). Burns et al. (2008) reports survival of red grouper was enhanced at depths greater than 27.4 m. For red grouper, which were not vented, recapture rate was 3.9%; however, the recapture rate for vented red grouper at the same depths was 9.7%

Dehooking devices can allow fishermen to remove hooks with greater ease and more quickly from snapper grouper species without removing the fish from the water. Leaving a fish in the water while removing the hook can reduce physiological stress. If a fish does need to be removed from the water, dehookers could still reduce handling time in removing hooks, thus increasing survival.

Therefore, the 82 to 86% reduction in harvest needed for red snapper might be achievable with a total closure of the red snapper fishery if there is a reduction in fishing effort associated with increased fuel prices and depressed economic conditions and if the venting tools and dehooking devices specified in Snapper Grouper Amendment 16 are effective at reducing release mortality.

However, it must be remembered that the projections from the assessment indicate that a prohibition on all harvest would not rebuild the stock. This may indicate that the assumptions above are too optimistic. In addition, as shown in Table 4-33b the projected commercial red snapper mortality is below both the liberal and conservative bundled ACTs whereas the projected recreational red snapper mortality is above both the liveral and conservative bundled ACTs. (Rick - The numbers in this table need to be converted to pounds; is there a number for each sector in the assessment that we can use???)

Table 4-33b. Comparison of reductions in red snapper mortality to the expected ACTs.

	Comm	MRFSS	HB	Total Rec	Total
Red snapper landings & dead discards (Table 4-32)	25,924	93,252	23,987	117,239	143,164
Reductions from Scenario 1 (Table 4-33)	58.9%	58.9%	58.9%		58.9%
Projected Red Snapper Mortality (Scenario 1)	10,655	38,327	9,859	48,185	58,840
Reductions from Scenario 3 (Table 4-33)	74.4%	74.4%	74.4%		74.4%
Projected Red Snapper Mortality (Scenario 3)	6,637	23,873	6,141	30,013	36,650
Bundled Liberal ACT (pounds whole weight)	10,584			24,525	
Bundled Conservative ACT (pounds whole weight)	7,526			19,620	

Alternative 3 would prohibit commercial and recreational harvest, possession, and retention of species in the snapper grouper FMU in an area that includes commercial logbook grids 2880, 2980, 2981, 3179, 3080, 3081, 3180, 3181, 3278, 3279, 3280, 3378, and 3379. Analysis of logbook data indicates closing the proposed area would reduce red snapper harvest by 87% (Table 4-34). However, the closed areas would also have significant impacts on the harvest of species such as vermilion snapper and gag (and other shallow water groupers). In addition, closing the area would also reduce harvest of deepwater species such as snowy grouper and golden tilefish, which are rarely taken on commercial trips with red snapper. Overall, closing the proposed areas would reduce snapper grouper harvest by 39%.

Table 4-34. Percentage of species taken by the commercial sector that occur in and out of the proposed closed areas during 2005-2007.

Species	% of landings IN	% of landings OUT
GROUPER.BLACK	29.87	70.13
GROUPER.GAG	61.21	38.79
GROUPER.RED	22.83	77.17
GROUPER.SNOWY	30.83	69.17
GROUPER.WARSAW	94.70	5.30
HIND.SPECKLED	41.83	58.17
SEA BASSE.ATLANTIC.BLACK.UNC	28.43	71.57
SNAPPER.RED	87.18	12.82
SNAPPER.VERMILION	63.75	36.25
TILEFISH	31.57	68.43
WRECKFISH	37.78	62.22
DW Group	29.62	70.38
All S-G	38.92	61.08

Closure of the proposed areas would reduce harvest of red snapper taken by the headboat fishery by 99% but would also result in large reductions in harvest of gag, black sea bass, and vermilion snapper, which are among the most abundant species taken by headboat fishermen (Table 4-35). Overall, closure of the proposed areas would reduce harvest of all snapper grouper species by 72%.

Table 4-35. Percentage of species taken by the headboat fishery that occur in and out of the proposed closed areas during 2005-2007.

Species	% of landings IN	% of landings OUT
Red Snapper	98.55	1.45
Black Grouper	0.60	99.40
Gag	89.13	10.87
Red Grouper	53.40	46.60
Snowy Grouper	49.29	50.71
Warsaw Grouper	54.37	45.63
Speckled Hind	61.99	38.01
Black Sea Bass	94.07	5.93
Vermilion Snapper	90.36	9.64
Golden Tilefish	NA	NA
Wreckfish	NA	NA
DW Group	48.75	51.25
All S-G	71.95	28.05

For recreational fishermen included in the MRFSS survey, the proposed closed areas would reduce harvest of red snapper by 94%. It is likely closure of the proposed areas would also result in large reductions in other snapper grouper species including gag, vermilion snapper, and black sea bass. Examination of MRFSS data indicates that 87%

of the red snapper caught are discarded.   This represent 74% of the recreational mortality. Since the recreational sector dominates landings of red snapper, this represents the largest source of red snapper mortality. Therefore, unless there is some effort reduction and ability to avoid red snapper as assumed in analysis for Alternative 2, a prohibition of catch without any type of area closure might not end overfishing.   NEED TO ADD ANALYSIS FOR OTHER SNAPPER GROUPER SPECIES.

Table 4-36. Average number of red snapper retained (AB1) and released B2 by state as well as number of fish within the proposed closed areas for MRFSS during 2005-2007.

		GA	NC	SC	FL North	FL South	TOTAL	% retained	CLOSED #save
Dead	AB1	2,679	1,087	1,793	24,485	4,008	34,051	12.6%	28,957
ALL	B2	18,865	780	2,359	201,845	13,279	237,128	87.4%	223,069
Dead	B2	7,546	312	944	80,738	5,312	94,851		89,228
Dead	AB1B2	10,225	1,399	2,736	105,223	9,319	128,902		118,184
ALL	AB1B2	21,543	1,867	4,152	226,330	17,287	271,179		252,025

Table 4-37. Average number of red snapper (total removals) inside and outside the proposed closed area during 2005-2007. Reduction in harvest of red snapper provided by the closed area.

Inside	AB1	28,957
Inside	Dead B2	89,228
Outside	AB1 Live	3,057
Outside	Dead B2	7,661
All areas		128,902
Reduction		94.1%

The reduction in harvest of red snapper provided by the proposed closed areas would meet the target level of 82 to 86% for the commercial and recreational sectors. However, the analysis does not consider reductions in harvest or red snapper that could be expected from actions in Snapper Grouper Amendment 16 for gag and vermilion snapper, reduction in release mortality of red snapper that could be provided by venting and dehooking devices implemented through Snapper Grouper Amendment 16, ability of fishermen to avoid red snapper and decrease harvest, and decrease in effort that may occur due to degrading economic conditions. Therefore, while the reduction in harvest meets the target, it may be more than what is needed to end overfishing of red snapper.

ADD A COMPARISION TO THE ACTS IN THE TABLE ONCE WE HAVE CONVERTED THESE NUMBERS OF FISH TO POUNDS.

Alternative 3 would have the greatest biological benefit of the alternatives considered since it would not only close red snapper but would also result in major reductions in harvest of co-occurring snapper grouper species. Therefore, incidental catch of red snapper would be substantially reduced, and harvest of other species, which are experiencing overfishing, would also be reduced.

Alternative 4 would prohibit harvest in the proposed area for all species except commercial black sea bass pots to harvest black sea bass and a limited fishery for golden tilefish. Golden tilefish are not commonly taken on trips with red snapper; however, black sea bass is one of the most abundant species taken on trips with red snapper, particularly in the recreational sector (Tables 4-38a, 4-38b, and 4-38c). Therefore, the biological effect of **Alternative 4** would be less than **Alternative 3** but greater than **Alternative 2** because fishermen would still be able to target black sea bass and incidental catch of red snapper could still occur.

Table 4-38a. Species taken on commercial trips when at least 1 pound of red snapper was caught.

Species	% by trip	% by wt	cum wt %
SNAPPER,VERMILION	64.91%	29.48%	29.48%
GROUPER,GAG	60.43%	13.21%	42.69%
SCAMP	63.59%	8.62%	51.31%
AMBERJACK,GREATER	38.01%	6.56%	57.87%
TRIGGERFISH,GRAY	53.92%	5.80%	63.67%
SNAPPER,RED	100.00%	5.09%	68.75%
GROUPER,RED	56.06%	4.86%	73.61%
JACK,ALMACO	32.83%	3.40%	77.02%
GROUPER,BLACK	11.35%	2.53%	79.55%
GROUPER,SNOWY	16.84%	1.70%	81.25%
KING MACKEREL	29.24%	1.50%	82.75%
SEA BASSE,ATLANTIC,BLACK,UNC	39.42%	1.49%	84.24%

Table 4-38b. Species taken on headboat trips when at least 1 red snapper was caught.

Species	% trip	% number	Cum % number
Vermilion Snapper	70.71%	43.69%	43.69%
Black Sea Bass	82.41%	19.80%	63.48%
Tomtate	23.56%	4.83%	68.31%
Gray triggerfish	67.98%	3.98%	72.29%
Banded rudderfish	15.66%	3.16%	75.45%
Red Snapper	100.00%	2.98%	78.43%
Red porgy	21.33%	2.71%	81.14%
White grunt	11.66%	2.57%	83.71%
Greater amberjack	50.12%	2.21%	85.92%
Gray snapper	40.21%	1.74%	87.65%
Scamp	30.20%	1.69%	89.34%
Bank sea bass	13.31%	0.90%	90.25%
Scup	2.07%	0.71%	90.95%
Whitebone porgy	23.68%	0.70%	91.65%
Lane snapper	30.14%	0.69%	92.34%
Gag	54.03%	0.65%	92.99%

Table 4-38c. Species taken on MRFSS trips when at least 1 red snapper was caught.

Species	% trip	% number	Cum % number
vermilion snapper	27.20%	33.99%	33.99%
black sea bass	45.61%	26.11%	60.11%
red snapper	100.00%	5.21%	65.32%
gray triggerfish	20.96%	4.80%	70.12%
tomtate	20.96%	2.89%	73.00%
white grunt	6.52%	2.12%	75.12%
atlantic sharpnose shark	19.97%	1.71%	76.83%
gag	17.42%	1.70%	78.53%
round scad	2.27%	1.65%	80.18%
king mackerel	7.93%	1.38%	81.55%
red porgy	9.07%	1.37%	82.92%
scamp	9.77%	1.22%	84.15%
greater amberjack	8.92%	1.19%	85.34%

Alternative 5 would prohibit harvest in the proposed area for all species except commercial black sea bass pots to harvest black sea bass and a limited fishery for golden tilefish and would restrict the closed area to between 30 and 50 m. Examination of Table 4-35 indicates landings of species within the logbook grids includes deep water species such as snowy grouper and golden tilefish, which are not commonly taken on trips with red snapper. White and Palmer (2004) as well as unpublished MARMAP data suggest

the zone of greatest abundance of red snapper is between 30 and 50 m. Unpublished MARMAP indicate red snapper were caught between 21 and 66 m (average 40 m). Since species such as snowy grouper are taken at depths greater than 50 m, this alternative would allow fishing for some species that do not co-occur with red snapper. However, Table 4-38b and 4-38c indicates black sea bass is one of the most abundant species taken on recreational trips with red snapper. Therefore, the biological effect of **Alternative 5** would similar to but less than **Alternative 4** since fishermen would still be able to target black sea bass commercially with black sea bass pots.

Alternative 6 would modify the bag and or size limit of red snapper. Since the bag limit of red snapper is currently 2 fish per person per day, a reduction in the bag limit to 1 fish per day (Table 4-39) would not provide the reduction in harvest needed to end overfishing. Similarly an increase in the size limit would not provide the reduction in harvest needed (Table 4-40). However, reduction in the bag limit and an increase in the size limit would likely increase the magnitude of regulatory discards, which is already very high.

Table 4-39. Reduction in harvest associated with reducing the bag limit for red snapper to 1 fish per person per day. Includes non-compliance with bag limit, and 40% release mortality.

Sector	Bag limit 1
Private	2.80
Charter	3.87
Priv/Char combined	3.21
Headboat	3.92
All rec	3.35

Table 4-40. Reduction in harvest associated with increasing the size limit for red snapper. Includes non-compliance with size limit, and 40% release mortality.

Sector	Estimated Harvest Reductions			
	21 inch	22 inch	23 inch	24 inch
Headboat	9.4	23.4	37.5	43.7
MRFSS	5.3	17.8	26.7	32.8
Commercial				

Rather than increase the minimum size limit, the Council could decide to decrease or eliminate it for red snapper. Minimum size limits can have detrimental effects on fish stocks such as red snapper because they do not protect the older year classes. For example, red snapper lives to ages as great as 57 years; however, SEDAR 15 (2008) indicates most red snapper in the South Atlantic are age 4 and less. Recruitment problems can occur in a fishery that has fewer age classes than an unfished population. Truncation of average size is often undesirable from an economic perspective, because larger fish are sought after by recreational fishermen and because commercial markets often favor fish of a certain size.

Additionally, minimum sizes encourage the harvest of older, larger fish that have the greatest reproductive potential. For example, fecundity has an exponential relationship with size. One 60.5 cm female red snapper can produce the same number of eggs as 212 females at 42 cm (PDT 1990). Therefore, the size of the spawner, not just the overall number of spawners, is important when considering the reproductive potential of a population, and removal of all the large spawners can be catastrophic even if some smaller spawners remain. If the size limit is set below the minimum size for reproduction, heavy fishing pressure may lead to reproductive failure, as the size limit does not protect fish of spawning size.

In the U.S. South Atlantic Bight and in the Gulf of Mexico, Grimes (1987) reported that size at first maturity is 23.7 cm (9.3 in) FL. For red snapper collected along the Southeastern United States, White and Palmer (2004) found that the smallest mature male was 20.0 cm (7.9 in) TL, and the largest immature male was 37.8 cm (15 in) TL. 50% of males are mature at 22.3 cm (8.8 in) TL, while 50% of females are mature at 37.8 cm (15 in) TL. Males are present in 86% of age 1, 91% of age 2, 100% of age 3, 98% of age 4, and 100% of older age fish. Mature females are present in 0% of age 1, 53% of age 2, 92% of age 3, 96% of age 4, and 100% of older age individuals. Therefore, the 20" TL minimum size limit did not prevent a truncation in the age structure of red snapper but may have protected a portion of young fish from mortality giving them the opportunity to spawn.

Alternative 1 will perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. **Alternatives 2-4** and their sub-alternatives are unlikely to have adverse affects on ESA-listed *Acropora* species. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect these species. These alternatives are unlikely to alter fishing behavior in a way that would cause new adverse affects to *Acropora.* The impacts from **Alternatives 2-4** and their sub-alternatives on sea turtles and smalltooth sawfish are unclear. If they perpetuates the existing amount of fishing effort, but causes effort redistribution, any potential effort shift is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. If these alternatives reduce the overall amount of fishing effort in the fishery, the risk of interaction between sea turtles and smalltooth sawfish will likely decrease.

4.8.1.2 Economic Effects

Commercial Fishery

Alternative 1 would result in the largest negative long-term impacts but largest short-term benefits compared to all other alternatives under this action. **Alternative 2** would result in the smallest short-term negative economic impacts ($344,000 annually) compared to other alternatives. **Alternative 3** would result in the largest short-term negative economic impacts ($7.2 million annually) but also the largest long-term economic benefits. **Alternative 4** would result in short-term negative economic impacts totaling $5.03 million annually while **Alternative 5** would result in less than $5.03 million annually in short-term negative economic impacts.

Alternative 2 prohibits retention of red snapper in all areas within the South Atlantic. This would result in annual losses of almost $344,000 using 2005-07 logbook data as a proxy for future landings. Red snapper landings account for less than 2% of all snapper grouper harvest. It is expected that fishermen who previously targeted red snapper would be able to target other species. However, in some regions, this may be difficult to achieve given the high percentage of red snapper caught. In at least two logbook grid areas, red snapper landings account for almost 10% of total snapper grouper landings.

Alternative 3 prohibits harvest of all snapper grouper species in specific areas. Estimates made from logbook data indicate that closure of these logbook grid areas would result in an estimated 39% decrease in landings of snapper grouper species (about 2.4 million pounds). Based on $3 per pound, this equates to an annual loss of over $7.2 million. Logbook data indicate that 61% of snapper grouper species were caught outside these areas 2005-07 (almost 3.8 million pounds valued at about $11.3 million).

Alternative 4 prohibits fishing for snapper grouper species in specific logbook grid areas but allows for continued fishing with black seabass pots and by vessels with a golden tilefish hook and line or longline endorsement.

Golden tilefish fishermen have indicated that they can avoid catch of speckled hind and Warsaw grouper by fishing over muddy substrate. **Alternative 4** avoids an estimated 155 pounds of Warsaw grouper and 1,292 pounds of speckled hind through area closures. According to logbook data, almost 55% of the golden tilefish harvested in 2007 was taken in areas with no bycatch of Warsaw grouper or speckled hind. The implied poundage can serve as a proxy of the amount of golden tilefish that can be harvested without bycatch of Warsaw grouper or speckled hind. Using this approach, 169,479 pounds of golden tilefish were harvested in 2007 without bycatch of Warsaw grouper or speckled hind. This amount has an ex-vessel value of $413,095 and is an estimate of what can be harvested by fishermen under **Alternative 4** if they harvest over muddy substrate. The annual negative economic impact from restrictions on harvest of golden tilefish is estimated at $340,705.

A golden tilefish specific hook and line or longline endorsement would prevent fishermen who have not historical fished for golden tilefish from targeting them. This would prevent people who are looking for other fisheries to enter from targeting golden tilefish and intensifying the race to fish that currently exists in that fishery. An intensified race to fish would result in lower ex-vessle prices and a shortened season. This could also result in a higher bycatch of speckled hind and warsaw grouper.

Using logbook data, an endorsement program with an eligibility requirement of an average 1,000 pounds landed between 2001 and 2005 (as recommended by the Golden Tilefish LAP Workgroup) for hook and line fishermen would result in about 11 hook and line fishermen. A requirement of an average 500 pounds result in about 21 hook and line fishermen. Using logbook data, an endorsement program with an eligibility requirement of a total of 2,000 pounds landed between 2005 and 2007 (as recommended by the Golden Tilefish LAP Workgroup) for longline fishermen would result in about 10 longline fishermen with golden tilefish longline endorsements. [Section 4.7.2 includes alternatives to evaluate endorsements in the golden tilefish fishery.]

Closure of the areas identified under **Alternative 4** result in an estimated loss of $5.03 million in ex-vessel revenues. This is an aggregate value of average landings of snapper grouper species caught in the proposed closed areas 2005-07 ($5.75 million) minus the value from black seabass caught in pots in these areas ($307,990) and golden tilefish caught in areas where Warsaw grouper and speckled hind are not caught as bycatch ($413,095).

Alternative 5 restricts commercial and recreational harvest in the same areas under Alternative 4 but only between 30-50 meters in depth. The alternative allows for black seabass harvest by pots in these areas as well as golden tilefish harvest (assuming they are able to avoid Warsaw grouper and speckled hind). Because red snapper are caught in the 30-50 meter depth range, this alternative would avoid capture of red snapper. The commercial economic impact would be less than the $5.03 million estimated under **Alternative 4** but further economic estimates are not possible because the logbook data is not detailed enough to allow such an analysis.

Non-use values, like existence and bequest values would be highest under **Alternative 3** since this action provides the greatest protection for red snapper and other snapper grouper stocks in these areas.

Recreational Fishery

Alternative 1 would have the smallest adverse economic effects on the recreational sector but the long-term effects would likely be the largest. **Alternative 2** would offer protection to the red snapper stock but not as much as **Alternatives 3 to 5** due to possible red snapper bycatch in case recreational harvests of other snapper grouper species are allowed in areas where red snapper are also caught. The differential impacts of **Alternatives 3 to 5** are hard to pin down at this stage since more specific areas where harvest, retention, and possession of snapper grouper species are provided for in these alternatives. Based on the size of the prohibited areas, together with additional harvest provisions, it would appear that **Alternatives 3 and 4** would have the same effects. Alternative 5 would have slightly lower adverse short-term effects than either **Alternative 3 or Alternative 4**. **Sub-Alternative 6A** would, in principle, tend to increase the quality of fishing and thus would result in higher benefits to anglers. On the other hand, **Sub-Alternative 6B** would do just the opposite, with the extent of effects determined by how widespread the current 2-fish bag limit is reached or exceeded.

4.8.1.3 Social Effects

While long-term economic and social benefits are highest under **Alternative 3**, short-term economic and social benefits will also be lowest under **Alternative 3** as well. Long-term economic and social benefits are lowest under **Alternative 1**. **Alternative 1** also offers the highest short-term economic and social benefits.

Long-term sustainability of snapper grouper stocks is necessary to maintain fishing communities. However, it is argued that the trade-off of short-term negative economic and social impacts for long-term sustainability could result in collapse of the snapper grouper fishing industry. For those towns that are recognized as fishing communities by the general public, loss of fish houses, boat yards, and restaurants that serve locally caught fish, and red snapper in particular, could result in a loss of income from tourism. The economic impact is felt in terms of dollars going to restaurants, hotels and other coastal businesses. Fishing families may experience increased stress due to financial difficulties and unemployment. This can contribute to an increase in domestic abuse, divorce rates, depression, and drug use, among other social ills. Community residents that are not part of fishing families can feel a loss of cultural and historical identity.

4.8.1.4 Administrative Effects

Effects on the administrative environment would be negative under the **No-Action Alternative**, since it is likely the ACT would be exceeded and AMs would be triggered. Information regarding those AMs would need to be packaged into a fishery bulletin and/or web content for public dissemination. Furthermore, if measures to end overfishing are not put in place through this amendment, there is a high likelihood that even more restrictive measures will need to be considered in subsequent amendments, further impacting the administrative environment. **Alternatives 2** would require the development of various forms of outreach materials such as fishery bulletins, web page content, and map creation. These alternatives would also involve extensive coordination amongst various divisions within NOAA Fisheries Service as well as Coast Guard and State law enforcement officials. Enforcement of **Alternative 2b** is expected to be somewhat less burdensome since there are no area boundaries to monitor other than that of the EEZ.

Alternative 3 would prohibit the harvest of all species in the snapper grouper FMU within one of two proposed areas (**Alternatives 3a or 3b**). This alternative would have similar administrative impacts as **Alternative 2b**. **Alternative 4** would require the development of outreach materials for public dissemination and the coordination of law enforcement entities within the region. Therefore, administrative impacts under **Alternative 4** could be considered minor.

4.8.1.5 Council's Conclusions

4.8.2 Regulations to Limit Black Grouper, Black Sea Bass, Gag, Red Grouper, and Vermilion Snapper Landings to the ACTs

Alternative 1 (no action). Retain existing regulations for black grouper, black sea bass, gag, red grouper, and vermilion snapper.

Alternative 2. Prohibit all harvest, possession, and/or retention of shallow water groupers (gag, black grouper, red grouper, scamp, red hind, rock hind, yellowmouth grouper, tiger grouper, yellowfin grouper, graysby, and coney) from x-x (Council to specify months above the 4 month closure from Snapper Grouper Amendment 16).

Alternative 3. Limit commercial and recreational (Council to clarify) possession of shallow water groupers (gag, black grouper, red grouper, scamp, red hind, rock hind, yellowmouth grouper, tiger grouper, yellowfin grouper, graysby, and coney) to one fish per vessel.

Alternative 4. Reduce the 3-grouper aggregate bag limit to a 1-grouper aggregate bag limit.

For black grouper, the ABC = 187,697 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). For black sea bass, the ABC = 847,000 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). For gag grouper, the ABC = 818,920 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). For red grouper, the ABC = 704,893 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). For vermilion snapper, the ABC = 628,459 pounds whole weight; the commercial ACT = X pounds (Council to specify) and the recreational ACT = Y pounds (Council to specify). The Council's goal is to keep total mortality (landings + discard/release mortality) less than or equal to the sector-specific ACT for each species.

Table 4-41. Current commercial regulations for shallow water and mid-shelf species.

COMMERCIAL REGULATIONS							
Species	Size Limit	Limited Access	Gear Restrictions	Annual Quota	Trip Limits	Seasonal Closures	Area Closures
Black Grouper	24" TL	√	√		In March & April, possession limited to no more than 2 black grouper and/or gag individually or in combination with no sale.	Jan-Apr[2]	√
Black Sea Bass	10" TL	√	√	309,000 lbs[1]			√
Gag	24" TL	√	√	416,469 lbs ww 352,940 lbs gw[2]	In March & April, possession limited to no more than 2 black grouper and/or gag individually or in combination with no sale.	Jan-Apr[2]	√
Red Grouper	20" TL	√	√			Jan-Apr[2]	√
Vermilion Snapper	12" TL	√	√	1,100,00 lbs 328,002 lbs			√
Red Snapper	20" TL	√	√				√

[1]Based on TAC of 718,000 lbs gutted weight (847,000 lbs whole weight).
[2]Preferred alternatives in Snapper Grouper Amendment 16
[3]The vermilion snapper quota number may change after the new SEDAR assessment.

Table 4-42. Current recreational regulations for shallow water and mid-shelf species.

RECREATIONAL REGULATIONS						
Species	Allowable Catch	Size Limit	Gear Restrictions	Possession Limit	Seasonal Closures	Area Closures
Black Grouper		24" TL	√	No more than 1 black grouper and/or gag individually or in combination (included in 3 grouper per person per day)[1,2]	Jan-Apr[1]	√
Black Sea Bass	409,000 lbs gw[3]	12" TL	√	Daily bag limit = 15		√
Gag		24" TL	√	No more than 1 black grouper and/or gag individually or in combination (included in 3 grouper per person)[1,2]	Jan-Apr[1]	√
Red Grouper		20" TL	√	Included in 3 grouper per person per day[1,2]	Jan-Apr[1]	√
Vermilion Snapper		12" TL	√	10 (in addition to the aggregate snapper bag limit of 10)		√
Red Snapper		20" TL	√	2 per person per day (included in the 10 aggregate snapper per person limit)[1,2]		√

[1]Preferred alternatives in Snapper Grouper Amendment 16
[2]Exclude the captain and crew on for-hire vessels from possessing a bag limit for groupers.
[3]Based on TAC of 718,000 lbs gutted weight (847,000 lbs whole weight).

4.8.2.1 Biological Effects

Alternative 1, would retain the current regulations established for black sea bass through Snapper Grouper Amendments 13C and 15A as well as the regulations proposed for gag, red grouper, black grouper, and vermilion snapper proposed in Snapper Grouper Amendment 16, which is under Secretarial review. Measures for these species are intended to end overfishing of black sea bass, gag, and vermilion snapper and limit catch levels to the yield at F_{OY}. Management measures proposed in Snapper Grouper Amendment 16 would also address overfishing of black grouper and red grouper.

For black sea bass, regulations established in October 2006 include a: 309,000 pound commercial quota; 10" total length commercial size limit; 409,000 pound recreational allocation; 12" total length recreational size limit; and a 15 fish bag limit. The quota and recreational allocation was based on applying an allocation established to a TAC corresponding to the yield at 75% F_{MSY}. As Snapper Grouper Amendment 15A established a rebuilding strategy for black sea bass that would hold catch steady throughout the rebuilding time frame, the allowable catch would be less than the yield at 75%F_{MSY} after 2009.

For gag, Snapper Grouper Amendment 16 proposes a quota of 348,00 pounds gutted weight, a January-April spawning season closure for the recreational and commercial sectors, and a reduction in the bag limit to 1 gag or black grouper (combined) within a 3 grouper aggregate bag limit. The spawning season closure would also apply to black grouper and red grouper and the bag limit for red grouper would be reduced to 3 fish per person per day within a 3 grouper aggregate bag limit. Furthermore, the commercial harvest and sale of black grouper and red grouper would be prohibited when the gag quota was met. While red grouper and black grouper are undergoing overfishing (NMFS 2008) it is unknown if the proposed actions in Snapper Grouper Amendment 16 would end overfishing since the stocks have not been recently assessed. However, the actions certainly would reduce the amount of overfishing since harvest reductions associated with the four month seasonal closure and commercial quota for gag would approximate 42% and 30% for black grouper and red grouper, respectively.

These regulations were intended to address overfishing of black sea bass, gag, red grouper, black grouper, and vermilion snapper as well as rebuild the black sea bass stock. Therefore, retention of status quo management measures would not likely have negative biological impacts on the stocks if management measures established through Snapper Grouper Amendments 13C, 15A, and 16 end overfishing. However, the ACT for these species has not been specified in Section 4.6. If the Council specifies an ACT at a level below the current and proposed management measures then additional measures proposed in **Alternatives 2 through 4** might be necessary.

ADD ACT ANALYSIS AFTER DECISIONS MADE

Alternative 2 would prohibit all harvest, possession, and/or retention of shallow water groupers (gag, black grouper, red grouper, scamp, red hind, rock hind, yellowmouth grouper, tiger grouper, yellowfin grouper, graysby, and coney) for a greater number of months than the January-April closure proposed in Snapper Grouper Amendment 16. The ACT values for gag, black grouper, and red grouper have not been specified in Section 4.6. However, extending the four month closure would have greater biological benefits for these species than specified in **Alternative 2** since it would reduce harvest below the yield at 75%F_{MSY} for gag and further reduce harvest for black grouper and red grouper greater than the reductions expected from Snapper Grouper Amendment 16.

Alternative 3 would limit possession of shallow water groupers (gag, black grouper, red grouper, scamp, red hind, rock hind, yellowmouth grouper, tiger grouper, yellowfin grouper, graysby, and coney) to one fish per vessel. Amendment 16 proposes to reduce the 5 fish grouper aggregate to 3 a fish grouper aggregate and restrict gag and black grouper to 1 fish per person (combined) (Table 4-43). On trips where any fishermen caught at least one shallow water grouper, the average number of grouper retained per person per trip is less than one fish. Therefore, the reduction in harvest associated with decreasing the bag limit from a maximum of five to three or two fish per person per day is small.

Preliminary analysis reveals that a more substantial reduction in harvest would be provided by restricting catch to 1 shallow water grouper per trip. For MRFSS, the reduction in harvest resulting from reducing the number of shallow water groupers to 1 fish per vessel would be 37% for charter boat fishermen and 26% for the private sector (Table 4-44). For headboats, the expected reduction associated with a 1 fish per vessel limit for shallow water grouper species would be 62% (4-45). Estimates incorporate a release mortality rate of 25% but do not consider non-compliance and elimination of captain and crew from retaining fish. The biological benefits of **Alternative 3** for the recreational sector would be greater than **Alternatives 1 and 4**. Since the length of the closure has not been specified in **Alternative 2**, no comparisons can be made.

Table 4-43. Reduction in harvest provided by reducing aggregate bag limit to 3 fish per person per day and gag and black grouper to 1 fish per person per day (combined). Source: Based on data from 1999-2005. Excludes captain and crew from retaining any grouper species with bag limit. Release mortality rate = 25%.

	Estimated Harvest Reductions				
Species	Headboat	Private	Charter	MRFSS	Combined
Aggregate	0.7	1.3	3.3	1.8	1.6
Gag and Black	2.4	3.1	9.2	4.6	4.4
Gag	2.6	5.4	6.5	5.7	5.4
Gag w/ aggregate*	3.6	5.4	8.7	6.2	5.9
Gag w/ agg & black*	4.1	5.4	11.1	6.8	6.5

Notes: Adjustments not made to private sector of MRFSS. **Assumes non-compliance**.
*Includes effect on gag of reducing aggregate bag limit to 3 fish and black grouper to 1 fish.

Table 4-44. Reduction in MRFSS harvest expected with various vessel limits for shallow water grouper species where release mortality = 25%. Does not consider non-compliance and eliminating captain and crew from charter. Landings in number of fish.

	Charter		Private		Total	
Vessel limit	LANDINGS	PERCENT	LANDINGS	PERCENT	LANDINGS	PERCENT
TOTAL	1,220	100	908	100	2,128	100
50	0	0	0	0	0	0
45	0	0	0	0	0	0
40	0	0	0	0	0	0
35	0	0	0	0	0	0
30	0	0	0	0	0	0
25	0	0	0	0	0	0
20	12	0.98	8	0.83	20	0.92
15	35	2.83	18	1.98	53	2.47
10	79	6.46	53	5.81	132	6.18
9	94	7.68	61	6.74	155	7.28
8	113	9.22	72	7.9	184	8.66
7	133	10.88	84	9.22	217	10.17
6	156	12.77	96	10.54	252	11.82
5	182	14.92	111	12.2	293	13.76
4	219	17.94	127	14.01	346	16.26
3	271	22.18	148	16.24	418	19.65
2	345	28.26	176	19.38	521	24.47
1	454	37.19	238	26.24	692	32.52

Table 4-45. Reduction in headboat harvest expected with various vessel limits for shallow water grouper species where release mortality = 25%. Does not consider non-compliance and eliminating captain and crew.

Vessel limit	LANDINGS	PERCENT
TOTAL	61,315	100.00
50	2,779	4.53
45	3,379	5.51
40	4,041	6.59
35	5,003	8.16
30	6,050	9.87
25	7,592	12.38
20	9,444	15.40
15	12,119	19.76
10	16,004	26.10
9	17,214	28.07
8	18,471	30.12
7	19,924	32.49
6	21,548	35.14
5	23,491	38.31
4	25,869	42.19
3	28,808	46.98
2	32,613	53.19
1	37,856	61.74

Alternative 4 would reduce the 3-grouper aggregate specified in Snapper Grouper Amendment 16 to a 1-grouper aggregate bag limit. Because fishermen catch fewer than 1 shallow water grouper per trip, little reduction in harvest is provided by reducing the aggregate bag limit. The reduction in harvest associated with decreasing the bag limit from a maximum of five to three or two fish per person per day is small (8.5%). Therefore, **Alternative 4** would have less biological benefit than any of the alternatives considered.

Table 4-46. Reduction in harvest provided by reducing aggregate bag limit to 1 fish per person per day.
Source: Based on data from 1999-2005. Excludes captain and crew from retaining any grouper species with bag limit. Release mortality rate = 25%.

	Estimated Harvest Reductions				
Species	Headboat	Private	Charter	MRFSS	Combined
Aggregate	8.1	7.2	12.8	8.6	8.5

Alternative 1 will perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. **Alternatives 2-4** are unlikely to have adverse affects on ESA-listed *Acropora* species. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect these species. These alternatives are unlikely to alter fishing behavior in a way that would cause new adverse affects to *Acropora*. The impacts from **Alternatives 2-4** on sea turtles and smalltooth sawfish are unclear. If they perpetuates the existing amount of fishing effort, but causes effort

redistribution, any potential effort shift is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. If these alternatives reduce the overall amount of fishing effort in the fishery, the risk of interaction between sea turtles and smalltooth sawfish will likely decrease.

4.8.2.2 Economic Effects

Appendix D shows bundled ACL and allocation alternatives for each species in this action.

Recreational Fishery

Alternative 1 would have the least short-term adverse economic effects on the recreational sector, but it could pose some problems regarding the long-term viability of the fishery. The relative adverse effects of **Alternative 2** would likely be the same for both charterboats and headboats while those of **Alternative 3** would likely have more adverse short-term effects on charterboats than headboats. Depending on the length of seasonal closure under Alternative 2, it would appear that **Alternative 4** would result in more adverse short-term effects than **Alternative 2** on private/rental mode anglers. To the extent that trips are cancelled during the seasonal closure under **Alternative 2**, the effects of this alternative on the for-hire sector would tend to be higher than those of **Alternative 4**.

4.8.2.3 Social Effects

Long-term sustainability of snapper grouper stocks is necessary to maintain fishing communities. However, it is argued that the trade-off of short-term negative economic and social impacts for long-term sustainability could result in collapse of the snapper grouper fishing industry. For those towns that are recognized as fishing communities by the general public, loss of fish houses, boat yards, and restaurants that serve locally caught fish, and red snapper in particular, could result in a loss of income from tourism. The economic impact is felt in terms of dollars going to restaurants, hotels and other coastal businesses. Fishing families may experience increased stress due to financial difficulties and unemployment. This can contribute to an increase in domestic abuse, divorce rates, depression, and drug use, among other social ills. Community residents that are not part of fishing families can feel a loss of cultural and historical identity.

4.8.2.4 Administrative Effects

Effects on the administrative environment would be negative under the **No-Action Alternative**, since it is likely the ACT would be exceeded and AMs would be triggered. Information regarding those AMs would need to be packaged into a fishery bulletin and/or web content for public dissemination would fall within the administrative realm.

Furthermore, if measures to end overfishing are not put in place through this amendment even more restrictive measures will need to be considered in subsequent amendments, further impacting the administrative environment.

Alternative 2 would implement a seasonal closure for all shallow water snapper grouper species. Such an action would cause minimal negative impacts on the administrative environment. If such a closure were promulgated through rulemaking, outreach materials would need to be developed and disseminated to the general public, and law enforcement on the federal and state levels would need to be coordinated. **Alternatives 3** and **4** would entail the same administrative effort and coordination as **Alternative 2**; however, the content of outreach materials would reflect the measures specified under the preferred alternative. The magnitude of administrative impacts across all alternatives considered under this action would be minimal.

4.8.2.5 Council's Conclusions

4.9 Accountability Measures

4.9.1 Commercial Sector

Alternative 1 (no action). Do not implement Accountability Measures for the commercial sector for species undergoing overfishing.

Alternative 2. Implement Accountability Measures for the commercial sector for **species undergoing overfishing**. If the sector ACT is projected to be met, prohibit the harvest and retention of species or species group. If the sector ACL is exceeded, the Assistant Administrator shall publish a notice to **reduce the sector ACT** in the following year by the amount of the overage.

Alternative 3. Implement Accountability Measures for the commercial sector for **species undergoing overfishing**. If the sector ACT is projected to be met, prohibit the harvest and retention of species or species group. If the sector ACL is exceeded, the Assistant Administrator shall publish a notice to **reduce the length of the following fishing year** by the amount necessary to recover the overage from the prior fishing year.

Alternative 4. Implement Accountability Measures for the commercial sector **for species undergoing overfishing**. **If the species is overfished or not overfished and the sector ACT** is projected to be met, prohibit the harvest and retention of species or species group. **If the species is overfished and the sector ACL is exceeded**, the Assistant Administrator shall publish a notice to reduce the sector ACT in the following year by the amount of the overage. **If the species is not overfished and the sector ACL** is exceeded, the Assistant Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to recover the overage from the prior fishing year.

4.9.1.1 Biological Effects

AMs are designed to provoke an action once either the ACL or ACT is reached during the course of a fishing season to reduce the risk overfishing will occur. However, depending on how timely the data are, it might not be realized that either the ACL and/or ACT has been reached until after a season has ended. Such AMs include prohibited retention of species once the sector ACT is met, shortening the length of the subsequent fishing season to account for overages of the ACL, and reducing the ACT in the subsequent fishing season to account for overages of the ACL.

The no action **Alternative 1** would retain the measures established through Snapper Grouper Amendments 13C and proposed in Amendment 16, which could serve as AMs. These AMs include commercial quota closures for black sea bass, snowy grouper, golden tilefish, gag, and vermilion snapper. Amendment 16 also specifies AMs for red grouper and black grouper where the fisheries for these species would close when the quota for gag was met (Table 4-47). However, the no-action alternative would not specify AMs for other species including speckled hind, warsaw grouper, and red snapper. Not specifying AMs could be expected to have negative biological effects if it increases the chance overfishing would occur.

Table 4-47. Yield at F_{MSY}, yield at Foy, total allowable catch (TAC), amendment implementing regulation, and accountability measures (AM). All values in pounds whole weight.

Species	OFL (Yield at F_{MSY})	ACT (Yield at F_{OY})	Current TAC	Amendment	Meet MSRA?	AM
Golden Tilefish	336,425	326,554	336,425	Amend 13C	Yes	Commercial (quota)
Snowy Grouper	116,845	102,960	102,960	Amend 15a	Yes	Commercial (quota)
Speckled Hind	unknown					Commercial (gag quota)
Warsaw Grouper	unknown					Commercial (gag quota)
Black grouper[1]	208,552[3]	187,960		Amend 16	Yes	Commercial (quota)
Black sea bass	912,713	847,000	847,000	Amend 15a	Yes	Commercial (quota)
Gag	1,065,540	818,920	818,920	Amend 16	Yes	Commercial (quota)
Red grouper[1]	783,214[3]	704,893		Amend 16	Yes	Commercial (gag quota)
Vermilion snapper[2]	TBD	TBD	TBD	Amend 16	Yes	Commercial (quota)
Red snapper[2]	TBD	TBD	TBD	Amend 17		TBD
1. Amendment 16 would close red grouper and black grouper during Jan-Apr (comm/rec) and close commercial fishery when gag quota is met. It would also reduce the bag limit.						
2. These values will change based on new assessment for vermilion snapper and addendum to assessment for red snapper.						
3. Based on average 2003-2007 landings from June 2008 SSC meeting. Yield at F_{OY} is estimated to be 90% of yield at F_{MSY}.						

Alternative 2 would implement AMs for the commercial sector for species undergoing overfishing. Similar to the no action **Alternative 1**, **Alternative 2** would prohibit the harvest and retention of species or species group if the sector ACT is projected to be met. However, if the sector ACL is exceeded, the Assistant Administrator would publish a notice to reduce the sector ACT in the following year by the amount of the overage. As **Alternative 2** would take an additional step to ensure overfishing does not occur, the biological benefits would be greater than **Alternative 1**.

Similar to **Alternatives 1 and 2, Alternative 3** would prohibit the harvest and retention of species or species group for the commercial sector if the ACT is projected to be met. **Alternative 3** differs from **Alternative 2** in that instead of reducing the sector ACT the following year if the sector ACL is exceeded, **Alternative 3** would have the Assistant Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to recover the overage from the prior fishing year. Since **Alternative 3** would reduce the length of the fishing year, it could increase the magnitude of regulatory discards, particularly for those species that are commonly caught when co-occurring species are targeted. Therefore, the biological benefits of **Alternative 3** could be less than **Alternative 2**. However, if bycatch of a species or species group is minimal when the fishery is closed, then the biological benefits of **Alternative 3** would be similar to **Alternative 2**.

Similar to **Alternatives 1-3**, **Alternative 4**, would prohibit the harvest and retention of species or species group if the sector ACT is projected to be met. However, **Alternative 4** specifies different measures if the ACL is exceeded, which depends on the status of the stock. If the species is overfished and the sector ACL is exceeded, the Assistant Administrator would publish a notice to reduce the sector ACT in the following year by the amount of the overage. If the species is not overfished and the sector ACL is exceeded, the Assistant Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to recover the overage from the prior fishing year. Reducing the sector ACT for an overfished stock could be more effective than reducing the length of the fishing year for a stock that is not overfished due to the magnitude of regulatory discards that could occur when fishermen target co-occurring species.

The effectiveness of **Alternatives 1 through 4** depends on the stock or species complex and their status. Certain alternatives could be more appropriate than others. For species considered in Amendment 17, they are all part of a multi-species fishery where incidental catch is likely when a species is regulated since they will still continue to be caught and suffer mortality when co-occurring are targeted. Therefore, alternatives which shorten the season to account for exceeding the ACL could result in greater bycatch than alternatives which would reduce the ACT the following year.

Alternative 1 will perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. **Alternatives 2-4** are unlikely to have adverse affects on ESA-listed *Acropora* species. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect these species. These alternatives are unlikely to alter fishing behavior in a way that would cause new adverse affects to *Acropora*. The impacts from **Alternatives 2-4** on sea turtles and smalltooth sawfish are unclear. If they perpetuates the existing amount of fishing effort, but causes effort redistribution, any potential effort shift is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. If these alternatives reduce the overall amount of fishing effort in the fishery, the risk of interaction between sea turtles and smalltooth sawfish will likely decrease.

4.9.1.2 Economic Effects

Alternatives 3 and 4 (for species that are overfished) reduce the length of the following year by the amount necessary to cover the previous year's overage. For fishermen that enter a particular fishery in the same month each year, like hook and line fishermen targeting golden tilefish, **Alternative 3** and **Alternative 4** (for species that are not overfished), could have higher negative economic impacts compared to **Alternative 2**, which takes the overage off of the next year. In the case of golden tilefish, assuming the fishing year is shortened by closing early, **Alternatives 3 and 4** could result in closure of the fishery in the fall months when hook and line fishermen typically enter the golden tilefish fishery. These alternatives could disadvantage particular gear groups. If a fishery closed even earlier, it could disadvantage fishermen in the northern states whose fishing is more influenced by weather than in southern regions.

Alternatives 2-4 all make planning for future years more difficult for fish house owners, dealers, distributors, and fishermen than under **Alternative 1**. While fishermen often plan at least one year in advance regarding what fisheries they will participate in and what adjustments they need to make to their vessel (including gear changes), those on the distributional side, like dealers, need to secure markets for the fish they expect to be able to sell. Both reduced commercial quotas and reduced fishing years make this more difficult than under **Alternative 1**.

There is no foreseen difference in non-use value between **Alternatives 2-4**.

4.9.1.3 Social Effects

Alternatives 3 and 4 (for species that are overfished) reduce the length of the following year by the amount necessary to cover the previous year's overage. As stated above, for fishermen that enter a particular fishery in the same month each year, like hook and line fishermen targeting golden tilefish in September, **Alternative 3** and **Alternative 4** (for species that are not overfished), could have higher negative social impacts compared to **Alternative 2**, which takes the overage off of the next year. As stated above, **Alternatives 2-4** all make planning for future years more difficult for fish house owners, dealers, distributors, and fishermen than under **Alternative 1**.

4.9.1.4 Administrative Effects

If AMs are not established for the commercial sector (**No-Action Alternative**) of the snapper grouper fishery the agency would fall out of compliance with requirements in the Magnuson-Stevens Act. Such non-compliance would undermine the effectiveness of proposed ACLs that would be established through this amendment and would greatly increase the risk of litigation. Any legal action taken against the agency adds significantly to the administrative burden. In preparation for legal defense, required documentation would need to be drafted and administrative records would need to be compiled. **Alternatives 2**, **3** and **4** would all require similar coordination and work products. These tasks are not considered to be a significant burden for the administrative environment. Dependent upon which alternative is chosen as the preferred, outreach in the form of fishery bulletins and web content would need to be developed, and would either include information on an ACT reduction or a fishing year time reduction in the year following a fishing year in which the ACT was exceeded. These actions would also require coordination amongst various NOAA Fisheries Divisions as well as the Coast Guard and State law enforcement entities.

4.9.1.5 Council's Conclusions

4.9.2 Recreational Sector

Alternative 1 (no action). Do not implement Accountability Measures for the recreational sector for species undergoing overfishing.

Alternative 2. Implement Accountability Measures (AMs) for the recreational sector for species undergoing overfishing. **The AM would not vary depending on stock status.**

> **Sub-alternative 2A**. Do **not implement *in season* AMs if the sector ACT is projected to be met**. If the sector ACL is exceeded, the Assistant 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 sector ACT for the following fishing year.
>
> **Sub-alternative 2B. Do not implement *in season* AMs if the sector ACT is projected to be met**. If the sector ACL is exceeded, the Assistant Administrator shall publish a notice to **reduce the sector ACT** in the following year by the amount of the overage.
>
> **Sub-alternative 2C. If the sector ACT is projected to be met**, prohibit the harvest and retention of species or species group. If the sector ACL is exceeded, the Assistant Administrator shall publish a notice to **reduce the length of the following fishing year** by the amount necessary to recover the overage from the prior fishing year.
>
> **Sub-alternative 2D. If the sector ACT is projected to be met**, prohibit the harvest and retention of species or species group. If the sector ACL is exceeded, the Assistant Administrator shall publish a notice to **reduce the sector ACT** in the following year by the amount of the overage.

Alternative 3. Implement Accountability Measures for the recreational sector for species undergoing overfishing. **The AM would vary depending on stock status.**

> **Sub-alternative 3A.** Do not implement ***in season*** AMs if the sector ACT is projected to be met. **If the species is overfished and the ACL is exceeded**, the Assistant Administrator shall publish a notice to reduce the sector ACT in the following year by the amount of the overage. **If not overfished and the ACL is exceeded**, the Assistant 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 sector ACT for the following fishing year.
>
> **Sub-alternative 3B.** If the sector ACT is projected to be met, prohibit the harvest and retention of species or species group. **If the species is overfished and the ACL is exceeded**, the Assistant Administrator shall publish a notice to reduce the

sector ACT in the following year by the amount of the overage. **If not overfished and the ACL is exceeded**, the Assistant 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 sector ACT for the following fishing year.

Alternative 4. Compare ACL in Alternatives 2 and 3 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 three year running average.

4.9.2.1 Biological Effects

AMs are designed to provoke an action once either the ACL or ACT is reached during the course of a fishing season to reduce the risk overfishing will occur. However, depending on how timely the data are, it might not be realized that either the ACL and/or ACT has been reached until after a season has ended. This is especially true for the recreational sector where real-time monitoring of catch is not possible. AMs listed below include prohibited retention of species once the sector ACT is met, shortening the length of the subsequent fishing season to account for overages of the ACL, and reducing the ACT in the subsequent fishing season to account for overages of the ACL.

Alternative 1 (no action) would not implement AMs for the recreational sector for species undergoing overfishing. Amendments 13C and 16 specified quotas for the commercial sector for black sea bass, snowy grouper, golden tilefish, gag, black grouper, red grouper, and vermilion snapper. When the a quota is met, commercial fisheries for these species would be closed. Therefore, a type of AM currently exists or will be put into place for the commercial sector. Management measures have been or will put into place to restrict harvest in the recreational sector to prevent a specified target level from being exceeded and overfishing in the recreational sector from occurring. However, similar measures for the commercial sector, such as closing a fishery when the target level is met have not been specified. Therefore, **Alternative 1** would retain the management measures put into place for species, which are intended to prevent overfishing from occurring but would not implement specific measures that would take restrictive measures if a target level in catch was attained.

Alternative 2 would implement AMs for species undergoing overfishing in the recreational sector regardless of stock status. **Sub-alternatives 2A and 2B** would not implement AMs when the sector ACT was met. Rather actions would not be taken until the limit catch specified by the ACL was reached. Since there is a delay in the availability of recreational landings data (Headboat and MRFSS), closing the fishery when the ACT is reached is not possible. Projections would need to be conducted to estimate, based on previous year's data, when an ACT would be expected to be met. For some species with consistent landings that are frequently sampled (i.e. black sea bass), this may be possible. However, when recreational landings are extremely variable or infrequently sampled, it may not be reasonable to establish AMs when the ACT is met as specified in **Sub-alternatives 2C, 2D, and 3B**.

In most cases **Sub-alternatives 2A or 2B** would be adequate, particularly if management was working and the ACL was never reached. However, in situations where a species in severely overfished, on a tight rebuilding schedule, and had consistent landings, the Council might want to consider **Sub-alternatives 2C and 2D**, which would implement an AM when the ACT was met and base AMs on the status of the species.

If the ACL was exceeded, **Sub-alternative 2A** would reduce the length of the following fishing year by the amount necessary to ensure landings did not exceed the sector ACT for the following fishing year. In contrast, **Sub-alternative 2B** would reduce the sector ACT in the following year by the amount of the ACL overage. Therefore, **Sub-alternative 2A** could have a greater biological benefit since a greater reduction in harvest would often be needed to ensure landings did not exceed the ACT. If management measures are working, any ACL overage would be small and therefore, **Sub-alternative 2B** might require smaller reductions in harvest than **Sub-alternative 2A**.

Sub-alternatives 2C and 2D would implement AMs if the sector ACT was met by prohibiting the harvest and retention of a species or species group. **Sub-alternative 2C** is similar to **Sub-alternative 2A** in that it would reduce the length of the fishing season if the ACL was exceeded; however, instead of reducing the length of fishing season the following year to ensure the ACT would not be exceeded, **Sub-alternative 2C** would decrease the length of the following fishing year by the amount necessary to recover the ACL overage from the prior fishing year. The biological benefit of **Sub-alternative 2C** would be greater than **Sub-Alternative 2A** because **Sub-alternative 2C** would implement an AM when the ACT is met and would take corrective action if the ACL was exceeded. As mentioned previously, in-season management of recreational catch is not possible for many species. **Sub-alternatives 2A and 2C** could increase the magnitude of regulatory discards during a closed season relative to **Sub-alternatives 2B and 2D** if a regulated species was taken incidentally when fishermen targeted co-occurring species and there was high release mortality.

Sub-alternative 2D like **Sub-alternatives 2B** would specify reductions in the ACT by the amount of the ACL overage, rather than a reduction in the length of the fishing season to account for overages. The biological benefit of **Sub-alternative 2D** would be greater than **Sub-Alternative 2B** because **Sub-alternative 2D** would implement an AM when the ACT is met and would take corrective action if the ACL was exceeded. Therefore, of the four sub-alternatives considered under **Alternative 2**, **Sub-alternative 2D** would likely have the greatest biological benefit in ensuring overfishing did not occur in the recreational sector. However, this assumes in-season management would be possible. In the absence of the ability to track recreational catch, **Sub-alternative 2B** would be reasonable because it would reduce the ACT rather than shorten the season to account for ACL overages.

In contrast to **Alternative 2, Alternative 3** and its sub-alternatives would implement AMs that would vary depending on stock status. As a result less restrictive measures could be implemented if a stock was not overfished than in **Alternative 2**. Similar to

Sub-alternatives 2A and 2B, **Sub-alternative 3A** would not implement AMs if the sector ACT is projected to be met. If the species is overfished and the ACL is exceeded, **Sub-alternative 3A** would reduce the sector ACT in the following year by the amount of the overage. If the stock is not overfished and the ACL is exceeded, the length of the following fishing year would be reduced by the amount necessary to ensure landings do not exceed the sector ACT. Reducing the ACT by the amount of the ACL overage for an overfished species would likely have a greater biological benefit than reducing the length of the fishing season to ensure the ACT is not exceeded due to incidental catch of the regulated species that could occur during a closed season. However, while different AMs would implemented depending on stock status, the biological benefits of **Sub-alternative 3A** would be less than the **Alternative 2** sub-alternatives, which would take action to account for ACL overage regardless of the stock status, and **Sub-alternative 3B**, which would specify an AM if the ACT was met.

Similar to Sub-alternatives 2C and 2D, Sub-alternative 3B would prohibit harvest and retention of a species or species group if the sector ACT is projected to be met. As mentioned previously, the inability to track in-season recreational catch could make this type of option problematic. Like **Sub-alternative 3A**, **Sub-alternative 3B** would employ different AMs depending on the status of a species. If the species is overfished and the ACL is exceeded, the sector ACT would be reduced the following year by the amount of the overage. If the stock is not overfished and the ACL is exceeded, the length of the following fishing year would be reduced by the amount necessary to ensure landings do not exceed the sector ACT for the following fishing year. The biological benefit of **Sub-alternative 2D** would be greater than **Sub-alternative 3B** because more restrictive AMs would be implemented regardless of the stock status. AMs that shorten the fishing season can increase the magnitude of regulatory discards and may not be as effective as AMs that lower the target level but still allow some catch.

Alternative 4 would use a range of landings in to set determine overages of ACLs in **Alternatives 2 and 3**. In the first year (2010), use only 2010 landings would be used. In the second year (2011), the average landings of 2010 and 2011 would be to the ACL to determine if an overage had occurred. For 2012 and beyond, a three year running average would be employed to determine if there was an overage of the ACL. Recreational landings data can be highly variable, particularly for species that are infrequently encountered. Therefore, using average landings for comparison with the ACL can buffer peaks in the landings that may be a function of sampling rather than a true estimation of action harvest. However, for some species that are very rarely encountered in recreational surveys (i.e. golden tilefish and snowy grouper), estimates of recreational harvest may not be reliable regardless of how the data are treated. For these species, it may not be possible to set ACLs and AMs because of problems with tracking recreational data for species with low sampling frequencies.

Alternative 1 will perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. **Alternatives 2-4** and their sub-alternatives are unlikely to have adverse affects on ESA-listed *Acropora* species. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect these species.

These alternatives are unlikely to alter fishing behavior in a way that would cause new adverse affects to *Acropora*. The impacts from **Alternatives 2-4** and their sub-alternatives on sea turtles and smalltooth sawfish are unclear. If they perpetuates the existing amount of fishing effort, but causes effort redistribution, any potential effort shift is unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. If these alternatives reduce the overall amount of fishing effort in the fishery, the risk of interaction between sea turtles and smalltooth sawfish will likely decrease.

4.9.2.2 Economic Effects

Alternative 1 would benefit mainly the private recreational sector potentially at the expense of the for-hire sector especially if the private recreational sector is the dominant sector for certain species undergoing overfishing.

Alternative 2 would affect all segments of the recreational sector, and the short-term adverse effects would be likely disproportionately shared by the less dominant segment of the recreational fishery. Among the sub-alternatives under **Alternative 2**, non-implementation of AMs as in **Sub-Alternative 2A and 2B** may be expected to have smaller short-term adverse effects than those which would impose AMs (**Sub-Alternatives 2C and 2D**). However, those sub-alternatives would also require potentially larger ACT reductions or shorter seasons the following year as to result in more adverse effects for that year. Between comparable alternatives, such as **Sub-Alternatives 2A and 2B** or **Sub-Alternatives 2C and 2D**, reducing the season length (**Sub-Alternatives 2A and 2C**) would possibly result in more adverse effects than reducing the ACT. Affecting the season length poses a higher likelihood of trip cancellations than reductions in ACTs.

Similar to **Alternative 2**, implementing AMs under **Sub-Alternative 3B** would likely result in more adverse short-term effects than without AMs (**Sub-Alternative 3A**) but could also result in relatively larger adverse impacts in the future. Under both sub-alternatives, a shortened season would possibly result in more adverse impacts than a reduced ACT.

4.9.2.3 Social Effects

Alternative 1 would not have any social impacts in the short term but impacts over the long term could be negative if the stocks were to decline. **Alternatives 2 and 3** would have short-term impacts if the sector ACT were to be met, however, the long-term effects would be positive as the stocks move closer to OY.

4.9.2.4 Administrative Effects

If AMs are not established for the commercial sector (**No-Action Alternative**) of the snapper grouper fishery the agency would fall out of compliance with requirements in the Magnuson-Stevens Act. Such non-compliance would undermine the effectiveness of proposed ACLs that would be established through this amendment and would greatly increase the risk of litigation. Any legal action taken against the agency adds significantly to the administrative burden. In preparation for legal defense, required documentation would need to be drafted and administrative records would need to be compiled.

Adverse impacts on the administrative environment under each of the sub **Alternatives 2a**, **2b**, **2c**, **2d**, **3a**, and **3b** for this action would be considered minimal and differ from each other only marginally. Under each of these sub alternatives outreach materials and would be drafted and disseminated to the fishing public, and law enforcement efforts would need to be closely coordinated. **Alternative 4** would require slightly more coordination since a comparison of past landings over different ranges of time would be required. Overall, administrative impacts would not be significant under this alternative and would not extend beyond the scope of those impacts already discussed under **Alternatives 2** and **3**.

4.9.2.5 Council's Conclusions

4.10 Red Snapper Rebuilding Plan

4.10.1 Rebuilding Schedule

Note: The SEFSC has been requested to redo projections. Values could change.

Alternative 1 (no action). There currently is not a rebuilding plan for red snapper. Amendment 4 (regulations effective January 1992) implemented a 15-year rebuilding plan beginning in 1991 which has since expired.

Alternative 2. Define a rebuilding schedule as the shortest possible period to rebuild in the absence of fishing mortality (T_{MIN}). This would equal 26 years (SEDAR 15 2007). 2010 is Year 1.

Alternative 3. Define a rebuilding schedule as the mid-point between shortest possible and maximum recommended period to rebuild. This would equal 36 years. 2010 is Year 1.

Alternative 4. Define a rebuilding schedule as the maximum recommended period to rebuild if T_{MIN} > 10 years. The maximum recommended period equals T_{MIN} + one generation time. This would equal 46 years (SEDAR 15 2007 was the source of the generation time). 2010 is Year 1.

4.10.1.1 Biological Effects

Choice of a rebuilding schedule has a direct effect on the biological, ecological, and physical environment by determining the length of time over which rebuilding efforts can be extended. Shorter schedules generally require overfished stocks be provided a greater amount of (and more immediate) relief from fishing pressure. Conversely, longer schedules generally allow overfished stocks to be harvested at higher rates of fishing mortality as they rebuild. Extending the rebuilding period beyond the shortest possible timeframe increases the risk that environmental or other factors could prevent the stocks from recovering. As a result, the biological/ecological benefits of a shorter schedule are generally greater than those of the intermediate schedule and the benefits of the intermediate schedule are generally greater than those of the maximum recommended schedule. However, the overall effects of all the action alternatives are expected to be beneficial because each defines a plan for rebuilding the overfished stock.

Alternative 1 (no action) would not establish a rebuilding schedule for red snapper. Because the most recent stock assessment indicated red snapper are overfished and undergoing overfishing a rebuilding schedule is a necessary component of the rebuilding plan. Without such a schedule it is unlikely the stock would recover within a predictable amount of time that would ultimately rebuild the stock to a sustainable level. Therefore, this alternative would not meet the objective of achieving SSB_{MSY} within the terms allowed by the Magnuson-Stevens Act. This alternative would also maintain the existing levels of risk to ESA-listed species.

Alternatives 2-4 would establish schedules would achieve rebuilding within time periods allowed by the MSA, and therefore, **Alternatives 2-4** would be expected to benefit the ecological environment by restoring a crucial link within the trophic structure of the ecosystem. Results of SEDAR 15 (2008) determined that in the absence of any fishing mortality, the fishery could rebuild to SSB_{MSY} in 28 years **(Alternative 2).** In addition, SEDAR 15 (2008) estimated the mean generation time for red snapper as 20 years. Therefore, the longest allowable time to rebuild would be 48 years **(Alternative 4). Alternative 3** represents a midpoint between **Alternatives 2 and 4.** Theoretically, **Alternative 2**, would rebuild the stock to SSB_{MSY} more quickly than other alternatives because it would require managers to impose the strictest harvest controls. Shorter rebuilding schedules generally provide the greatest biological benefit by allowing biomass, the age and size structure, sex ratio, and community structure to be restored to healthy levels at the fastest possible rate. However, red snapper is part of a multispecies fishery. Even if retention of red snapper is prohibited, red snapper would still be caught since they have temporal and spatial coincidence with other species fishermen target. Consequently, **Alternative 2** would have minimal biological benefits relative to **Alternatives 3 and 4** because the actual mortality of red snapper would likely be similar under all three alternatives.

If no harvest of red snapper was allowed, as specified in **Alternative 2**, it is still expected that red snapper would be caught and released by commercial fishermen at some level under or near the current commercial quota. Since release mortality for the commercial sector is nearly 90 percent, while release mortality for the recreational sector is approximately 40 percent for red snapper (SEDAR 15 2008), the schedule specified in **Alternative 2** is not considered to be realistic and would not be expected to rebuild the stock to SSB_{MSY}. It is not possible to eliminate incidental mortality on one species in a multi-species complex, without prohibiting fishermen from targeting all associated species wherever the prohibited species occurs. The Council has addressed other deepwater snapper grouper species as unit in Amendments 13C, and 15A. Due to bycatch mortality, the schedule specified in **Alternative 3** also is not realistic and would not likely allow red snapper to rebuild to SSB_{MSY} by the end of the rebuilding schedule unless greater restrictions were placed on other species that co-occur with red snapper. Consequently, **Alternative 4** would support an allowable harvest level that is basically a “bycatch quota”, enabling snapper grouper fishermen to retain incidentally encountered red snapper when targeting co-occurring species. In addition, the magnitude of bycatch would be less for **Alternative 4** than for **Alternatives 2 and 3**.

The impacts of **Alternatives 2, 3, and 4** on ESA-listed species will be very similar to those mentioned above for fish species. More restrictive harvest limits are expected to provide the most protection to ESA-listed species due to effort reductions.

Specifying a re-building schedule for red snapper will not directly affect the biological or ecological environment, including protected species, because these parameters are not used in determining immediate harvest objectives.

4.10.1.2 Economic Effects

While a rebuilding schedule does not directly impact fishermen, the management measures that are based on the rebuilding schedule will. **Alternative 1** would impose the least stringent management measures while **Alternative 2** would impose the most stringent. Therefore, **Alternative 1** would result in the smallest long-term economic benefits but the largest short-term economic benefits while **Alternative 2** would result in the largest long-term economic benefits but the smallest short-term economic benefits. However, as stated above, the biological benefits between **Alternatives 2, 3, and 4** are minimal therefore, the economic benefits would be likewise.

Non-use values, like existence and bequest values, would be highest under **Alternative 2** and lowest under **Alternative 1**. However, the differences in non-use value between **Alternatives 2, 3, and 4** are minimal.

4.10.1.3 Social Effects

While a rebuilding schedule does not directly impact fishermen, the management measures that are based on the rebuilding schedule will. **Alternative 1** would impose the least stringent management measures while **Alternative 2** would impose the most stringent. Therefore, **Alternative 1** would result in the smallest long-term social benefits but the largest short-term social benefits while **Alternative 2** would result in the largest long-term social benefits but the smallest short-term social benefits. However, as stated above, the biological benefits between **Alternatives 2, 3, and 4** are minimal therefore, the social benefits would be likewise.

4.10.1.4 Administrative Effects

Under the **No-Action Alternative**, no rebuilding timeframe would be established for red snapper. The Magnuson-Stevens Act requires that a rebuilding plan be established for any species undergoing overfishing and is declared overfished. Part of a rebuilding plan is the timeframe within which the stock would be rebuilt. Therefore, if no rebuilding timeframe were implemented, the rebuilding plan could not be considered complete and the agency would not meet the Magnuson-Stevens Act requirement. If this situation were to occur, NOAA Fisheries Service would incur a substantial litigation risk. Administratively, the impacts of a lawsuit brought against the agency would be moderate and take the form of compiling the administrative record, and drafting case related documents. The rebuilding timeframe alternatives themselves would not affect the administrative environment regardless of the length of time specified in each alternative.

4.10.1.5 Council's Conclusions

4.10.2 Rebuilding Strategy

Note: The SEFSC has been requested to redo projections. Alternatives will be developed based on the projections.

~~**Alternative 1 (no action).** Do not define a yield-based rebuilding strategy for red snapper.~~

~~**Alternative 2.** Fixed Exploitation would be $F=F_{MSY}$ (or $F<F_{MSY}$)~~

~~**Alternative 3.** Modified Exploitation would be allow for adjustment in $F<=F_{MSY}$, which would allow for the largest landings that would rebuild the stock to B_{MSY} in the allowable timeframe.~~

~~**Alternative 4.** Fixed harvest would be maximum fixed harvest with $F<=F_{MSY}$ that would allow the stock to rebuild to B_{MSY} in the allowable timeframe.~~

Staff recommends that this action be moved to the Considered But Rejected Appendix as the maximum mortality must be less than or equal to the ABC and rebuilding F must equal the yield at ACL.

4.10.2.1 Biological Effects

Rebuilding Strategy Alternative 1 would not define a yield-based strategy for rebuilding the red snapper stock. The effects of **Alternative 1** would be biologically adverse since it would not provide a plan of how fishing effort would be regulated during the rebuilding schedule, and, it could result in unnecessary discard of dead red snapper as biomass increased. **Alternatives 2** and **3** would result in beneficial effects to the stock and associated ecosystem by allowing fishery managers to regulate fishing effort throughout the rebuilding timeframe.

Under all the rebuilding strategy alternatives, an increase in the magnitude of dead discards would be expected for red snapper as biomass rebuilds. However, any estimate of increased bycatch must rely upon many assumptions about how fishermen will change their behavior in response to new management measures. For example, fishermen may decide to avoid areas where red snapper occur due to management restrictions, or the four-month shallow-water snapper grouper spawning season closure proposed in

Amendment 16. As **Alternative 3** would allow for modified exploitation biomass increases, the stock could rebuild ahead of schedule.

Specific values for **Alternatives 2-4** are being developed; however, some general aspects of the various rebuilding strategies can be discussed. **Alternative 2** holds F at F_{MSY} or some level less than F_{MSY} throughout the rebuilding timeframe. The strategy would decrease in landings during 2010 to the yield associated with F_{MSY} or some level less than F_{MSY} but then would allow landings to increase as the stock rebuilds. **Alternative 3** would allow for a fishing mortality rate that could be modified throughout the rebuilding timeframe to allow for the largest possible landings. Rebuilding would occur at a faster rate under **Alternative 2** than **Alternatives 3** as it would likely require lower catches during the rebuilding period. **Alternative 4** would specify a fixed harvest at a yield less than F_{MSY}. If catch was set at low enough levels, this alternative could rebuild the stock sooner than other alternatives.

Environmental factors such as weather, currents, and water temperature may affect the survival of eggs and larvae, causing poor recruitment even when large numbers of offspring are produced. Thus, alternatives, which allow the population to more rapidly attain a greater number of older, larger fishes in the population, also provides additional protections against recruitment failure due to several years of poor environmental conditions for eggs and larvae, creating a more robust population. Delaying rebuilding could make stocks more susceptible to adverse environmental conditions that might affect recruitment success, or to unanticipated errors in parameter estimates, which could result in excessive fishing.

In theory, the net ecological effects of the choice of **Alternatives 1 - 4** would be positive, as the reef community would more closely represent that which would persist in a natural, or undisturbed state, and the possibility of ecosystem overfishing would be reduced. However, as fishing pressure is reduced on the protected stock(s), fishermen may target other members of the reef fish ecosystem, which have fewer fishing restrictions. Furthermore, changes in effort and community structure could change as biomass increases. This displacement of effort may further disrupt community structure. The natural balance of an ecosystem cannot be fully restored as long as the ecosystem is subjected to fishing-related mortality. Additionally, there is some speculation that a disrupted community cannot be restored to pre-existing conditions, because it may change to a new climax community in a post-disturbed condition with a different suite of species.

The level of fishing effort applied to the fishery can influence fishing gear interactions with the sea floor. Furthermore, fish abundance, species composition, and the interaction of different fish and invertebrate species can have an effect on the habitat that they occupy. However, the number, nature, and extent of such interactions are more greatly influenced by the type of management measures that regulate the extent and distribution of fishing effort.

Alternatives 2, **3**, and **4** differ primarily in how they would distribute the rebuilding burden over time. However, the average fishing effort supported by each alternative throughout the rebuilding period would likely be similar. Thus, any differences in the habitat effects associated with the rebuilding strategy alternatives are probably insignificant over the long term. Additionally, regardless of potential differences in the magnitude of effects associated with different rebuilding strategy alternatives, all are expected to only minimally affect the physical environment because the primary gear used in this fishery (hook and line) is believed to have minimal effects on the sea floor. The overall impacts of **Alternatives 1-4** on ESA-listed species are uncertain. Sea turtle abundance in the South Atlantic changes seasonally and the impact of fishing effort shifts, if any, resulting from these alternatives is difficult to predict. Current monitoring programs will allow NMFS to track and evaluate any increased risk to ESA-listed species. If necessary, an ESA consultation can be re-initiated to address any increased levels of risk.

Specifying a re-building strategy will not directly affect the biological or ecological environment, including protected species, because these parameters are not used in determining immediate harvest objectives.

4.10.2.2 Economic Effects

Specifying a rebuilding strategy will not directly affect the economic environment because these parameters are not used in determining management measures.

4.10.2.3 Social Effects

Specifying a rebuilding strategy will not directly affect the social environment because these parameters are not used in determining management measures.

4.10.2.4 Administrative Effects

Under the **No-Action Alternative**, the rebuilding strategy based upon yield would not be established for red snapper. The Magnuson-Stevens Act requires that a rebuilding plan be established for any species undergoing overfishing and is declared overfished. Part of a rebuilding plan is the strategy by which the stock would be rebuilt. Therefore, if no rebuilding strategy were implemented, the rebuilding plan would not be considered complete and the agency would not meet the Magnuson-Stevens Act requirement. If this situation were to occur, NOAA Fisheries would incur a substantial litigation risk. Administratively, the impacts of a lawsuit brought against the agency would be moderate and take the form of compiling the administrative record and drafting case related documents. All alternative rebuilding strategies under this action would require the periodic tracking of stock status. Typically, as stocks begin to recover, allowable harvest increases proportionately until the stock is fully recovered. Another strategy may involve a fixed harvest reduction where the reduced harvest level would be held constant until the stock is rebuilt, at which time increasing the allowable harvest would be considered. An adjustable rebuilding strategy would incur slight higher administrative impacts since fishermen would need to be notified of increased allowable harvest levels periodically, whereas a fixed restriction would involve a one time outreach effort.

4.10.2.5 Council's Conclusions

4.11 Improvements to Data Reporting

4.11.1 Commercial

Note: The Council may choose more than one alternative as their preferred.

Alternative 1 (no action). Retain existing data reporting systems for the commercial sector. NEED TO OUTLINE THEM IN A TABLE.

Alternative 2. Require selected dealers handling snapper grouper species to report electronically (computer or fax) through the SAFIS system; NMFS is authorized to require weekly or daily reporting as required.

Alternative 3. Require all dealers handling snapper grouper species to report electronically (computer or fax) through the SAFIS system; NMFS is authorized to require weekly or daily reporting as required.

Alternative 4. Require all vessels with a Federal Snapper Grouper Commercial Permit to have an electronic logbook tied to the vessel's GPS onboard the vessel.

Alternative 5. Require all vessels with a Federal Snapper Grouper Commercial Permit to have an electronic camera monitoring system onboard the vessel.

Alternative 6. Require vessels with a Federal Snapper Grouper Commercial Permit to have an electronic camera monitoring system onboard the vessel at a level that represents 10% of all trips by vessels with the permit.

Alternative 7. Require observers to be onboard vessels with a Federal Snapper Grouper Commercial Permit at level that represents 5% of all trips by vessels with the permit.

Alternative 8. Require observers on 20-100% (Council to specify) of all trips by vessels with golden tilefish endorsements.

4.11.1.1 Biological Effects

Alternative 1 (no action) would retain existing data reporting systems for the commercial sector. For the South Atlantic snapper grouper commercial fishery current regulations (50CFR § 622.5) require commercial and recreational for-hire participants in the South Atlantic snapper grouper fishery who are selected by the Southeast Science and Research Director (SRD) to maintain and submit a fishing record on forms provided by the SRD. Bycatch data on protected species are currently collected in the commercial snapper grouper fishery through the supplementary discard form. In 1990, the SEFSC initiated a logbook program for vessels with federal permits in the snapper grouper fishery from the Gulf of Mexico and South Atlantic. In 2001, a separate bycatch reporting logbook was added to include numbers on the average size of discarded fish by species. The discard data are collected using a supplemental form that is sent to a 20% stratified random sample of the active permit holders. The sample selections are made each year and the selected fishermen/vessels are required to complete and submit the form for the trips they make during the following calendar year. Fishermen are not selected for the next four years after they submit a discard form for a year. However, over a five-year period, 100 percent of snapper grouper permit holders will have been required to report in one of the five years.

Alternative 1 would continue to obtain fishing effort information as well as protected species interactions via a logbook. Discard data are collected using a supplemental form that is sent to a 20% stratified random sample of the active permit holders. The sample selections are made in July of each year and the selected fishermen/vessels are required to complete and submit the form for the trips they make during August through July of the following year. Fishermen are not selected for the next four years after they submit a discard form for a year. However, over a five-year period, 100 percent of snapper grouper permit holders will have been required to report in one of the five years. In addition, information is collected on protected species interactions. The key advantage of logbooks is the ability to use them to cover all fishing activity relatively inexpensively. However, in the absence of any observer data, there are concerns about the accuracy of logbook data in collecting bycatch information. Biases associated with logbooks primarily result from inaccuracy in reporting of species that are caught in large numbers or are of little economic interest (particularly of bycatch species), and from low compliance rates. Many fishermen may perceive that accurate reporting will result in restricted fishing effort or access. This results in a disincentive for reporting accurate bycatch data and an incentive to under-report or not report. Therefore, logbook programs are more useful in recording information on infrequently caught species and providing estimates of total effort by area and season that can then be combined with observer data to estimate total bycatch.

Commercial quotas are monitored by the NMFS Southeast Fisheries Science Center (SEFSC). Landings information are obtained from dealers. Dealer selections are made for a calendar year based on the production for the previous year. Selected dealers are notified that they must report landings by the 5th of a following month, even if no purchases were made. The SEFSC provides periodic reports to NMFS Southeast

Regional Office (SERO) and the Council (at least prior to each Council meeting). In addition, timing of possible closures are estimated. Periodically, quota monitoring data are compared to general canvas landings data for the same dealers. The purpose is to determine if selected dealers provide an acceptable percentage of total reported landings. The review of the general canvass landings data are also used to identify new dealers handling quota species. If new dealers are identified or if the percentage of landings accounted for by selected dealers drops below a specified percentage, additional dealers would be required to report landings.

Dealers have two options for submitting data: (1) a paper form faxed to SEFSC or (2) online reporting. To enter and use the online system, the dealer uses a valid user login ID and password. This system is secure and only users with valid user ID's and passwords can access it. Furthermore, the user ID and password is unique for each dealer and will only allow access to the data entered by an individual using that password. All entries are logged on a tracking database and each time a user enters the system and makes a change to the data, that entry, and the changes are recorded, along with the date and time the changes were made. Instructions are provided to the dealers on how to use the online system.

Some data are also collected through cooperative research projects. Cooperative research with the commercial and recreational sectors on bycatch was identified as a high priority item at the Southeast Bycatch Workshop during May 2006. There is clearly a need to characterize the entire catch of commercial fishermen and compare differences in abundance and species diversity to what is caught in fishery-independent gear. As we move towards a multi-species management approach, these types of data are essential. In addition, estimates of release mortality are needed for stock assessments but currently this is not being measured for fishery-dependent data. It is anticipated that additional cooperative research projects will be funded in the future to enhance the database on bycatch in the snapper grouper fishery in the South Atlantic.

Cooperative research projects between science and industry are being used to a limited extent to collect bycatch information on the snapper grouper fishery in the South Atlantic. For example, Harris and Stephen (2005) characterized the entire (retained and discarded) catch of reef fishes from a selected commercial fisherman in the South Atlantic including total catch composition and disposition of fishes that were released. The Gulf and South Atlantic Fisheries Foundation, Inc. obtained funding to conduct a fishery observer program within the snapper grouper vertical hook-and-line (bandit rig) fishery of the South Atlantic United States. Through contractors they randomly placed observers on cooperating vessels to collect a variety of data quantifying the participation, gear, effort, catch, and discards within the fishery.

Research funds for observer programs, as well as gear testing and testing of electronic devices are also available each year in the form of grants from the Foundation, Marine Fisheries Initiative (MARFIN), Saltonstall-Kennedy (S-K) program, and the Cooperative Research Program (CRP). Efforts are made to emphasize the need for observer and logbook data in requests for proposals issued by granting agencies. A condition of funding for these projects is that data are made available to the Councils and NOAA Fisheries Service upon completion of a study.

Included in the no-action **Alternative 1** would be the measures proposed in Amendment 15B, which is under Secretarial review. The Council's preferred alternative would allow for the implementation of interim programs to monitor and assess bycatch in the South Atlantic snapper grouper fishery until the ACCSP Release, Discard and Protected Species (Bycatch) Module can be fully funded. The interim programs or first phase of the alternative would allow for the collection of bycatch information utilizing a variety of methods and sources when this amendment is implemented as follows:

1. Require that selected vessels carry observers (It is the Council's intent that NOAA Fisheries Service and grant-funded programs would cover the cost of observers on snapper grouper vessels.)
2. Require selected vessels employ electronic logbooks or video monitoring (It is the Council's intent that NOAA Fisheries Service and grant-funded programs cover the cost of purchase and installation of these units.)
3. Utilize bycatch information collected in conjunction with grant-funded programs such as MARFIN and Cooperative Research Program (CRP). Require that raw data are provided to NOAA Fisheries Service and the Council.
4. Request that bycatch data collected by states are provided to NOAA Fisheries Service and the Council. Many states may have collected data on snapper grouper bycatch in the past. Furthermore, some states may be currently collecting bycatch data through studies that are conducted in state waters.
5. Develop outreach and training programs to improve reporting accuracy by fishermen.

Alternative 1 would not require that commercial vessels with a snapper grouper permit to use the SAFIS system or vessel monitoring systems (VMS).

Alternatives 2 through 8 identify options for monitoring catch and effort, which are more specific that what was specified in Amendment 15B. There are no direct biological impacts from establishing a standardized reporting methodology to estimate bycatch. However, indirect impacts resulting from **Alternatives 2 through 8** would provide a better understanding of the composition and magnitude of catch and bycatch; enhance the quality of data provided for stock assessments; increase the quality of assessment output; provide better estimates of interactions with protected species; and lead to better decisions regarding additional measures that might be needed to reduce bycatch. Management measures that affect gear and effort for a target species can influence fishing mortality in other species. Therefore, enhanced catch and bycatch monitoring would provide better data that could be used in multi-species assessments.

Alternatives 2 through 8 differ in type, amount, and quality of data they would provide. They also differ in feasibility. For example, it is not feasible to place observers (**Alternative 8**) on many commercial snapper grouper vessel due to the small size of the boats and safety concerns. Therefore, the Council may elect to allow fishermen to choose which method they want to use to monitor catch or bycatch (**Alternatives 5/6, or 7**).

Alternatives 2 and 3 would require dealers to report electronically (computer or fax) through the Standard Atlantic Fisheries Information System (SAFIS) and require weekly or daily reporting when it is anticipated a quota was going to be met. The difference between **Alternatives 2 and 3** is **Alternative 2** would only require selected dealers to participate in the program; whereas, **Alternative 3** would require all dealers to participate. SAFIS is a real-time, web-based reporting system for commercial landings on the Atlantic coast. It is comprised of three applications:

- Electronic Dealer Reports (eDR) - A forms based application collecting from the dealers (landings) including condition and price.
- Electronic Trip Reports (eTRIPS) - A Web-based application collecting data from fisherman (catch and effort) including gears used, fishing areas, and catch disposition.
- SAFIS Management System (SMS) - A Web-based application providing administrative tools to SAFIS administrators for management of user accounts, participants, permits etc.

Data reported through SAFIS is fed into the ACCSP Data Warehouse. Beneficial biological impacts would be provided by **Alternatives 2 and 3** if data are provided more quickly from the fishermen and dealers to NMFS and fishery managers. In addition to monitoring quotas in a more timely fashion than under the current quota monitoring system, the SAFIS has the potential to improve the quality of data and stock assessments.

Alternative 4 would require all vessels with a Federal Snapper Grouper Commercial Permit to have an electronic logbook tied to the vessel's GPS onboard the vessel. This alternative differs from **Alternative 1** in that a vessel would only be required to use electronic logbook if it were selected.

The Council tested the use of electronic logbook reporting using the Thistle Marine HMS-110 unit to examine the magnitude and spatial distribution of fishing effort and species composition (O'Malley 2003). The project was implemented on two commercial snapper/grouper vessels in South Carolina and North Carolina from May 2002 through November 2002. Over 4,000 high spatial and temporal resolution data points on commercial catch and effort representing 19 fishing trips were captured. The Thistle box allows fishermen to record all species encountered as well as the disposition of released specimens. A comparison of electronic versus paper reporting for a single trip indicates more than twice the number of species than recorded on the trip ticket (O'Malley 2003). Catch per unit of effort (CPUE) can be expressed in different ways for this fishery and the Thistle logbook device can be configured to record all of the parameters necessary to calculate different types of CPUE. These could include catch per trip/day/hour fished, catch per hook/line/reel fished, or catch per man-trip/man-day/man-hour. The Thistle electronic logbook is also setup to record fish lengths. Electronic logbooks have the potential to automatically collect information on date, time, location, and fishing times. Information (species, length, disposition) of released species can be manually entered into the system at the end of a fishing event. If the electronic format prompts a fisherman to record data as bycatch occurs, an electronic logbook may provide better estimates of bycatch than a paper logbook. However, for electronic logbooks, like paper logbooks, biases may result from inaccuracy in reporting of species that are caught in large numbers or are of little economic interest.

Alternatives 5 would require vessels with a Federal Snapper Grouper Commercial Permit to have an electronic camera monitoring system (EM) onboard the vessel.

Alternative 6 would also require 10% of the trips of permitted vessels to have an electronic monitoring systems. **Alternative 1** would only require an electronic monitoring system if it was selected and therefore would be similar to **Alternative 6**. Video monitoring hardware and software could provide a cost-effective and reliable system of monitoring bycatch, release mortality, handling of fishes, and other shipboard practices. These systems have been shown to be useful in monitoring bycatch. A study was recently completed to test a video monitoring system for the reef longline fishery in the Gulf of Mexico (Pria et al. 2008). EM systems consisted of three closed circuit television cameras, a GPS receiver, a hydraulic pressure transducer, a winch rotation sensor, and a system control box. EM systems were placed on six vessels for a total of over 148 days. EM and observer fishing event and catch data were available for comparison for 218 fishing events. EM sensor data provided accurate vessel position information and enabled identification of setting and hauling events. In terms of catch, both EM and observer methods were numerically within 2.7% of each other and detection of protected species categories was identical. Catch identification comparisons between observer and EM methods were generally good with 80% of catch pairing comparisons having a positive match on a hook-by-hook analysis. Some species showed identification discrepancies between observer and EM, shark species being predominant. These discrepancies were offset when results from similar species were grouped, usually within the same genus or family. Overall, results of this study suggest that EM shows promise for collecting fishing activity spatial-temporal data and assessing catch composition.

Pertinent data collected by a video electronic monitoring system would include species caught, number of hooks, location, depth, date, time, and disposition of released organisms. These data could provide information needed to help rebuild and maintain sustainable fisheries and determine what impact the fishery has on the survival of species. Data collected can be used to assess the fish species composition associated with the habitat affected by fishing gear, allowing for a better understanding of the ecosystem. Information would also be collected on protected resources encountered by fishing gear. The use of technology to record species, capture position, and disposition of released fishes has the potential to augment the collection of bycatch information and lessen the need for observers. Video technology can be used on vessels that cannot take a human observer for safety reasons or vessel limitations. It is substantially less expensive than observer coverage for comparable data collection; however, there would be costs associated with processing and interpreting video output.

Alternative 7 would require observers to be onboard vessels with a Federal Snapper Grouper Commercial Permit at level that represents 5% of all trips by vessels with the permit. This alternative differs from the no-action **Alternative 1** in that Amendment 15B would only require to carry an observer if it was selected. Data collected from at-sea observer programs are considered to be the most reliable method for estimating bycatch if coverage is adequate to avoid large sampling errors and there is little "observer effect" (where fishing operations are altered in the presence of an observer). Unfortunately, observer programs are expensive. However, when observer data are combined with reliable estimates of total fishing effort that can be inexpensively obtained from logbooks or electronic data collection devices, bycatch rates from observer data can be used to more reliably estimate total bycatch levels in a fishery.

Alternative 8 would require a vessel monitoring system (VMS). **Sub-alternative 8A** would require all vessels with a Federal Snapper Grouper Commercial Permit to have a VMS onboard the vessel; whereas, **Sub-alternative 8B** would require all vessels with a Federal Snapper Grouper Commercial Permit to have a vessel monitoring system (VMS) onboard the vessel if transiting an area where fishing for any species in the snapper grouper FMU is prohibited.

VMS is a satellite-based vessel-monitoring program. It consists of a mobile transceiver unit placed on the vessel, a communications service provider that supplies the wireless link between the unit on the vessel and the Office of Law Enforcement (OLE), and a secure OLE facility where staff can monitor compliance. VMS enhances enforcement of area restrictions. Amendment 17 proposes area-specific regulations in which fishing would be restricted or prohibited. Amendment 14, which is under review by the Secretary, would implement closed areas to protect deep water species, habitat, and spawning aggregations. Unlike size, bag, and trip limits, where the catch can be monitored when a vessel returns to port, area restrictions require at-sea enforcement.

VMS would allow OLE to monitor vessels over vast expanses of open-water while maintaining the confidentiality of fishing operations. VMS allows OLE to use modern-day technology to monitor compliance, track violations, and provide substantial evidence for prosecution, while maintaining the integrity of the individual fisherman's effort.
In addition, some VMS provide an optional safety mechanism with a 'panic button' that can be activated during a vessel emergency, and United States Coast Guard assets can be directed to the vessel's last known position.

Alternative 1-8 are unlikely to have adverse affects on ESA-listed *Acropora* species. Previous ESA consultations determined the snapper grouper fishery was not likely to adversely affect these species. **Alternatives 1-8 and their sub-alternatives** are unlikely to alter fishing behavior in a way that would cause new adverse affects to *Acropora*. **Alternatives 1-4** will perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. These alternatives are unlikely to change fishing behavior in a way that would ultimately reduce the risk of interactions between sea turtles and smalltooth sawfish, and the fishery. **Alternatives 5 -7** are unlikely to reduce the risk of interactions with ESA-listed species and the fishery, in and of themselves. However, depending on how electronic camera monitoring is implemented and configured, and what information observers collect, these alternatives may provide more data on the level and severity of protected species interactions with the fishery. Observer coverage may be especially useful if it can sample enough trips to estimate protected species interactions with an appropriate coefficient of variation.

4.11.1.2 Economic Effects

See Section I for information about various monitoring tools and costs associated with these costs

4.11.1.3 Social Effects

See Section I for information about various monitoring tools and costs associated with these costs.

4.11.1.4 Administrative Effects

Under the **No-Action Alternative** no administrative impacts would be incurred outside of the status-quo. **Alternatives 2-7,** and **9** would each result in an increased administrative burden; however, that burden would not extend beyond the scope of data management and analysis. The resultant increased data management workload would be considered a minimal to moderate adverse administrative impact.

Alternative 8 would require a vessel to have a VMS unit on board and operational. In order to show that a vessel has on board a VMS, which has been activated and deemed operational, the installer would be required to fill out a VMS activation certification form to be submitted to the NOAA Fisheries Service Office for Law Enforcement. It is estimated that this would create an approximate 15-minute time burden on the vessel owners. Therefore the adverse impact on the administrative environment would be minimal.

4.11.1.5 Council's Conclusions

4.11.2 For-Hire

Note: The Council may choose more than one alternative as their preferred.

Alternative 1 (no action). Retain existing data reporting systems for the for-hire sector. NEED TO OUTLINE THEM IN A TABLE.

Alternative 2. Require all vessels with a Federal For-Hire Permit to report electronically (computer or fax) through the SAFIS system; NMFS is authorized to require weekly or daily reporting as required.

Alternative 3. Require all dealers handling snapper grouper species to report electronically (computer or fax) through the SAFIS system; NMFS is authorized to require weekly or daily reporting as required.

Alternative 4. Require all vessels with a Federal For-Hire Permit to have an electronic logbook tied to the vessel's GPS onboard the vessel.

Alternative 5. Require all vessels with a Federal For-Hire Permit to have an electronic camera monitoring system onboard the vessel.

Alternative 6. Require all vessels with a Federal For-Hire Permit to have an electronic camera monitoring system onboard the vessel at level that represents 5% of all trips by vessels with the permit..

Alternative 7. Require observers to be onboard vessels with a Federal For-Hire Permit a level that represents 5% of all trips by vessels with the permit.

Alternative 8. Implement a voluntary logbook for discard characteristics (e.g., size and reason for discarding) for vessels with a Federal For-Hire Permit.

4.11.2.1 Biological Effects

Alternative 1 (no action) would retain existing data reporting systems for the for-hire sector. Harvest and bycatch in the private and for-hire charter vessel sector has been consistently monitored by MRFSS since its inception. The survey uses a combination of random digit dialed telephone intercepts of coastal households for effort information and dock-side intercepts for individual trips for catch information to statistically estimate total catch and discards by species for each subregion, state, mode, primary area and wave. Bycatch is enumerated by disposition code for each fish caught but not kept (B2). Prior to 2000, sampling of the charter vessel sector resulted in highly variable estimates of catch. However, since 2000, a new sampling methodology has been implemented. A 10 percent sample of charter vessel captains is called weekly to obtain trip level information. In addition, the standard dockside intercept data are collected from charter vessels and charter vessel clients are sampled through the standard random digital dialing of coastal households. Precision of charter vessel effort estimates has improved by more than 50 percent due to these changes (Van Voorhees *et al.* 2000). Additional improvements are scheduled for MRFSS in the next few years.

A recent National Science Foundation review of MRFSS data raised a number of issues. The South Atlantic Council is including a permit to fish for any species in their Fishery Ecosystem Plan Comprehensive Amendment; this known universe of recreational fishermen could be used to sample thereby improving the MRFSS estimates. The Council is also evaluating requiring all for-hire vessels to maintain a logbook. These actions will address a number of the NSF recommendations.

Harvest from headboats is monitored by NOAA Fisheries Service at SEFCs's Beaufort Laboratory. Collection of discard data began in 2004. Daily catch records (trip records) are filled out by the headboat operators; or in some cases by NOAA Fisheries Service approved headboat samplers based on personal communication with the captain or crew. Headboat trips are subsampled for data on species lengths and weights. Biological samples (scales, otoliths, spines, reproductive tissues, stomachs) are obtained as time permits. Lengths of discarded fish are occasionally obtained but these data are not part of the headboat database.

Included in the no-action **Alternative 1** would be the measures proposed in Amendment 15B, which is under Secretarial review. The Council's preferred alternative would allow for the implementation of interim programs to monitor and assess bycatch in the South Atlantic snapper grouper fishery until the ACCSP Release, Discard and Protected Species (Bycatch) Module can be fully funded. The interim programs or first phase of the alternative would allow for the collection of bycatch information utilizing a variety of methods and sources when this amendment is implemented as follows:

1. Require that selected vessels carry observers (It is the Council's intent that NOAA Fisheries Service and grant-funded programs would cover the cost of observers on snapper grouper vessels.)
2. Require selected vessels employ electronic logbooks or video monitoring (It is the Council's intent that NOAA Fisheries Service and grant-funded programs cover the cost of purchase and installation of these units.)
3. Utilize bycatch information collected in conjunction with grant-funded programs such as MARFIN and Cooperative Research Program (CRP). Require that raw data are provided to NOAA Fisheries Service and the Council.
4. Request that bycatch data collected by states are provided to NOAA Fisheries Service and the Council. Many states may have collected data on snapper grouper bycatch in the past. Furthermore, some states may be currently collecting bycatch data through studies that are conducted in state waters.
5. Develop outreach and training programs to improve reporting accuracy by fishermen.

Alternative 1 would not require that for-hire vessels to use the SAFIS system or vessel monitoring systems (VMS).

Alternatives 2 through 9 identify options for monitoring catch and effort, which are more specific than what was specified in Amendment 15B. There are no direct biological impacts from establishing a standardized reporting methodologies. However, indirect impacts resulting from **Alternatives 2 through 9** would provide a better understanding of the composition and magnitude of catch and bycatch; enhance the quality of data provided for stock assessments; increase the quality of assessment output; provide better estimates of interactions with protected species; and lead to better decisions regarding additional measures that might be needed to reduce bycatch. Management measures that affect gear and effort for a target species can influence fishing mortality in other species. Therefore, enhanced catch and bycatch monitoring would provide better data that could be used in multi-species assessments.

Alternatives 2 through 9 differ in type, amount, and quality of data they would provide. They also differ in feasibility. **Alternatives 2 and 3** would require vessels to report electronically (computer or fax) through the Standard Atlantic Fisheries Information System (SAFIS) and require weekly or daily reporting when it is anticipated a quota was going to be met. The difference between **Alternatives 2 and 3** is **Alternative 2** would only require selected vessels to participate in the program; whereas, **Alternative 3** would require all vessels to participate. SAFIS is a real-time, web-based reporting system for commercial landings on the Atlantic coast. It is comprised of three applications:

- Electronic Dealer Reports (eDR) - A forms based application collecting from the dealers (landings) including condition and price.
- Electronic Trip Reports (eTRIPS) - A Web-based application collecting data from fisherman (catch and effort) including gear used, fishing areas, and catch disposition.
- SAFIS Management System (SMS) - A Web-based application providing administrative tools to SAFIS administrators for management of user accounts, participants, permits etc.

Data reported through SAFIS is fed into the ACCSP Data Warehouse. Beneficial biological impacts would be provided by **Alternatives 2 and 3** if data are provided more quickly from the fishermen and dealers to NMFS and fishery managers. In addition to monitoring quotas in a more timely fashion than under the current quota monitoring system, the SAFIS has the potential to improve the quality of data and stock assessments.

Alternative 4 would require all vessels with a Federal for-hire permits to have an electronic logbook tied to the vessel's GPS onboard the vessel. This alternative differs from **Alternative 1** in that a vessel would only be required to use electronic logbook if it were selected.

The Council tested the use of electronic logbook reporting using the Thistle Marine HMS-110 unit to examine the magnitude and spatial distribution of fishing effort and species composition (O'Malley 2003). The project was implemented on two commercial snapper/grouper vessels in South Carolina and North Carolina from May 2002 through November 2002. Over 4,000 high spatial and temporal resolution data points on commercial catch and effort representing 19 fishing trips were captured. The Thistle box allows fishermen to record all species encountered as well as the disposition of released specimens. A comparison of electronic versus paper reporting for a single trip indicates more than twice the number of species than recorded on the trip ticket (O'Malley 2003). Catch per unit of effort (CPUE) can be expressed in different ways for this fishery and the Thistle logbook device can be configured to record all of the parameters necessary to calculate different types of CPUE. These could include catch per trip/day/hour fished, catch per hook/line/reel fished, or catch per man-trip/man-day/man-hour. The Thistle electronic logbook is also setup to record fish lengths. Electronic logbooks have the potential to automatically collect information on date, time, location, and fishing times. Information (species, length, disposition) of released species can be manually entered into the system at the end of a fishing event. If the electronic format prompts a fisherman to record data as bycatch occurs, an electronic logbook may provide better estimates of bycatch than a paper logbook. However, for electronic logbooks, like paper logbooks, biases may result from inaccuracy in reporting of species that are caught in large numbers or are of little economic interest.

Alternatives 5 would require for-hire vessels with a Federal Snapper Grouper Permits to have an electronic camera monitoring system (EM) onboard the vessel. **Alternative 6** would also require 10% of the trips of permitted vessels to have an electronic monitoring systems. **Alternative 1** would only require an electronic monitoring system if it was selected and therefore would be similar to **Alternative 6**. Video monitoring hardware and software could provide a cost-effective and reliable system of monitoring bycatch, release mortality, handling of fishes, and other shipboard practices. These systems have been shown to be useful in monitoring bycatch. A study was recently completed to test a video monitoring system for the reef longline fishery in the Gulf of Mexico (Pria et al. 2008). EM systems consisted of three closed circuit television cameras, a GPS receiver, a hydraulic pressure transducer, a winch rotation sensor, and a system control box. EM systems were placed on six vessels for a total of over 148 days. EM and observer fishing event and catch data were available for comparison for 218 fishing events. EM sensor data provided accurate vessel position information and enabled identification of setting and hauling events. In terms of catch, both EM and observer methods were numerically within 2.7% of each other and detection of protected species categories was identical. Catch identification comparisons between observer and EM methods were generally good with 80% of catch pairing comparisons having a positive match on a hook-by-hook analysis. Some species showed identification discrepancies between observer and EM, shark species being predominant. These discrepancies were offset when results from similar species were grouped, usually within the same genus or family. Overall, results of this study suggest that EM shows promise for collecting fishing activity spatial-temporal data and assessing catch composition.

Pertinent data collected by a video electronic monitoring system would include species caught, number of hooks, location, depth, date, time, and disposition of released organisms. These data could provide information needed to help rebuild and maintain sustainable fisheries and determine what impact the fishery has on the survival of species. Data collected can be used to assess the fish species composition associated with the habitat affected by fishing gear, allowing for a better understanding of the ecosystem. Information would also be collected on protected resources encountered by fishing gear. The use of technology to record species, capture position, and disposition of released fishes has the potential to augment the collection of bycatch information and lessen the need for observers. Video technology can be used on vessels that cannot take a human observer for safety reasons or vessel limitations. It is substantially less expensive than observer coverage for comparable data collection; however, there would be costs associated with processing and interpreting video output.

Alternative 7 would require observers to be onboard for-hire vessels with a Federal Permits at level that represents 5% of all trips by vessels with the permit. This alternative differs from the no-action **Alternative 1** in that Amendment 15B would only require to carry an observer if it was selected. Data collected from at-sea observer programs are considered to be the most reliable method for estimating bycatch if coverage is adequate to avoid large sampling errors and there is little “observer effect” (where fishing operations are altered in the presence of an observer). Unfortunately, observer programs are expensive. However, when observer data are combined with reliable estimates of total fishing effort that can be inexpensively obtained from logbooks or electronic data collection devices, bycatch rates from observer data can be used to more reliably estimate total bycatch levels in a fishery.

Alternative 8 would require a vessel monitoring system (VMS). **Sub-alternative 8A** would require all for-hire vessels with a Federal permit to have a VMS onboard the vessel; whereas, **Sub-alternative 8B** would require all for-hire vessels with a Federal Permit to have a vessel monitoring system (VMS) onboard the vessel if transiting an area where fishing for any species in the snapper grouper FMU is prohibited.

VMS is a satellite-based vessel-monitoring program. It consists of a mobile transceiver unit placed on the vessel, a communications service provider that supplies the wireless link between the unit on the vessel and the Office of Law Enforcement (OLE), and a secure OLE facility where staff can monitor compliance. VMS enhances enforcement of area restrictions. Amendment 17 proposes area-specific regulations in which fishing would be restricted or prohibited. Amendment 14, which is under review by the Secretary, would implement closed areas to protect deep water species, habitat, and spawning aggregations. Unlike size, bag, and trip limits, where the catch can be monitored when a vessel returns to port, area restrictions require at-sea enforcement.

VMS would allow OLE to monitor vessels over vast expanses of open-water while maintaining the confidentiality of fishing operations. VMS allows OLE to use modern-day technology to monitor compliance, track violations, and provide substantial evidence for prosecution, while maintaining the integrity of the individual fisherman’s effort.

In addition, some VMS provide an optional safety mechanism with a 'panic button' that can be activated during a vessel emergency, and United States Coast Guard assets can be directed to the vessel's last known position.

Alternative 9 would implement a voluntary logbook for discard characteristics (e.g., size and reason for discarding) for for-hire vessels with a Federal permit. The key advantage of logbooks is the ability to use them to cover all fishing activity relatively inexpensively. However, in the absence of any observer data, there are concerns about the accuracy of logbook data in collecting bycatch information. Biases associated with logbooks primarily result from inaccuracy in reporting of species that are caught in large numbers or are of little economic interest (particularly of bycatch species), and from low compliance rates. Many fishermen may perceive that accurate reporting will result in restricted fishing effort or access. This results in a disincentive for reporting accurate bycatch data and an incentive to under-report or not report. Therefore, logbook programs are more useful in recording information on infrequently caught species and providing estimates of total effort by area and season that can then be combined with observer data to estimate total bycatch.

The impacts on ESA-listed species from **Alternatives 1-8 and their sub-alternatives** for the for-hire sector will be the same as those noted in section 4.10.1.1.

4.11.2.2 Economic Effects

See Section I for information about various monitoring tools and costs associated with these costs.

4.11.2.3 Social Effects

See Section I for information about various monitoring tools and costs associated with these costs.

4.11.2.4 Administrative Effects

Under the **No-Action Alternative** no administrative impacts would be incurred outside of the status-quo. **Alternatives 2-7,** and **9** would each result in an increased administrative burden, however that burden would not extend beyond the scope of data management and analysis. The resultant increased data management workload would be considered a minimal to moderate adverse administrative impact.

Alternative 8 would require a vessel to have a VMS unit on board. In order to show that a vessel has on board a VMS, which has been activated and deemed operational, the installer would be required to fill out a VMS activation certification form to be submitted to the NOAA Fisheries Service Office for Law Enforcement. It is estimated that this would create an approximate 15-minute time burden on the vessel owners. Therefore the adverse impact on the administrative environment would be minimal.

4.11.2.5 Council's Conclusions

4.11.3 Private Recreational

Note: The Council may choose more than one alternative as their preferred.

Alternative 1 (no action). Retain existing data reporting systems for the private recreational sector. NEED TO OUTLINE THEM IN A TABLE.

Alternative 2. Require all vessels with a state recreational fishing license to have an electronic logbook tied to the vessel's GPS onboard the vessel.

Alternative 3. Require all vessels with a state recreational fishing license to have an electronic camera monitoring system onboard the vessel.

Alternative 4. Require all vessels with a state recreational fishing license to have an electronic camera monitoring system onboard the vessel at level that represents 5% of all trips by vessels with the license.

Alternative 5. Require observers to be onboard vessels with a state recreational fishing license a level that represents 5% of all trips by vessels with the license.

Alternative 6. Implement a voluntary logbook for discard characteristics (e.g., size and reason for discarding) for vessels with a state recreational fishing license.

4.11.3.1 Biological Effects

Alternatives 1 and 2 will perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. These alternatives are unlikely to change fishing behavior in a way that would ultimately reduce the risk of interactions between sea turtles and smalltooth sawfish, and the fishery. **Alternatives 3-5** are unlikely to reduce the risk of interactions with ESA-listed species and the fishery, in and of themselves. However, depending on how electronic camera monitoring is implemented and configured, and what information observers collect, these alternatives may provide more data on the level and severity of protected species interactions with the fishery. Observer coverage may be especially useful if it can sample enough trips to estimate protected species interactions with an appropriate coefficient of variation. **Alternative 6** is unlikely to reduce the risk of interactions between the fishery and ESA-listed species, in and of itself. However, if protected species interaction information is collected, this alternative may provide more data on the level and severity of protected species interactions with the for-hire sector of the fishery.

4.11.3.2 Economic Effects

See Section I for information about various monitoring tools and costs associated with these costs.

4.11.3.3 Social Effects

See Section I for information about various monitoring tools and costs associated with these costs.

4.11.3.4 Administrative Effects

Under the **No-Action Alternative** no administrative impacts would be incurred outside of the status-quo. **Alternatives 2-7,** and **9** would each result in an increased administrative burden, however that burden would not extend beyond the scope of data management and analysis. The resultant increased data management workload would be considered a minimal to moderate adverse administrative impact.

Alternative 8 would require a vessel to have a VMS unit on board. In order to show that a vessel has on board a VMS, which has been activated and deemed operational, the installer would be required to fill out a VMS activation certification form to be submitted to the NOAA Fisheries Service Office for Law Enforcement. It is estimated that this would create an approximate 15-minute time burden on the vessel owners. Therefore the adverse impact on the administrative environment would be minimal from a vessel owner's perspective. However, impacts on the agencies' administrative environment would be significant since well over 1,000 additional vessels would require staff time beyond the status-quo to be properly monitored.

4.11.3.5 Council's Conclusions

4.12 Improvements to Law Enforcement Capabilities

Note: The Council may choose more than one alternative as their preferred.

Alternative 1 (no action). Retain existing law enforcement tools
NEED TO OUTLINE THEM IN A TABLE.

Alternative 2. Require vessel monitoring systems (VMS) on commercial vessels.

> **Sub-alternative 2A.** Require all vessels with a Federal Snapper Grouper Commercial Permit to have a vessel monitoring system (VMS) onboard the vessel and operational when on a trip in the South Atlantic.
>
> **Sub-alternative 2B.** Require all vessels with a Federal Snapper Grouper Commercial Permit to have a vessel monitoring system (VMS) onboard the vessel and operational if transiting an area where fishing for any species in the snapper grouper FMU is prohibited.

Alternative 3. Require vessel monitoring systems (VMS) on for-hire vessels.

> **Sub-alternative 3A.** Require all vessels with a Federal For-Hire Permit to have a vessel monitoring system (VMS) onboard the vessel and operational when on a trip in the South Atlantic.
>
> **Sub-alternative 3B.** Require all vessels with a Federal For-Hire Permit to have a vessel monitoring system (VMS) onboard the vessel and operational if transiting an area where fishing for any species in the snapper grouper FMU is prohibited.

Alternative 4. Require vessel monitoring system (VMS) on recreational vessels.

> **Sub-alternative 4A.** Require all vessels with a state recreational fishing license to have a vessel monitoring system (VMS) onboard the vessel and operational when on a trip in the South Atlantic.
>
> **Sub-alternative 4B.** Require all vessels with a state recreational fishing license to have a vessel monitoring system (VMS) onboard the vessel and operational if transiting an area where fishing for any species in the snapper grouper FMU is prohibited.

4.12.1 Biological Effects

It is unclear what impact **Alternative 2, 4 and their sub-alternatives** will have on protected species. Requiring VMS is unlikely to reduce the number of interactions between the fishery and protected species. However, data collected from VMS may provide useful information about fishery characteristics (trip location, duration, etc.) that may improve the knowledge of how and where fishery/protected species interactions occur.

Alternative 3 is unlikely to reduce the risk of interactions with ESA-listed species in and of itself. However, if protected species interaction information is collected, this alternative may provide more data on the level and severity of protected species interactions with the for-hire sector of the fishery.

4.12.2 Economic Effects

The current VMS units approved by NMFS are included in Table 4-48. The VMS regulations changed in 2008 and now only authorize the purchase of Enhanced Mobile Transmitting Units (EMTU). These are VMS units that have a computer screen which enables the fishermen to submit any forms. Previously, HMS and rock shrimp vessel owners were able to purchase "pingers" only which were half the cost of these newer units. All fisheries are now required to comply with the new EMTU requirements and those estimated costs are provided in Table 4-48a.

Table 4-48a. NMFS Approved Brands and Models of VMS Units, 2008.

Brand and Model	Cost
Boatracs FMCT-G	$3,095
Thrane and Thrane TT-3026D	$3,595
Faria Watchdog KTW304	$3,295

Table 4-48b includes NMFS approved VMS units communications costs which average from $30 to $80 per month according to the VMS companies. However, shrimp fishermen claim that this is a vast underestimates and that costs are actually around $1,200 annually.

Table 4-48b. NMFS-approved VMS communications costs.

1. Qualcomm (for Boatracs units)
$30/mo satellite fee, $.30/message, $.006 per character for messaging (average price
$80/month which includes 24/7 operations center support)
2. Telenor (for Thrane units)
$.06 per position report or $1.44 per day for 1 hour reporting. If in the "In Harbor"
mode, then $.36 per day. Messaging costs $.24 per e-mail. ($30/mo average)
3. Xantic (for Thrane units)
$.06 per position report or $1.44 per day for 1 hour reporting. If in the "In Harbor"
mode, then $.36 per day. Messaging costs $.22 per message and $.22 per e-mail.
($35/mo average)
4. Iridium/Cingular Wireless (for Faria units)
$44.95 per month which includes 4,000 Iridium bytes and 35,000 GSM bytes for
email and e-forms reporting.
5. Orbcomm (for Skymate units) - (still awaiting updated costs for new unit)

Source: Data provided by NMFS Office of Law Enforcement, July 2008.

Table 4-49 contains estimated costs of **Alternative 2A.**

Table 4-49. Summary of annual costs of implementing Alternative 2 per vessel assuming VMS unit cost is subsidized[1].

Alternatives	Number of People Potentially Impacted	Avg Unit Cost (fishermen/ management)	Implementation of Unit (fishermen)	Average Unit Maintenance (fishermen)	Communication Costs (fishermen)	Total Cost (fishermen/ management)[2]
Alternative 2	**840**					
First year		$228	$300	Unknown	$1,200	$1,728
Subsequent year		NA	NA	Unknown	$1,200	$1,200[3]

Note 1: This table assumes that the VMS unit cost is subsidized by management.
Note 2: This estimate does not account for the fact that management may subsidize VMS units that need replacement. It is not possible to make an estimate as to how many units may need replacement at this time.
Note 3: These costs do not include the incremental administrative costs associated with data collection, employees, function, and maintenance of the VMS system for the golden crab fishery.

The current reimbursement amount from NMFS for the HMS and rock shrimp fisheries for purchase of a VMS unit is $3,100.

If the fleet pays the cost of VMS, the producer surplus would be expected to decrease by the variable component of the total VMS costs, since VMS is expected to neither increase revenue nor decrease fishing costs not associated with the VMS. If NMFS pays for the cost of the VMS it would not change producer surplus, because transfer payments are excluded from the calculation.

4.12.3 Social Effects

Alternative 2 would result in increased costs to commercial fishermen. If government funds were made available to cover the costs of VMS units, there would still be ongoing costs associated with maintenance and operation of the VMS units. Any increase in costs of fishery operations places increased stress on fishermen and their families.

In addition to the emotional stress associated with increased costs, it is expected that fishermen will have negative emotions associated with "being watched" via VMS monitoring. While many fishermen favor increased enforcement, for some VMS monitoring will increase their distrust towards fisheries managers since VMS regulations are considered when there are concerns regarding compliance.

4.12.4 Administrative Effects

4.12.5 Council's Conclusions

4.13 Acceptable Biological Catch Control Rule

~~**Alternative 1 (no action).** Do not specify ABC Control Rules for 10 species undergoing overfishing.~~

~~**Alternative 2.** Determine ABC based on a proportion of the exploitation at Fmsy.~~
~~This is similar to the approach used by the Council to develop OY alternatives. It does not address the SSCs advice that ABC should reflect assessment uncertainty.~~
~~Sub-alternative 2A. ABC is the yield at 65% Fmsy~~
~~Sub-alternative 2B. ABC is the yield at 75% Fmsy~~
~~Sub-alternative 2C. ABC is the yield at 85% Fmsy~~

~~**Alternative 3.** Determine ABC based on a proportion of OFL.~~
~~This is similar to Alternative 2, except the separation between OFL and ABC is based explicitly on yield rather than exploitation rate.~~
~~**Sub-alternative 2A.** ABC is 90% of OFL~~
~~**Sub-alternative 2B.** ABC is 75% OFL~~

~~**Alternative 4.** Determine ABC based on assessment uncertainty.~~

Council staff recommends the ABC Control Rule Action and Alternatives 1 through 4 be moved to the Comprehensive ACL Amendment because (1) the SSC has not had sufficient time to work on developing an ABC control rule and their discussions will continue with a special 1-day session at the December 2008 meeting; (2) the ACL proposed rule calls for the Council to develop an ABC Control Rule whereas the MSA leaves this to the SSC; (3) NMFS guidance for ACLs is still only at the proposed rule stage; (4) the Comprehensive ACL Amendment will give the SSC sufficient time to work on this important topic and should provide sufficient time for NMFS to finalize guidance through the publication of a final rule; (5) the Comprehensive ACL Amendment will be completed and implemented by January 2011 so there will not be a significant delay; and (6) this will reduce the number of actions in Snapper Grouper Amendment 17.

Because assessments vary in their complexity and available outputs, this alternative requires levels or tiers that recognize assessment differences. Levels are proposed based on assessment availability and the nature of the assessment. Data levels and associated ABC alternatives proposed here are for discussion purposes only. Considerable refinement and modification is expected following Council and SSC review.

The term 'probabilistic analysis of yield' refers to a quantitative examination of the probability that overfishing will occur at some point in the future given a particular limit (MFMT) and recommended catch level (ABC). The example analysis cited by the SSC is Shertzer et al (2008), although other viable approaches may be available or may become available over time.

The term ‘recent approved assessment’ refers to a quantitative assessment that has undergone independent peer review, has been accepted by the SSC, and not more than 10 years has passed since completion of a benchmark or update. This typically means assessments developed through SEDAR since 2003.

The term ‘reliable landings’ refers to landings statistics that have been reviewed by the SSC and deemed useful for providing insight regarding the stock and fishery and developing ABC recommendations.

Level 1
Information available: Recent approved assessment, MSY-based reference points, and probabilistic analyses.
Example: Gag
ABC Options:
ABC = yield that provides (20%, 25%, 30%) probability of overfishing (F>Fmsy)

Level 2
Information available: Approved assessment, MSY-based reference points but no probabilistic analyses.
Examples: Black Sea Bass, Red Porgy, Golden Tilefish, Snowy Grouper
ABC Options:
A) ABC = yield associated with F=(65%, 75%, 85%) Fmsy
B) ABC = yield associated with F(30%, 40%, 50%)SPR

Level 3
Information available: Approved assessment, SPR-based MSY proxies
Example: Mutton Snapper, Vermilion Snapper
ABC Options:
A) ABC = yield associated with F(65%, 75%, 85%) MFMT
B) ABC = yield associated with F(30%, 40%, 50%)SPR
C) ABC = yield associated with FXX%SPR, where XX%SPR= the %SPR@MFMT + 10%. (e.g., if MFMT = F30%SPR, then ABC = yield at F40%SPR (F30% + 10%))

Level 4
Information available: dated assessment, SPR-based MSY proxies, reliable recent landings
Example: Red Grouper, Black Grouper, Wreckfish, Scamp
ABC Options:
A) ABC = yield associated with F(65%, 75%, 85%) MFMT
B) ABC = yield associated with F(30%, 40%, 50%)SPR
C) ABC = yield associated with FXX%SPR, where XX%SPR= the %SPR@MFMT + 10%. (e.g., if MFMT = F30%SPR, then ABC = yield at F40%SPR (F30% + 10%))

Level 5
Information available: dated assessment, SPR-based MSY proxies
Example: Warsaw grouper, Speckled hind

ABC Options:
A) ABC = average landings over a selected time period
B) ABC = XX% of average landings over a selected time period
C) ABC = 0

Level 6
Information available: reliable landings, life history characteristics
Example: Gray Triggerfish, White Grunt
ABC Options:
A) ABC = average landings over a selected time period
B) ABC = XX% of average landings over a selected time period
C) ABC = 0

Level 7
Information available: None.
Example: Puddingwife, Cottonwick
ABC Options:
A) ABC = average landings over a selected time period
B) ABC = XX% of average landings over a selected time period
C) ABC = 0

4.13.1 Biological Effects

Alternative 1 (no action) would not specify ABC Control Rules for 10 species undergoing overfishing. For purposes of setting ACLs, a critical piece of scientific advice that Councils would need is the ABC. For stock and stock complexes required to have an ABC, NMFS recommends that each Council establish an ABC control rule (see § 600.310(f)(4) based on scientific advice from its SSC. Determining the acceptable level of risk of overfishing that results from scientific uncertainty is a policy issue. The SSC would recommend an ABC to the Council after the Council advises the SSC on their recommendation on the probability that actual catch would exceed the recommended ABC. The Council would set ACLs at a level, which cannot be higher than the SSCs recommendation for ABC. Therefore, without an ABC control rule, the SSC would not have the necessary guidance on how to calculate an ABC.

Alternative 2 would determine ABC based on a proportion of the exploitation at F_{MSY}. This is similar to the approach used by the Council to develop OY alternatives; however, it does not address the advice from the SSC and proposed guidelines that ABC should reflect assessment uncertainty. In many cases it will not be possible to estimate scientific uncertainty as the majority of species in the snapper grouper fishery management unit have not been assessed and data are not adequate for future assessments. Of the sub-alternatives considered under **Alternative 2**, **Sub-alternative 2A** would have the greatest biological benefit of ensuring overfishing did not occur since it is the most conservative. **Sub-alternative 2C**, which would specify ABC as the yield at 85% of F_{MSY} would be less conservative. However, uncertainty is also taken into consideration when specifying an ACT. It is the system of OFL, ABC, ACL, ACTs, and AMs that is used to ensure overfishing does not occur.

Alternative 3 would determine ABC based on a proportion of OFL. **Alternative 3** is similar to **Alternative 2**, except the separation between OFL and ABC is based explicitly on yield rather than exploitation rate. *Note: John C. to add some discussion here.* Of the two sub-alternatives considered under **Alternative 3**, **Sub-alternative 3B**, which sets ABC at 75% of OFL would have the greatest biological benefit since it is more conservative than **Sub-alternative 2A** where ABC is 90% of OFL. Like **Alternative 2**, **Alternative 3** would not address the advice from the SSC and proposed guidelines that ABC should reflect assessment uncertainty. However, in many cases it will not be possible to estimate scientific uncertainty as the majority of species in the snapper grouper fishery management unit have not been assessed and data are not adequate for future assessments. Therefore, a simple calculation that specified ABC as a portion of ABC might be appropriate in many data poor cases. For the 10 species contained within Amendment 17, six have been assessed and assessments are pending for four others (red grouper, black grouper, speckled hind, and warsaw grouper). In cases where scientific uncertainty can be estimated, more refined methods to estimate ABC could be used.

Alternative 4 would determine ABC based on assessment uncertainty. Because assessments vary in their complexity and available outputs, this alternative requires levels or tiers that recognize assessment differences. Levels are proposed based on assessment availability and the nature of the assessment. Data levels and associated ABC alternatives proposed here are for discussion purposes only. Considerable refinement and modification is expected following Council and SSC review. In comparison to other alternatives, **Alternative 4** could provide an ABC that would be most appropriate for a stock based on data availability for estimating scientific uncertainty.

The term 'probabilistic analysis of yield' refers to a quantitative examination of the probability that overfishing will occur at some point in the future given a particular limit (MFMT) and recommended catch level (ABC). The example analysis cited by the SSC is Shertzer et al (2008), although other viable approaches may be available or may become available over time.

The term 'recent approved assessment' refers to a quantitative assessment that has undergone independent peer review, has been accepted by the SSC, and not more than 10 years has passed since completion of a benchmark or update. This typically means assessments developed through SEDAR since 2003.

The term 'reliable landings' refers to landings statistics that have been reviewed by the SSC and deemed useful for providing insight regarding the stock and fishery and developing ABC recommendations.

Specifying an acceptable biological catch rule will not directly affect the biological or ecological environment, including protected species, because these parameters are not used in determining immediate harvest objectives.

4.13.2 Economic Effects

Specifying an acceptable biological catch rule will not directly affect the economic environment because these parameters are not used in determining immediate harvest management tools.

4.13.3 Social Effects

Specifying an acceptable biological catch rule will not directly affect the social environment because these parameters are not used in determining immediate harvest management tools.

4.13.4 Administrative Effects

The **No-Action Alternative** would be the most administratively burdensome since no standard means by which ABCs could be determined would be implemented. Establishing one standard control rule or a small pool of control rules for designating ABCs would make the process of doing so much less cumbersome and remove a large element of potential uncertainty if older ABCs are called into question at some future point in time.

4.13.5 Council's Conclusions

4.14 Research Needs

Vermilion snapper, gag, snowy grouper, golden tilefish, black sea bass, and red snapper have been assessed through the SEDAR process. After completion of these assessments, research needs have been identified by the SEDAR workgroup and made available. These needs have been identified and prioritized in the MARFIN request for proposals. Furthermore, a summary of current research will be provided in the Snapper Grouper SAFE Report (NMFS 2005a), which is considered to be a "living" document that will be updated as new data become available.

Biological research needs that have been identified through the SEDAR process are as follows:

4.14.1 Vermilion Snapper

- Quantify discard rates especially in commercial fishery. Estimate discard mortality rates by depth and fishery.
- Research management measures that will reduce release mortality.
- Age sampling from commercial, headboat, and MRFSS that is representative.
- Develop better abundance indices that cover a broader spatial/seasonal scale.
- Fecundity estimates by length and age.
- Collect data on the magnitude and size/age composition of vermilion snapper that are discarded by fishery and gear.
- Develop an index of recruitment.
- Investigate methods of weighting applied to the input data.
- Expand MARMAP area coverage, and include more deep-water habitat.
- Incorporating commercial logbooks for use as an abundance index.
- Need to increase number of age samples, with a minimum of 500 samples annually for specific fishery segments (i.e., hook and line and headboat).
- Externally combine the indices of abundance into one index to be used in parallel with the existing age-structured model, rather than including the individual indices.
- The update assessment workshop strongly suggests that a new model type be investigated for the vermilion snapper assessment, and that the next assessment be conducted as a benchmark assessment.

4.14.2 Gag

- Continue research on the use of otolith chemistry to evaluate the population structure of gag.
- Continue genetic research on gag population structure. Add Mexican (Campeche) samples to determine patterns of gene flow and population connectivity.
- Continue workshops on aging and reproductive biology, targeting gag and similar species to eliminate potential methodological differences.

- Long-term continuous monitoring of age structure should be undertaken in the South Atlantic to test the hypothesis that annual recruitment trends are similar between regions.
- Continue oceanographic modeling efforts of recruitment and larval transport associated with development of an Integrated Coastal Ocean Observing System (ICOOS).
- Additional tagging studies should be conducted off the east coast of Florida to examine the extent of northerly and southerly movements.
- Increase sampling to obtain otoliths for aging.
- Improvement in at-sea observation for discards.
- Continue education of samplers for species identification.
- Conversions are needed for different market categories (gutted, headed, filleted, whole weight).
- Data are needed on effort and discards by depth.
- A fishery independent index of abundance should be developed.
- The gag mature sex ratio is needed, from which it may be possible to infer information about male fertility and the number of sperm required for successful fertilization.
- Reconstruct the catch and total removals history (prior to 1962) from data sources not currently being used in the assessment.
- Employ DNA tagging to provide an independent snapshot of total mortality.
- Effectiveness of effort from technological changes should be examined be examined.

4.14.3 Black sea bass

- Age sampling from commercial, headboat, and MRFSS that is representative.
- Increased fishery independent sampling.
- Update fecundity information by age and length.
- Age structured models that will take into consideration historical landings.
- Estimates of release mortality by depth and fishery.
- Determine if changes in fishing operations, including species composition of the landings, might reflect catchability of black sea bass that has not been taken into account by the assessment.
- Index of recruitment.
- Estimate the magnitude, direction, geographic extent, timing, and management implications of mixing north and south of Cape Hatteras.
- Behavioral dynamics associated with reproduction should be investigated with respect to the effects of size selective harvesting.

4.14.4 Golden tilefish

- Develop standardized techniques for aging golden tilefish. Resolve discrepancies in aging from different institutions. Additional research is needed to verify and validate age determinations.
- Sampling programs are needed to quantify discard rates. Research is also needed to identify management measures that will reduce discard mortality.

- Expand fishery-independent sampling of tilefish.
- Representative age, length, and sex composition data are needed for all fisheries (commercial, MRFSS, headboat), gear, seasons, and areas.
- Additional life history and biological research is needed to cover the full geographic range of the species.
- Fecundity information by age and length.

4.14.5 Snowy grouper

- Develop standardized techniques for aging snowy grouper. Resolve discrepancies in aging from different institutions. Additional research is needed to verify and validate age determinations.
- Sampling programs are needed to quantify discard rates. Research is also needed to identify management measures that will reduce discard mortality.
- Expand fishery-independent sampling of snowy grouper.
- Representative age, length, and sex composition data are needed for all fisheries (commercial, MRFSS, headboat), gear, seasons, and areas.
- Additional life history and biological research is needed to cover the full geographic range of the species.
- Fecundity information by age and length.
- Further research is needed into the implication of sex change for fishery management.

4.14.6 Red snapper

- Use new technology such as recent advances in genetics techniques to reinvestigate the stock structure and estimate the effective population size of red snapper in the Gulf of Mexico and along the Atlantic coast.
- Obtain better estimates of red snapper natural mortality and release mortality in commercial and recreational fisheries.
- Investigate life history of larval/juvenile (age 0 and 1) red snapper.
- Include assessment of otolith edge type in all future assessments. Classification schemes for edge type and quality of the otolith/section have been developed by the MARMAP program and are currently used by MARMAP and NMFS Beaufort.
- Continue to conduct inter-lab comparison of age readings from test sets of otoliths in preparation for any future stock assessments.
- Obtain adequate data for gutted to whole weight conversions a priori (before stock assessment data workshop).
- Ensure small specimens from fishery-independent are available to produce good estimates of von Bertalanffy parameters.

4.14.7 Black grouper, Red grouper, Speckled hind, and Warsaw grouper

Black grouper, red grouper, speckled hind and warsaw grouper have not been assessed through the SEDAR process and therefore no research recommendations have been specified for these species. Black grouper and red grouper are scheduled to be assessed in 2009 through SEDAR 19 and speckled hind and warsaw grouper are scheduled to be assessed in 2013 through SEDAR 29.

Although research recommendations have not been specifically identified, some general research recommendation for other assessed species would apply. These recommendations include:

- Identify the complete catch of commercial fishermen. Determine percentage of catch retained, species composition of released fishes and fate of those fishes.
- Age composition of commercial and recreational discards is needed.
- At-sea observers for monitoring discards and developing CPUE indices.
- Develop standardized techniques for aging reef fishes. Resolve any discrepancies in fish age estimates by different institutions.
- For all reef fish species, representative age, length, and sex composition data are needed for all fisheries (commercial, MRFSS, headboat), gear, seasons, and areas.
- Provide estimates of ages determined from fishes caught with fishery-independent gear.
- Recruitment indices for reef fishes.
- Age specific estimates of natural mortality (M).
- Thoroughly examine estimates of natural mortality (M) and steepness (h) in a workshop setting.
- Estimate predator-prey interactions.
- Bioenergetics and trophic relationships needed for ecosystem management.
- Additional life history and biological research is needed for many species to cover the full geographic range of the species.
- Further research is needed into the implication of sex change for fishery management.
- Identify spawning locations, duration, periodicity, and determine if there is spawning migration.
- Fecundity information, batch fecundity, spawning frequency by age and length.

4.14.8 Sociocultural Research Needs

Sociocultural research needs that have been identified by the Council's Scientific and Statistical Committee are as follows:

1. Identification, Definition and Standardization of Existing Datasets to meet short-term social analysis needs (e.g. behavioral networks based on annual rounds). Centrally locate these datasets so they are accessible to researchers and managers (realizing the constraints imposed by confidentiality);

2. Development of New Variables to meet long-term social analytical needs (e.g., community health, individual health, decision-making patterns, cumulative impacts of endogenous, exogenous, and regulatory factors);

3. Longitudinal Data – Monitoring Needs, including historical, ethnographic, and quantitative data over time;

4. Traditional Ecological Knowledge/Local Fisheries Knowledge (TEK/LFK) constructions along with Scientific Ecological Knowledge (SEK);

5. State Data (license/permit data; social survey type data) and Coordination between agencies/levels;

6. Better integration of social, biological and economic variables in modeling efforts; and

7. Better efforts to include humans and human behavior in the ecosystem-based framework (e.g., representation of humans as keystone predators in the system);

Economic research needs that have been identified by the Council's Scientific and Statistical Committee are as follows:

The following issues were identified as being impediments to conducting economic research:

- Confidentiality of state data and data collected through federal research projects.
- Data collected through certain agency grants cannot be distributed without dealing with confidentiality issues.
- The inability to display confidential data.

Commercial

1. Explore the feasibility of developing computable general equilibrium models, which can incorporate the entire economy and important ecosystem components (Medium priority, High cost).
2. Develop an input output model for the South Atlantic commercial fisheries. This model should be similar to the NOAA Fisheries Service model for other regions on shore-based communities (Medium priority, High cost).
3. Consider alternative ways to collect data on both a social and economic basis e.g. partnerships to develop projects (High priority, Medium cost).
4. Ensure availability, improve upon and collect basic data: catch, employment, effort, price, cost/earnings (Very High priority, high cost).
5. Opportunity costs - Rely on the studies completed in the past on the next best jobs. Include collection of data to estimate worker satisfaction bonus.
6. Integrated biological, social and economic models including dynamic optimization models.
7. Demand analysis – include the effects of imports. Studies of value added product e.g. branding and marketing strategies.
8. Include data collection and analysis on the processing sector, retail sector.
9. Research on the economic and social effects of capacity reduction.
10. Employment in the primary and secondary sectors of the fishing industry that also includes research on household budgets.
11. Cumulative impacts – economic and social.
12. Models to predict fishing behavior in the face of fishing regulations. This would include description of fishing rounds on a seasonal basis and fishing behavioral networks.
13. Non-consumptive and non-use benefits of marine protected species and essential fish habitat/habitat areas of particular concern. Also, measure the socio-cultural benefits of these species.
14. Research on live product/whole weight conversion factors on a seasonal basis possibly through the TIP program or through other biological sampling programs.

Recreational

1. Assess the feasibility of developing benefits transfer models from existing data and the MRFSS. Complete recreational demand models that are more relevant for fisheries management. These models should focus on policy relevant variables (bag, size limits, individual species and species groups).
   (High priority, low/medium cost)
2. Develop random utility models for predicting participation changes, economic value and behavior of recreational fishermen. (High priority, high cost for data collection).
3. Develop targeted input-output model to estimate the effects of policy changes on the economic impacts of recreational fishing. Will provide information on jobs,

wages, income on affected sectors such as lodging, restaurants, bait and tackle shops, marinas, boats (Medium priority, high cost).

4. Include categories/motivations of recreational anglers in models outlined in items 1 and 2 (Medium priority, high cost).
5. Collect data on motivations/behavioral patterns of recreational fishermen. (Medium priority, high cost).
6. Characterize participants in subsistence fisheries. (Low priority, high cost).
7. Develop Valuation models and I/O models for tournament fishing. (Medium priority, high cost).
8. Develop Cost-earnings model for the for-hire sector (charter and headboat). (High priority, high cost). NOAA Fisheries Service is currently conducting a study.

Ecosystem based management

1. Conduct analyses to facilitate the economic valuation of ecosystem services (Very High priority, High cost).
2. Explore the use of Ecopath and Ecosim (Very High priority, High cost).

4.15 Cumulative Effects

As directed by 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.

4.15.1 Biological

SCOPING FOR CUMULATIVE EFFECTS

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

The 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 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. Since the boundaries are solely political in nature and do not prohibit immigration and emigration of fish, and fish larvae, the geographic scope of the CEA must be expanded. Tagging work conducted by the MARMAP program indicates that there is movement of species (e.g., gag and greater amberjack) between the Gulf of Mexico and South Atlantic (McGovern and Meister 1999; McGovern *et al.* 2005). Large-scale movement of vermilion snapper and other species has not been documented (McGovern and Meister 1999). However, vermilion snapper and shallow water grouper species (red grouper, red hind, rock hind, yellowmouth grouper, tiger grouper, black grouper, yellowfin grouper, graysby, coney, and scamp) have pelagic eggs and larvae that may remain in the water column for extended periods of time and travel long distances before late stage larvae or juveniles assume a demersal existence.

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. The CEA cannot establish geographical boundaries in terms of coordinates, but recognizes that the proper geographical boundary to consider effects on the biophysical environment is larger than the entire South Atlantic EEZ. The ranges of affected species are described in Section 3.2. 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. Monitoring should continue indefinitely for all species to ensure that management measures are adequate for preventing overfishing in the future.

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 vermilion snapper, gag, and shallow water grouper.

A. Past

The reader is referred to **<u>Section 1.3 History of Management</u>** 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.

B. Present

The proposed actions in Snapper Grouper Amendment 17 would: Extend the range of the snapper grouper fishery management plan north, reconsider OY for 10 species undergoing overfishing, specify Annual Catch Limits (ACL), Annual Catch Targets (ACT), and Accountability Measures (AM) for 10 species undergoing overfishing, specify allocations for four species undergoing overfishing, modify management measures to limit total mortality to the ACT, specify a rebuilding plan for red snapper, improve the accuracy, timing, and quantity of fisheries statistics, and establish an ABC Control Rule.

C. Reasonably Foreseeable Future

Snapper Grouper Amendment 14 would 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 (speckled hind, snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish). These measures are expected to be implemented in the near future.

The actions in Snapper Grouper Amendment 16 would end overfishing of vermilion snapper and gag. Management measures for the commercial sector would include new or adjusted: sector specific allocations and catch quotas; size limits; trip limits; seasonal closures, including a closure for shallow water groupers during the gag spawning closure and after the gag directed commercial quota is met; fishing year start dates; and gear

restrictions. Management measures for the recreational sector would include new or adjusted: catch allocations; bag limits; size limits; and seasonal closures.
Comprehensive Annual Catch Limit (ACL) Amendment would establish Annual Catch Limits (ACLs) and Annual Catch Targets (ACTs) for all other species. Other actions would include: (1) choosing ecosystem component species; (2) allocations; (3) management measures to limit recreational and commercial sectors to their ACTs; (4) accountability measures; and (5) any necessary modifications to the range of regulations.

The Council is evaluating a limited access privilege program for golden tilefish.

II. Non-Council and other non-fishery related actions, including natural events affecting gag and vermilion 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 and 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 it may have on a stock. Gag occur in estuarine areas along the southeastern United States (Robins and Ray 1986; Heemstra and Randall 1993). Alteration of estuarine habitats could affect survival of juveniles. However, estimates of the abundance of fish, which utilize this habitat, as well as, determining the impact habitat alteration may have on juveniles, is problematic.

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 SEDAR stock assessment indicated gag biomass is at 94% of the biomass at MSY (B_{MSY}) and is approaching an overfished condition. Overfishing is occurring with $F/F_{MSY} = 1.3$. Gag are vulnerable to overfishing because they live for at least 26 years, change sex from female to male later in life, and form spawning aggregations at locations known to fishermen. During the 1990s, gag off the Southeastern U.S. was exhibiting many of the symptoms of an exploited population. Harris and Collins (2000) reported a lower age at first maturity and a significant increase in the observed mean length at age in the South Atlantic gag population in 1994-95 in comparison with data from 1976-82. Increased fishing pressure was suggested as a contributing factor in the described life history changes (Harris and Collins 2000). During the same period, McGovern *et al.* (1998) found the sex ratio decreased from 19.6% males in 1976-82, to 5.5% males in 1994-95. The size at 50% maturity also declined in the later period.

There is some indication from a more recent life history study the status of the population has improved since the 1990s. Reichert and Wyanski (2005) found size at maturity during 2004-05 occurred at significantly larger sizes than during 1994-95. Age at maturity also increased since 1994-95, albeit less dramatically than for size at maturity. The percentage of males and individuals undergoing transition in the population increased from 5.5% in 1994-95 to 8.2%; however, the current percentage is still much lower than the revised estimate of 19.4% for samples collected during 1976-82. Sex transition has occurred at progressively larger sizes and younger ages since 1977-82, a trend that is also probably related to the increasing growth rates over time.

The SEDAR 10 (2006) stock assessment also suggested despite continued overfishing, the condition of the gag stock has improved since the middle 1990s, perhaps in response to management measures. A substantial decline in fishing mortality has occurred since 1990 with a second decline occurring after 1998 when the minimum size limit was increased to 24 inches TL and a two-month commercial spawning season closure was put into place.

The recent SEDAR Update #3 (2007) determined the vermilion snapper stock in the South Atlantic is undergoing overfishing. The SSC, in June 2007, recommended the Council not adopt the biomass and yield benchmarks used to determine whether the stock is overfished, as they were deemed unreliable for management purposes.

Commercial landings of vermilion snapper rose from 743,000 to 954,000 lbs gutted weight during 1992 to 1995 (Figure 4-5). Landings declined to 718,000 lbs gutted weight followed by a large increase to 1,682,000 lbs gutted weight in 2001. A large decline in landings to 760,000 lbs gutted weight occurred in 2003 followed by an increase to about 1,000,000 lbs gutted weight in 2004-2005. Landings decreased further in 2006. The CPUE of vermilion snapper taken with MARMAP trapping gear showed similar trends to commercial landings with an increase during 1994-1996 from 5.8 to 6.2 fish caught per hour followed by a decrease to 2.2 fish caught per hour in 1999 (SEDAR Update #3 2007). CPUE increased to 4.7 fish caught per hour in 2001 with a sharp decrease in 2003 to 0.35 fish per trap hour, the lowest value recorded since 1988. Low CPUE in 2003, as well as low commercial catches, was probably due to a prolonged cold water upwelling event. A slight increase in CPUE occurred in 2004 and 2005-2006 values were similar to 2004. Headboat CPUE increased during 1992-2002, decreased in 2003 and then increased again during 2004-2006 (SEDAR Update #3 2007).

Zhao *et al*. (1997) and Zhao and McGovern (1997) report during the middle 1990s, the vermilion snapper stock was exhibiting many of the symptoms of an overexploited population, including a decrease in size at age, possibly caused by fishing pressure. Since these studies were conducted, the Council established a program to limit initial eligibility for the snapper grouper fishery and raised the vermilion snapper recreational size limit to 11" total length in 1999, increased the recreational size limit to 12" total length in 2006, and imposed a 1.1 million pound gutted weight commercial quota. Additionally, the Council recently extended indefinitely the *Oculina* closed area. Although the biological benefits of this area cannot be quantified at this time, evidence indicates there has been an increase in abundance of many species within the area since it was closed (Koenig 2001).

Some of these management measures may have reduced fishing mortality (F) during the late 1990s as the SEDAR stock assessment noted a substantial decline in fishing mortality during 1997 and 1998; however, F increased during 1999-2001. The SEDAR Update #3 (2007) indicates overfishing is still occurring. Such trends are expected to continue if status quo commercial management regulations are maintained, and could have a significant adverse effect on the stocks if allowed to continue indefinitely. The adverse effects of decreasing size and age trends on stock biomass and reproduction, population structure, and the marine ecosystem are described Amendment 13C (SAFMC 2006). A new benchmark assessment is being conducted for vermilion snapper with a completion date expected in late 2008. Results of the new age-based benchmark assessment could be different from either the SEDAR 2 (2003) benchmark assessment or the 2007 SEDAR Update #3 (2007), both of which were length-based.

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 snapper and 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

Definitions of overfishing and overfished for these species snapper are identified in Amendment 11 to the Snapper Grouper FMP (SAFMC 1998d). Numeric values of overfishing and overfished thresholds are being updated in this amendment for some species. 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). Based on these definitions, gag is approaching an overfished condition (SEDAR 10 2006). The overfished condition of vermilion snapper is unknown due to uncertainties associated with biomass estimates; however, the stock is experiencing overfishing. A new benchmark assessment is being conducted for vermilion snapper, which could provide biomass estimates and update fishing mortality values in late 2008.

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 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.

DETERMINING THE ENVIRONMENTAL CONSEQUENCES OF CUMULATIVE EFFECTS

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

The relationship between human activities and biophysical ecosystems within the context of this CEA is solely related to extractive activities and the installment of regulations as outlined in Table 4-85.

Table 4-50. The cause and effect relationship of fishing and regulatory actions within the time period of the Cumulative Effects Analysis (CEA).

Time period/dates (Table 4-85)	**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	<u>Prohibited gear</u>: fish traps south of Cape Canaveral, FL; entanglement nets; longline gear inside of 50 fathoms; powerheads and bangsticks in designated SMZs off SC. <u>Size/Bag limits</u>: 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	Spawning potential ratio for vermilion snapper and gag is less than 30% indicating

Time period/dates (Table 4-85)	Cause	Observed and/or Expected Effects
	continue for a number of snapper grouper species including vermilion snapper and gag.	that they are overfished.
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
Regulations not yet effective	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.
	Snapper Grouper FMP Amendment 15B (SAFMC 2008b)	
Target January 1, 2009	Snapper Grouper FMP Amendment 16 (SAFMC 2008c)	
Target January 1, 2010	Snapper Grouper FMP Amendment 17.	SFA parameters for red snapper; interim allocations; ACLs and ACTs; management measures to limit recreational and commercial sectors to their ACTs; accountability measures; and extend snapper grouper

Time period/dates (Table 4-85)	Cause	Observed and/or Expected Effects
		management regulations into the Mid-Atlantic or New England Fishery Management Council's jurisdiction.
Regulations not yet effective	Snapper Grouper FMP Amendment 16	The actions in Snapper Grouper Amendment 16 would end overfishing of vermilion snapper and gag. Management measures for the commercial sector would include new or adjusted: sector specific allocations and catch quotas; size limits; trip limits; seasonal closures, including a closure for shallow water groupers during the gag spawning closure and after the gag directed commercial quota is met; fishing year start dates; and gear restrictions. Management measures for the recreational sector would include new or adjusted: catch allocations; bag limits; size limits; and seasonal closures.
Target January 1, 2011	Comprehensive ACL Amendment.	ACLs, ACTs, and accountability measures 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.

9. Determine the magnitude and significance of cumulative effects.

Current management actions, as summarized in Section 2, should reduce fishing mortality and end overfishing of gag and vermilion snapper and are expected to have a beneficial, cumulative effect on the biophysical environment. These management actions are expected to increase stock biomass, which may affect other stocks. The shallow water grouper closure during the gag spawning closure and after the directed gag commercial quota is met will help a number of species particularly red and black grouper that are listed as undergoing overfishing in the Stock Status Report to Congress.

Because gag, and to a certain extent, vermilion snapper are upper level predators preying primarily on fish, benthic invertebrates, and squid, the degree of competition for food resources between these species and other co-occurring species may increase as stock abundance increases. In addition, gag, red porgy, vermilion snapper, black sea bass, greater amberjack, red snapper, white grunt and other co-occurring species may begin to compete for habitat as they increase in abundance.

Restrictions in the catch of gag and vermilion snapper could result in fishermen shifting effort to other species. The snapper grouper ecosystem includes many species that occupy the same habitat at the same time. For example, vermilion snapper and gag co-occur with tomtate, scup, red porgy, white grunt, red grouper, scamp, and others. Therefore, restricted species are likely to still be caught since they will be incidentally caught when fishermen target other co-occurring species. Continued overexploitation of any snapper grouper species could disrupt the natural community structure of the reef ecosystems that support these species. However, some fishermen may choose to use different gear types and target species in different fisheries such as mackerel and dolphin.

Complex models are needed to better understand competition between resources and the effect of effort shifting of fishermen to other species and fisheries. The Council is working with a number of partners to develop an Ecopath model for the South Atlantic ecosystem. Full development of this model will assist in better understanding these linkages. The Council is also developing an Ecosystem FMP that will address the cumulative effects of management regulations, fishing effort, and biomass of all species in the marine ecosystem. Delaying implementation of proposed actions until these tools are completed could adversely affect gag and vermilion snapper. However, although the cumulative effects of proposed actions cannot be quantified, 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 NMFS, States, stock assessments and stock assessment updates, life history studies, and other scientific observations.

4.15.2 Socioeconomic

Will be added prior to public hearings.

4.16 Bycatch Practicability Analysis

Will be added prior to public hearings.

4.17 Unavoidable Adverse Effects

Will be added prior to public hearings.

4.18 *Effects of the Fishery on the Environment*

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 EFH or EFH-HAPCs 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 Councils 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, 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.

4.19 *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 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 EEZ; 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, 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, 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 increased mesh size in the back panel of pots, which has reduced bycatch and retention of undersized fish. Amendment 15B, which has been submitted for review by the Secretary of Commerce includes an action that would implement 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, which is being developed, includes an action, which is intended to reduce bycatch by requiring fishermen use venting tools and 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 HAPC and added two additional satellite HAPCs. Amendment 14, which has been approved by the Council, would establish marine protected areas where fishing for or retention of snapper grouper species would be prohibited.

4.20 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, gag, vermilion snapper, black sea bass, snowy grouper, golden tilefish, black grouper, red grouper, speckled hind, and warsaw grouper 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.

4.21 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 stocks.

Since the Snapper Grouper FMP and its implementing regulations are always subject to future changes, proceeding with the development of Amendment 17 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.

4.22 Monitoring and Mitigation Measures

The proposed actions would adversely affect immediate, short-term net revenues of some commercial and for-hire fishermen in the South Atlantic. The proposed actions would also adversely affect short-term consumer surplus of some recreational anglers in the South Atlantic and may result in cancelled trips and reduced expenditures to the fishery and associated industries. However, it is anticipated reductions in fishing pressure, which will reduce the likelihood that these stocks will be declared overfished, will assist in restoring the size and age structure to more natural conditions and allow stock biomass to increase to more sustainable and productive levels. As a result, the amount of fish that can be harvested should increase as the stocks rebuild. The short-term, adverse effects of ending overfishing can be mitigated to some degree by the type of regulations the Council selects to manage reduced catch levels. The Council's preferred alternatives contain those measures that are believed to best mitigate the unavoidable, short-term, adverse effects of ending overfishing.

4.23 Unavailable or Incomplete Information

The Council on Environmental Quality, in its implementing regulations for the National Environmental Policy Act, addressed incomplete of unavailable information at 40 CFR 1502.22 (a) and (b). That direction 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…".

Stock assessments have been conducted on vermilion snapper, gag, black sea bass, snowy grouper, golden tilefish, and red snapper using the best available data available. Status determinations for these species were derived from the 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 NMFS staff reviewed and considered any concerns about the adequacy of the data. Section 4.4 lists data needs that resulted from these assessments. The Council's SSC determined that the assessments were based on the best available data.

The Council's Snapper Grouper Committee acknowledged, while stock assessment findings are uncertain, 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 closures or after a quota is met, management measures have been designed to adopt a conservative approach to increase the probability overfishing does not occur.

5 Regulatory Impact Review

This section will be added after the Council picks preferred alternatives and prior to public hearings.

6 Initial Regulatory Flexibility Analysis

This section will be added after the Council picks preferred alternatives and prior to public hearings.

7 Fishery Impact Statement – Social Impact Assessment

This section will be added after the Council picks preferred alternatives and prior to public hearings.

8 Other Applicable Law

8.1 Administrative Procedure Act

All federal rulemaking is governed under the provisions of the Administrative Procedure Act (APA) (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, NMFS is required to publish notification of proposed rules in the *Federal Register* and to solicit, consider, and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day waiting period from the time a final rule is published until it takes effect.

8.2 Coastal Zone Management Act

Section 307(c)(1) of the federal Coastal Zone Management Act (CZMA) of 1972 requires that all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. While it is the goal of the South Atlantic Council to have management measures that complement those of the states, Federal and State administrative procedures vary and regulatory changes are unlikely to be fully instituted at the same time. Based on the analysis of the environmental consequences of the proposed action in Section 4.0, the Council has concluded this amendment would improve Federal management of snapper grouper species.

8.3 Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 U.S.C. Section 1531 et seq.) requires that federal agencies ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or the habitat designated as critical to their survival and recovery. The ESA requires NOAA Fisheries Service to consult with the appropriate administrative agency (itself for most marine species and the U.S. Fish and Wildlife Service for all remaining species) when proposing an action that may affect threatened or endangered species or adversely modify critical habitat. Consultations are necessary to determine the potential impacts of the proposed action. They are concluded informally when proposed actions may affect but are "not likely to adversely affect" threatened or endangered species or designated critical habitat. Formal consultations, resulting in a biological opinion, are required when proposed actions may affect and are "likely to adversely affect" threatened or endangered species or adversely modify designated critical habitat.

NOAA Fisheries Service completed a biological opinion in 2006 evaluating the impacts of the continued authorization of the South Atlantic snapper grouper fishery under the Snapper Grouper Fishery Management Plan and Amendment 13C on ESA-listed species (see Section 3.2.4) (NMFS 2006). The opinion stated the fishery was not likely to adversely affect northern right whale critical habitat, seabirds, or marine mammals (see

NMFS 2006 for discussion on these species). However, the opinion did state that the snapper grouper fishery would adversely affect sea turtles and smalltooth sawfish, but would not jeopardize their continued existence. An incidental take statement was issued for green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles, as well as smalltooth sawfish. Reasonable and prudent measures to minimize the impact of these incidental takes were specified, along with terms and conditions to implement them.

NOAA Fisheries Service has also recently conducted an informal Section 7 consultation evaluating the impacts of the South Atlantic snapper grouper fishery on ESA-listed *Acropora* species. The consultation concluded that the continued operation of the snapper grouper fishery was not likely to adversely affect listed *Acropora* species.

8.4 Executive Order 12612: Federalism

E.O. 12612 requires agencies to be guided by the fundamental federalism principles when formulating and implementing policies that have federalism implications. The purpose of the Order is to guarantee the division of governmental responsibilities between the Federal government and the States, as intended by the framers of the Constitution. No federalism issues have been identified relative to the actions proposed in this amendment and associated regulations. The affected states have been closely involved in developing the proposed management measures and the principal state officials responsible for fisheries management in their respective states have not expressed federalism related opposition to the proposed action.

8.5 Executive Order 12866: Regulatory Planning and Review

E.O. 12866, signed in 1993, requires federal agencies to assess the costs and benefits of their proposed regulations, including distributional impacts, and to select alternatives that maximize net benefits to society. To comply with E.O. 12866, NMFS prepares a Regulatory Impact Review (RIR) for all fishery regulatory actions that implement a new FMP or that significantly amend an existing plan. RIRs provide a comprehensive analysis of the costs and benefits to society associated with proposed regulatory actions, the problems and policy objectives prompting the regulatory proposals, and the major alternatives that could be used to solve the problems. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the RFA. A regulation is significant if it is likely to result in an annual effect on the economy of at least $100,000,000 or if it has other major economic effects.

8.6 Executive Order 12898: Environmental Justice

E.O. 12898 states "*Agency Responsibilities*. To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Marian islands."

Section 3.4.2 describes five fishing communities in North Carolina, two fishing communities in Florida, and one each in Georgia and South Carolina. These communities were identified as key communities involved in the snapper grouper fishery based on fishing permit and employment data. The demographic information reported for these communities were derived from census data. Census data describes community-wide demographics and cannot be partitioned into just those populations that rely on the snapper grouper fishery. A key reason for this is the census data combines fishing occupations with farming and forestry occupations under the occupation category, and with agriculture, forestry, and hunting under the industry category. For this reason, demographic information on snapper grouper fishing communities is not available for use in evaluating the effects of the proposed actions on low-income and minority populations. Nevertheless, although demographics of the snapper grouper fishery are unknown, these actions would apply to all participants in the fishery, regardless of their race, color, national origin, or income level and, as a result are not considered discriminatory. The current demographic make-up of the respective fishing communities is assumed to be the result of historic cultural and economic conditions and not the result of specific historic or current management action that favored or discriminated against minority or low-income participants. Therefore, no environmental justice issues are anticipated and no modifications to any proposed actions have been made to address environmental justice issues. Additionally, none of the proposed actions are expected to affect any existing subsistence consumption patterns or raise any issues thereof.

8.7 Executive Order 12962: Recreational Fisheries

E.O. 12962 requires Federal agencies, in cooperation with States and Tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods including, but not limited to, developing joint partnerships; promoting the restoration of recreational fishing areas that are limited by water quality and habitat degradation; fostering sound aquatic conservation and restoration endeavors; and evaluating the effects of Federally-funded, permitted, or authorized actions on aquatic systems and recreational fisheries, and documenting those effects. Additionally, the order establishes a seven member National Recreational Fisheries Coordination Council responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by Federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among Federal agencies involved in conserving or managing recreational fisheries. The Council also is responsible for developing, in cooperation with Federal agencies, States and Tribes, a Recreational Fishery Resource Conservation Plan - to include a five-year agenda.

8.8 Executive Order 13089: Coral Reef Protection

E.O. 13089, signed by President William Clinton on June 11, 1998, recognizes the ecological, social, and economic values provided by the Nation's coral reefs and ensures that Federal agencies are protecting these ecosystems. More specifically, the Order requires Federal agencies to identify actions that may harm U.S. coral reef ecosystems, to utilize their program and authorities to protect and enhance the conditions of such ecosystems, and to ensure that their actions do not degrade the condition of the coral reef ecosystem.

Previous Snapper Grouper Amendments, including Amendment 13A (SAFMC 2003), eliminated all potential adverse impacts to *Oculina* coral in the *Oculina* Banks HAPC and Experimental Closed Area that are associated with bottom fishing gear and fulfills the intentions of E.O. 13089. The use of bottom trawls, bottom longlines, dredges, fish traps, and fish pots is currently prohibited within the *Oculina* Banks HAPC and Experimental Closed Area and that prohibition would not be affected by the proposed actions.

8.9 Executive Order 13158: Marine Protected Areas

E.O. 13158 was signed on May 26, 2000 to strengthen protection of U.S. ocean and coastal resources through the use of Marine Protected Areas (MPAs). The E.O. defined MPAs as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." It directs federal agencies to work closely with state, local, and non-governmental partners to create a comprehensive network of MPAs "representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources". The South Atlantic Council developed Amendment 14 to the Snapper Grouper Fishery Management Plan to establish a series of deepwater marine protected areas in the South Atlantic EEZ. The amendment was approved by the Council during its June 2007 meeting and submitted to NOAA Fisheries for approval by the Secretary of Commerce on July 18, 2007.

8.10 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas. It also prohibits the importing of marine mammals and marine mammal products into the United States. Under the MMPA, the Secretary of Commerce (authority delegated to NOAA Fisheries) is responsible for the conservation and management of cetaceans and pinnipeds (other than walruses). The Secretary of the Interior is responsible for walruses, sea otters, polar bears, manatees, and dugongs.

In 1994, Congress amended the MMPA, to govern the taking of marine mammals incidental to commercial fishing operations. This amendment required the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction; development and implementation of take-reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fisheries; and studies of pinniped-fishery interactions. The MMPA requires a commercial fishery to be placed in one of three categories, based on the relative frequency of incidental serious injuries and mortalities of marine mammals. Category I designates fisheries with frequent serious injuries and mortalities incidental to commercial fishing; Category II designates fisheries with occasional serious injuries and mortalities; and Category III designates fisheries with a remote likelihood or no known serious injuries or mortalities. To legally fish in a Category I and/or II fishery, a fisherman must obtain a marine mammal authorization certificate by registering with the Marine Mammal Authorization Program (50 CFR 229.4), the must accommodate an observer if requested (50 CFR 229.7(c)) and comply with any applicable take reduction plans.

The commercial hook-and-line components of the South Atlantic snapper grouper fishery (i.e., bottom longline, bandit gear, and handline) are listed as part of a Category III fishery (72 FR 66048; November 27, 2007) because there have been no documented interactions between these gears and marine mammals. The black sea bass pot component of the South Atlantic snapper grouper fishery is part of the Atlantic mixed species trap/pot fishery, a Category II fishery, in the 2008 LOF (72 FR 66048; November 27, 2007). The Atlantic mixed species trap/pot fishery designation was created in 2003 (68 FR 41725, July 15, 2003), by combining several separately listed trap/pot fisheries into a single group. This group was designated Category II as a precaution because of known interactions between marine mammals and gears similar to those included in this group. Prior to this consolidation, the black sea bass pot fishery in the South Atlantic was a part of the "U.S. Mid-Atlantic and Southeast U.S. Atlantic Black Sea Bass Trap/Pot" fishery (Category III). There has never been a documented interaction between marine mammals and black sea bass trap/pot gear in the South Atlantic.

8.11 Migratory Bird Treaty Act and Executive Order 13186

The Migratory Bird Treaty Act (MBTA) implemented several bilateral treaties for bird conservation between the United States and Great Britain, the United States and Mexico, the United States and Japan, and the United States and the former Union of Soviet Socialists Republics. Under the MBTA, it is unlawful to pursue, hunt, take, capture, kill, possess, trade, or transport any migratory bird, or any part, nest, or egg of a migratory bird, included in treaties between the signatures, except as permitted by regulations issued by the Department of the Interior (16 U.S.C. 703-712). Violations of the MBTA carry criminal penalties. Any equipment and means of transportation used in activities in violation of the MBTA may be seized by the United States government and, upon conviction, must be forfeited to the U.S. government.

Executive Order 13186 directs each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a memorandum of understanding (MOU) with the U.S. Fish and Wildlife Service (USFWS) to conserve those bird populations. In the instance of unintentional take of migratory birds, NOAA Fisheries Service would develop and use principles, standards, and practices that will lessen the amount of unintentional take in cooperation with the USFWS. Additionally, the MOU would ensure that National Environmental Policy Act (NEPA) analyses evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern.

An MOU is currently being developed, which will address the incidental take of migratory birds in commercial fisheries under the jurisdiction of NOAA Fisheries. NOAA Fisheries Service must monitor, report, and take steps to reduce the incidental take of seabirds that occurs in fishing operations. The United States has already developed the U.S. National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries. Under that plan many potential MOU components are already being implemented.

8.12 National Environmental Policy Act

Concerned with the degree of damages incurred by human activity on the sensitive ecological environment in the United States, Congress passed, and Richard Nixon signed into law, the National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. §§ 4321 *et seq.* NEPA sets the national environmental policy by providing a mandate and framework for federal agencies to consider all reasonably foreseeable environmental effects of their actions. In addition, it requires disclosure of information regarding the environmental impacts of any federal or federally funded action to public officials and citizens before decisions are made and actions taken. The analyses and results are presented to the public and other agencies through the development of NEPA documentation. The Final Environmental Impact Statement (FEIS) integrated into

Amendment 16 to the FMP serves as the documentation to satisfy the requirements of NEPA.

8.13 National Marine Sanctuaries Act

Under the National Marine Sanctuaries Act (NMSA) (also known as Title III of the Marine Protection, Research, and Sanctuaries Act of 1972), as amended, the U.S. Secretary of Commerce is authorized to designate National Marine Sanctuaries to protect distinctive natural and cultural resources whose protection and beneficial use requires comprehensive planning and management. The National Marine Sanctuary Program is administered by the Sanctuaries and Reserves Division of the NOAA. The Act provides authority for comprehensive and coordinated conservation and management of these marine areas. The National Marine Sanctuary Program currently comprises 13 sanctuaries around the country, including sites in American Samoa and Hawaii. These sites include significant coral reef and kelp forest habitats, and breeding and feeding grounds of whales, sea lions, sharks, and sea turtles. The two main sanctuaries in the South Atlantic EEZ are Gray's Reef and Florida Keys National Marine Sanctuaries. The Florida Keys National Marine Sanctuary represents the bulk of the ESA-listed *Acropora* species' range in the South Atlantic region.

8.14 Paperwork Reduction Act

The purpose of the Paperwork Reduction Act is to control paperwork requirements imposed on the public by the federal government. The authority to manage information collection and record keeping requirements is vested with the Director of the Office of Management and Budget. This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications.

The Council is not proposing, in this amendment, measures that would involve increased paperwork and consideration under this Act.

8.15 Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) of 1980 (5 U.S.C. 601 et seq.) requires Federal agencies to assess the impacts of regulatory actions implemented through notice and comment rulemaking procedures on small businesses, small organizations, and small governmental entities, with the goal of minimizing adverse impacts of burdensome regulations and record-keeping requirements on those entities. Under the RFA, NMFS must determine whether a proposed fishery regulation would have a significant economic impact on a substantial number of small entities. If not, a certification to this effect must be prepared and submitted to the Chief Counsel for Advocacy of the Small Business Administration. Alternatively, if a regulation is determined to significantly impact a substantial number of small entities, the Act requires the agency to prepare an initial and final Regulatory Flexibility Analysis to accompany the proposed and final rule, respectively. These analyses, which describe the type and number of small businesses affected, the nature and size of the impacts, and alternatives that minimize these impacts while accomplishing stated objectives, must be published in the *Federal Register* in full or in summary for public comment and submitted to the chief counsel for advocacy of the Small Business Administration. Changes to the RFA in June 1996 enable small entities to seek court review of an agency's compliance with the Act's provisions.

8.16 Small Business Act

Enacted in 1953, the Small Business Act requires that agencies assist and protect small-business interests to the extent possible to preserve free competitive enterprise.

8.17 Public Law 99-659: Vessel Safety

Public Law 99-659 amended the Magnuson-Stevens Act to require that a FMP or FMP amendment must consider, and may provide for, temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to a fishery for vessels that would be otherwise prevented from participating in the fishery because of safety concerns related to weather or to other ocean conditions.

No vessel would be forced to participate in the snapper grouper fishery under adverse weather or ocean conditions as a result of the imposition of management regulations proposed in this amendment.

The fact that low quotas are being implemented with a January 1st start date may force fishermen to fish in the winter.

No concerns have been raised by people participating in the fishery nor by the U.S. Coast Guard that the proposed management measures directly or indirectly pose a hazard to crew or vessel safety under adverse weather or ocean conditions. Therefore, this amendment proposes neither procedures for making management adjustments due to vessel safety problems nor procedures to monitor, evaluate, or report on the effects of management measures on vessel or crew safety under adverse weather or ocean conditions.

9 List of Preparers

Name	Title	Agency	Division	Location
Myra Brouwer	Fishery Scientist	SAFMC	N/A	SAFMC
David Dale	EFH Specialist	NMFS	HC	SERO
Rick DeVictor	Environmental Impact Scientist	SAFMC	N/A	SAFMC
Tracy Dunn	Enforcement Specialist	NMFS	LE	SERO
Andy Herndon	Biologist	NMFS	PR	SERO
Tony Lamberte	Economist	NMFS	SF	SERO
Palma Ingles	Anthropologist	NMFS	SF	SERO
Jennifer Lee	Council Liaison	NMFS	PR	SERO
Jack McGovern	Fishery Biologist	NMFS	SF	SERO
Janet Miller	Permits	NMFS	SF	SERO
Roger Pugliese	Senior Fishery Biologist	SAFMC	N/A	SAFMC
Kate Quigley	Economist	SAFMC	N/A	SAFMC
Monica Smit-Brunello	Attorney Advisor	NOAA	GC	SERO
Jim Waters	Economist	NMFS	Economics	SEFSC
Kate Michie	Fishery Management Specialist	NMFS	SF	SERO
Gregg Waugh	Deputy Director	SAFMC	N/A	SAFMC
Erik Williams	Stock Assessment Biologist	NMFS	SF	SEFSC

10 List of Agencies, Organizations, and Persons To Whom Copies of the Statement Are Sent

Responsible Agency

Amendment 17:
South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
Charleston, South Carolina 29405
(843) 571-4366 (TEL)
Toll Free: 866-SAFMC-10
(843) 769-4520 (FAX)
safmc@safmc.net

Environmental Impact Statement:
NMFS, Southeast Region
263 13th Avenue South
St. Petersburg, Florida 33701
(727) 824-5301 (TEL)
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List of Agencies, Organizations, and Persons Consulted

SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Marine Protected Areas Advisory Panel
SAFMC Coral Advisory Panel
SAFMC Habitat and Environmental Protection Panel
SAFMC Scientific and Statistical Committee
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

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Will be added prior to public hearings.