



FINAL

SNAPPER GROUPER AMENDMENT 15B

July 2008

South Atlantic Fishery Management Council
4055 Faber Place, Suite 201
North Charleston, South Carolina 29405
(843) 571-4366 / FAX (843) 769-4520
Toll Free (866) SAFMC-10
email: safmc@safmc.net

National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701
(727) 824-5301 / FAX (727) 824-5308



*THIS IS A PUBLICATION OF THE SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL PURSUANT TO
National Oceanic and Atmospheric Administration Award No. NA05NMF4410004*

ABBREVIATIONS AND ACRONYMS

ABC	Allowable biological catch
ACCSP	Atlantic Coastal Cooperative Statistics Program
ACL	Annual Catch Limits
ALS	Accumulated Landings System
APA	Administrative Procedures Act
ASMFC	Atlantic States Marine Fisheries Commission
B	A measure of stock biomass either in 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
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 15B TO THE FISHERY MANAGEMENT PLAN FOR THE
SNAPPER GROUPER FISHERY OF THE SOUTH ATLANTIC REGION
INCLUDING A FINAL ENVIRONMENTAL IMPACT STATEMENT, INITIAL
REGULATORY FLEXIBILITY ANALYSIS, REGULATORY IMPACT REVIEW
AND SOCIAL IMPACT ASSESSMENT/FISHERY IMPACT STATEMENT**

Proposed actions: Define allocations for snowy grouper (*Epinephelus niveatus*) and red porgy (*Pagrus pagrus*); Update select management reference points for the golden tilefish (*Lopholatilus chamaeleonticeps*) stock; Modify sales restrictions; Establish a method to monitor and assess bycatch in the snapper grouper fishery; Implement measures to minimize the impact of incidental take on sea turtles and smalltooth sawfish; and Modify permit renewal and transferability requirements.

Lead agency: FMP – South Atlantic Fishery Management Council (SAFMC)
EIS - NOAA Fisheries Service

For Further Information Contact: Robert K. Mahood
SAFMC
4055 Faber Place, Suite 201
North Charleston, SC 29405
866-SAFMC-10; 843-571-4366
safmc@safmc.net

Roy E. Crabtree
NOAA Fisheries, Southeast Region
263 13th Avenue South
St. Petersburg, FL 33701
727-824-5301

NOI for Amendment 13:	January 31, 2002 [67 FR 4696]
NOI Supplement for Amendment 13B:	September 12, 2003 [68 FR 53706]
NOI Supplement for Amendment 15:	August 4, 2006 [71 FR 44260]
Scoping meeting held:	March 5, 2002
DEIS filed:	November 2, 2007
DEIS notice published:	November 9, 2007 [72 FR 63579]
Amended DEIS notice published:	November 16, 2007 [72 FR 64619]
DEIS Comments received by:	January 11, 2008 5:00 PM
SDEIS published:	April 25, 2008 [73 FR 22343]
SDEIS Comments received by:	June 9, 2009
FEIS filed:	DATE TO BE FILLED IN
FEIS Comments received by:	DATE TO BE FILLED IN

RESPONSES TO COMMENTS

The following section satisfies NEPA's requirement for responding to comments on the draft and supplemental environmental impact statements (DEIS and DSEIS). NEPA requires that a federal agency shall respond to comments on the DEIS by one or more of the following means: (1) Modify an existing alternative; (2) develop and analyze a new alternative, (3) supplement, improve, or modify the analyses; (4) make factual corrections; or (5) explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position. In an effort to satisfy the fifth requirement mentioned above, the following section responds to written comments generated during the comment period for the Fishery Management Plan (FMP) and DEIS, in addition to those received as verbal testimony during the public hearings.

The first section (Section A) summarizes and responds to Environmental Protection Agency (EPA) comments on the DEIS, which received an LO (Lack of Objections) rating from that agency. The remaining sections summarize and respond to comments received from the North Carolina Division of Marine Fisheries, the Ocean Conservancy, and the general public. Section B summarizes and responds to comments on the SDEIS.

A. DEIS COMMENTS

I. EPA Comments

Comment 1 (Action 5: Monitor and Assess Bycatch): The FEIS should also indicate when the ACCSP guidance would be ready for adoption. We also assume that this methodology is geared for the species of concern. Has any research been conducted on the success of this methodology for these species (i.e., survivorship of discards)?

Response: Numerous studies are conducted to assess bycatch including survivorship of discards. Some studies are continuous, but many studies are intermittent and subject to funding. In the commercial fishery, approximately 20% of snapper grouper permitted vessels from the Gulf of Mexico and South Atlantic are randomly selected each year to fill out supplementary logbooks to provide discard information. For the recreational fishery, estimates of discards are available each year from the Marine Recreational Fisheries Statistics Survey (MRFSS). Recent studies conducted with funding from the Cooperative Research Program, Sea Grant, the Marine Fisheries Initiative, and other sources has provided estimates of release mortality for many species including black sea bass, gag, and vermilion snapper. The ACCSP methodology has been approved by the states, NMFS, and the Council. However, it is unknown when funding will be available to implement ACCSP. In the interim, estimates of discards will continue to be available from MRFSS and supplementary logbook. Furthermore, it is anticipated funding will continue to be available to conduct studies on species of concern.

Comment 2 (Action 6: Sea Turtle and Smalltooth Sawfish Incidental Take Impact Minimization Measures): *Will there be training for fishers regarding the timely and proper use of the gear and how will onboard efficiency and success be monitored? We assume the survivorship of entangled turtles is reasonably high (if drowning was avoided); however, the FEIS should discuss the survivorship of both species.*

Response: NOAA Fisheries Service will provide training to fishers via outreach materials (e.g., mailings of sea turtle and smalltooth sawfish careful release protocols). Additionally, the Southeast Fisheries Science Center's Fishery Methods and Equipment Specialist will conduct voluntary dockside training sessions. Onboard efficiency and success will be documented by observers documenting incidental take events, the amount of gear removed from an incidentally caught animal, and the amount of gear remaining on the animal at the time of release. In 2004, NOAA Fisheries Service convened a workshop to discuss post-release mortality and survivorship in sea turtles incidentally captured by longline gear. Proceedings from that workshop (Ryder *et al.* 2006) describe the increased survivorship resulting from gear removal.

Ryder, C.E., T.A. Conant, and B.A. Schroeder. 2006. Report on the Workshop on Marine Turtle Longline Post-Interaction Mortality. U.S. Department of Commerce, NOAA Technical Memorandum, NMFS-F/OPR-29, 36p.

Comment 3: *In addition to these comments, we wish to emphasize the importance of implementing the ecosystem management approach whenever possible within fisheries management. This may be particularly relevant for the snapper grouper fishery since there are numerous co-occurring snapper grouper species that are ecologically inter-related, or perhaps are even bycatch for other snapper grouper target species.*

Response: The Council is developing an ecosystem-based approach to resource management through the development of a Fishery Ecosystem Plan (FEP). The Council's intent is to gain an understanding of the South Atlantic Bight ecosystem and the complex relationships among humans, marine life, and essential fish habitat. This effort will provide a more comprehensive understanding of the biological, social, and economic impacts of management. Over twenty workshops have been held to date (since 2002) to integrate and update ecosystem information and begin development of the South Atlantic FEP. These workshops brought together Habitat and Coral Advisory Panel members and a core group of resource and habitat experts from cooperating federal, state and academic institutions as well as conservation organizations that participated directly in development of the Habitat Plan. Updated life history and stock status information on managed species and the characteristics of the food web they exist within will be incorporated as well as social and economic research needed to fully address ecosystem-based management. The Council approved the FEP for public hearing in March 2008.

The FEP will constitute the source document for the Comprehensive Ecosystem Amendments/EISs for all FMPs. The developing Comprehensive Ecosystem Amendment will also be completed in 2008 and currently contains three actions: Amend

the Coral FMP to (1) establish a network of deepwater Coral Habitat Areas of Particular Concern (HAPC); (2) prohibit use of all bottom damaging gear including fish traps, bottom longlines, trawls (midwater and bottom trawls), anchors, anchor chain and grapples within the Coral-HAPCs; and (3) address Essential Fish Habitat mandates in the Final Rule to provide additional data for designated EFH and EFH-HAPCs.

II. North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries Comments

***Comment 4:** Amendment 15B references stock assessments that indicate overfishing is occurring for snowy grouper, red porgy, and black sea bass. The North Carolina Division of Marine Fisheries (DMF) remains concerned that there is little confidence that the assessments provide an adequate estimation of the stock status. The data used may have indeed been best available at the time, yet our position on these assessments remains that the data, particularly in the snowy grouper and black sea bass assessments, are unsound.*

Response: Although Amendment 15B references stock assessments for snowy grouper, black sea bass, and red porgy, the only actions in the amendment that would directly affect these species are allocations for snowy grouper and red porgy and specification of the snowy grouper and red porgy commercial quotas and recreational allocations. The recreational allocation for snowy grouper would be specified in number of fish not pounds. Status determinations for snowy grouper, black sea bass, and red porgy were derived from the Southeast Data, Assessment, and Review (SEDAR) process. The SEDAR process 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, Council Advisory Panels, the Council, and NOAA Fisheries Service staff reviewed and considered these and other concerns about the adequacy of the data. The Council's Snapper Grouper Committee and Council acknowledged, while stock assessment findings are uncertain, there is no reason to assume such uncertainty leads to unrealistically pessimistic conclusions about stock status. Rather, the stocks could be in worse shape than indicated by the stock assessment. Therefore, uncertainty should not be used as a reason to avoid taking action.

This issue with data was a subject of a recent civil action, NORTH CAROLINA FISHERIES ASSOCIATION, INC., *et al.* v. CARLOS GUTIERREZ, Secretary, United States Department of Commerce, where the plaintiffs claimed that actions taken in Amendment 13C (SAFMC 2006) were inconsistent with National Standard 2, which requires that all FMPs and plan amendments "be based upon the best scientific information available". The Judge concluded "the Secretary was not obliged to 'sit idly by' when faced with overfishing and overfished stocks simply because the data available to him may have been less than perfect. In sum, the Secretary's decision to act on the basis of the existing information easily meets the standard of rationality required of him."

The NOAA Fisheries Service's Southeast Fisheries Science Center (SEFSC) reviewed and certified Amendment 13C and its supporting analyses as being based on the best available scientific information in April 2006. Finally, the amendment also was subject to a pre-dissemination review in May 2006 in compliance with the Information Quality Act (IQA).

The Council's Scientific and Statistical Committee (SSC) has determined Amendment 15B is based on the best available science. Amendment 15B is being reviewed by the SEFSC and will be subject to a pre-dissemination review in compliance with the IQA.

Comment 5: *Since the 1997 North Carolina Fisheries Reform Act that established a commercial limited entry system, sale of recreationally caught fish has been prohibited. However, any fisherman who has a Standard Commercial Fishing License (SCFL) or Retired Standard Commercial Fishing License (RSCFL) is legally allowed to sell their catch. Fishermen who do not have a Federal Snapper/Grouper Permit, but hold a SCFL or an RSCFL are allowed to sell up to the recreational bag limit for species in the SAFMC snapper grouper complex. Given the inability to separate out commercially caught fish from those caught by recreational anglers with a SCFL, we support eliminating the sale of all species, not just snappers and groupers caught under a recreational bag limit where there are restrictive quotas and Federal permits already in place.*

Response: The Council's preferred alternative is to require the Federal snapper grouper permit to sell South Atlantic snapper grouper species. The Council is concerned that with the introduction of more restrictive quotas, bag limit caught fish will represent a significant portion of the commercial quota. The Council believes that removing the economic incentive to target fish by those without the federal permit may avoid an early closure of the commercial fishery and possibly aid in the recovery of stocks currently undergoing overfishing and/or in an overfished state. In addition, sale of recreationally caught fish could result in double counting if catches are reported through the Marine Recreational Fisheries Statistics Survey and through commercial snapper grouper dealers. All landings that are sold are considered commercial harvest and count towards a species' commercial quota, independent of whether or not the fisherman has a federal permit. As bag limits for snapper grouper species are attributed to a person per day and the universe of recreational fishermen is relatively large, the Council is concerned that harvest from trips where fishermen are limited to the bag limit may constitute a significant portion of the commercial quota. In addition, the Council's Law Enforcement Advisory Panel recommended such action be taken by the Council in order to improve law enforcement in the region. The Council will be evaluating prohibiting sale of bag limit fish for all managed species in each FMP amendment.

Comment 6: *The current allocation of snowy grouper between commercial and recreational fishermen is 96% going to commercial fishing and 4% going to recreational fishing interests. The current system is unable to monitor when the recreational quota has been met. Without some kind of real time monitoring of the recreational fishery and given the small quota for the recreational sector, it is highly likely there will be recreational overages in the landings of snowy grouper.*

Response: The Council's intent is to establish the allocations in Amendment 15B for snowy grouper and red porgy as interim allocations until the implementation of more permanent allocations. The Council has formed an Allocation Committee that will develop recommendations for the Snapper Grouper Committee. The Allocation Committee will investigate ways to divide allowable future harvest amongst the commercial and recreational sectors for all species currently managed by the Council. Allocations within the recreational (e.g., for-hire and private) and commercial (e.g., hook-and-line, black sea bass pots, and longlines) sectors are also be under consideration.

III. The Ocean Conservancy Comments

Comment 7: The Ocean Conservancy disagreed with the Council's preferred alternative to define MSST at $SSB(MSY) \cdot (0.75)$, and would instead suggest the Council set the reference point for MSST at alternative 1, which links the biomass threshold with the natural mortality of the species (using $SSB(MSY) \cdot (1-M)$).

Response: The current definition of MSST is $SSB_{MSY} \cdot ((1-M) \text{ or } 0.5)$, whichever is greater) where M equals the natural mortality rate. The relatively low estimation of M (0.08) produces a MSST that is similar to SSB_{MSY} . By modifying the current definition of MSST for snowy grouper to $0.75 \times B_{MSY}$, the Council is hoping to avoid a situation where the natural variation in recruitment causes the stock biomass to frequently alternate between an overfished and rebuilt condition, even if the fishing mortality rate applied to the stock was within the limits specified by the MFMT. Such a situation could create administrative difficulties if the overfished threshold was met and a rebuilding plan was unnecessarily triggered.

IV. Other Comments

Comment 8: One individual believed that state-permitted fishermen will enter the black market if recreational sales are eliminated. He believed that these illegal sales will further deteriorate law enforcement standards. In turn, unlawful sales activity will be unaccounted for thereby distorting the accuracy and usefulness of legally harvested fish totals.

Response: The Council developed this action based on a recommendation from its Law Enforcement Advisory Panel (LEAP). At its October 2005, the LEAP made a motion to require the appropriate commercial federal permit to sell any species under the Council's jurisdiction. The LEAP reported that such a measure would aid law enforcement as it would reduce the universe of people involved in the sale of snapper grouper species. In addition, in order to sell fish caught in the Gulf of Mexico and in state waters off the east coast of Florida, a commercial federal snapper grouper permit is required. Therefore, the implementation of compatible regulations between jurisdictions will likely help improve the enforceability of sale of seafood products in the region.

Beginning in 2005, the Florida Fish and Wildlife Conservation Commission Law Enforcement, in cooperation with the Florida Department of Agriculture and Consumer Services and the Florida Department of Business and Professional Regulation, conducted “Operation No More Back Door”. The purpose was to target people and businesses illegally buying, selling, packaging or mislabeling seafood products. Such cooperative law enforcement efforts have the potential to reduce the illegal sale of seafood products.

Comment 9: *Several representatives from the Coastal Conservation Association supported the use of the allocations in Amendment 15B as interim allocations and supported the development of a new methodology devised to better allocate South Atlantic fish stocks. They felt that allocation decisions should not be solely based on past catch histories; rather decision-makers should also evaluate economic value and impact comparisons of the recreational and commercial fisheries.*

Response: The Council’s intent is to establish the allocations in Amendment 15B for snowy grouper and red porgy as interim allocations until the implementation of more permanent allocations. The Council has formed an Allocation Committee that will develop recommendations on alternatives. The Allocation Committee will investigate ways to divide allowable future harvest amongst the commercial and recreational sectors for all species currently managed by the Council. Allocations within the recreational (e.g., for-hire and private) and commercial (e.g., hook-and-line, black sea bass pots, and longlines) sectors are also be under consideration.

Comment 10: *Many were against the Council taking action to require a commercial federal permit in order to sell catch, as they felt that it would create economic hardships. Some fishermen, despite not having a Federal Snapper grouper permit, have state commercial licenses and believed that they should be able to sell their harvest up to the bag limits. As most of their income is from fishing activities, they consider themselves commercial fishermen. Some hold other federal permits (King and Spanish Mackerel, Dolphin/Wahoo) and augment their income with the sale of snapper and grouper species. For example, one fisherman reported offsetting a trip with low landings of king mackerel with catches of groupers. Some felt that this regulation would lead to the reduction in small businesses, tackle shops, boat dealers, marine supply stores, and other marine business.*

Charterboat operators, particularly in the Florida Keys, also anticipate economic hardships with the requirement for a Federal permit to sell catch. They reported that the ability of charter/headboat vessels to sell their recreational catch is a historic practice in the South Atlantic region and their crews are financially dependent on the practice as are local restaurants. They report that this income is crucial to the existence of their business, particularly with a weakening economy and rising fuel prices.

Response: The Council’s proposed action, if implemented, would eliminate sales of snapper grouper species by fishermen without a Federal Commercial Snapper Grouper Permit. The Council acknowledges the economic impacts from this action. However, the Council believes this action would further the goals and objectives of the Snapper Grouper FMP for several reasons. The Council believes that removing the economic

incentive to target fish by those without the federal permit may avoid an early closure to the commercial fishery and possibly aid in the recovery of stocks currently undergoing overfishing and/or in an overfished state. All landings that are sold are considered commercial harvest and count towards a species' commercial quota, independent of whether or not the fisherman has a federal permit. As bag limits for snapper grouper species are attributed to a person per day and the universe of recreational fishermen is relatively large, the Council is concerned that harvest from trips where fishermen are limited to the bag limit may constitute a significant portion of the commercial quota. The importance of this harvest becomes more significant as regulations for snapper grouper species have become increasingly restrictive over the years and more restrictions are anticipated for some species. For example, the Council implemented a commercial quota for black sea bass below historic harvest through Amendment 13C. Amendment 16, under development, proposes quotas for gag and vermillion snapper below historic harvest.

The Council believes that the implementation of this measure should improve the accuracy of data by eliminating harvest counting towards both the commercial quota and recreational allocation. This practice, typically called "double counting" occurs when catches are reported through the Marine Recreational Fisheries Statistics Survey (MRFSS) and through commercial snapper grouper dealers. In addition, the Council's LEAP recommended such action be taken to the Council in order to improve law enforcement in the region.

B. SDEIS COMMENTS

Following the publication of the DEIS, it came to the attention of Council and NOAA Fisheries staff that additional data were available, which could be used to analyze the effects of the bag limit sales provision. An update of the economic analysis on bag limit sales was conducted during early 2008 and results were made available to the public for comment through a Supplement to the DEIS (SDEIS). The SDEIS published in the Federal Register on April 25, 2008 with a comment period ending June 9, 2008.

***Comment 11:** Two individuals stated a black market could be created if bag limit sales were eliminated and would have no law enforcement benefit.*

Response: At its October 2005, the LEAP made a motion to require the appropriate commercial federal permit to sell any species under the Council's jurisdiction. The LEAP reported the measure would aid law enforcement by reducing the number of people involved in the sale of snapper grouper species. The Council followed the recommendation of LEAP when developing the action to require a Federal snapper grouper permit to sell bag limit caught fish. In addition, to sell fish caught in the Gulf of Mexico and in state waters off the east coast of Florida, a commercial Federal snapper grouper permit is required. Therefore, the implementation of compatible regulations

between jurisdictions will likely help improve the enforceability of sale of seafood products in the region.

***Comment 12:** Many were against the Council taking action to require a commercial Federal permit in order to sell catch, as they felt that it would create economic hardships. Some fishermen, despite not having a Federal Snapper grouper permit, have state commercial licenses and believe they should be able to sell their harvest up to the bag limits. As most of their income is from fishing activities, they consider themselves commercial fishermen. Some felt that this regulation would have significant economic impacts on fishermen and other marine business. Charterboat operators, particularly in the Florida Keys, also anticipate economic hardships with the requirement for a Federal permit to sell catch. They report that this income is crucial to the existence of their business, particularly with a weakening economy and rising fuel prices. Several individuals felt the action would only benefit fishermen with Federal snapper grouper permits and would have little conservation benefits since it might not result in a reduction in the number of fish caught.*

Response: The Council's proposed action, if implemented, would eliminate sales of snapper grouper species by fishermen without a Federal Commercial Snapper Grouper Permit. The updated economic analysis indicates while there would be adverse economic impacts to those engaged in bag limit sales, benefits would accrue to the "directed" fishery due to sales transfer and reduced quota closure pressure, improved data integrity (reduced double counting) resulting in improved assessments and management, and improved enforcement. After reviewing the updated economic analysis and all comments on the SDEIS at their June 2008 meeting, the Council still maintains that this action would further the goals and objectives of the Snapper Grouper FMP. The Council supports this action because it believes that removing the economic incentive to target fish by those without the Federal snapper grouper permit could avoid an early closure to the commercial fishery and possibly aid in the recovery of stocks currently undergoing overfishing and/or in an overfished state. Therefore, some conservation benefit from the action is possible.

All landings that are sold are considered commercial harvest and count towards a species' commercial quota, independent of whether or not the fisherman has a Federal snapper grouper permit. The updated economic analysis indicates the magnitude of bag limit sales is fairly large and the Council is concerned that harvest from trips where fishermen are limited to the bag limit may constitute a significant portion of the commercial quota. The importance of this harvest becomes more significant as regulations for snapper grouper species have become increasingly restrictive over the years and more restrictions are anticipated for some species through Amendments 16 and 17.

The Council believes that the implementation of this measure should improve the accuracy of data by eliminating harvest counting towards both the commercial quota and recreational allocation, which occurs when catches are reported through the Marine Recreational Fisheries Statistics Survey (MRFSS) and through commercial snapper grouper dealers. In addition, the Council's LEAP recommended such action be taken by

the Council to improve law enforcement in the region and to have regulations compatible with those in Gulf of Mexico and state waters off the east coast of Florida.

ABSTRACT

The need for action through Amendment 15B is due to the continually changing nature of the fishery. 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, 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:

- Define allocations for snowy grouper and red porgy;
- Update management reference points for golden tilefish;
- Modify sale restrictions;
- Implement a plan to monitor and assess bycatch;
- Implement measures to minimize the impacts of incidental take on sea turtles and smalltooth sawfish; and
- Modify permit renewal and transferability requirements.

Comments on the DEIS were accepted for 45 days from publication of the Notice of Availability (NOA) in the Federal Register. The DEIS published in the Federal Register on November 9, 2007 with a comment period ending January 11, 2008.

Following the publication of the DEIS, it came to the attention of Council and NOAA Fisheries that additional data were available, which could be used to analyze the effects of the bag limit sales provision. An update of the economic analysis on bag limit sales was conducted during early 2008 and results were made available to the public for comment through a Supplement to the DEIS (SDEIS). The SDEIS published in the Federal Register on April 25, 2008 with a comment period ending June 9, 2008.

TABLE OF CONTENTS

RESPONSES TO COMMENTS	IV
ABSTRACT	XIII
SUMMARY	XXVI
1 Introduction.....	1-1
1.1 Background.....	1-1
1.2 Purpose and Need	1-3
1.3 History of Management	1-9
1.4 Management Objectives.....	1-17
2 Alternatives.....	2-1
2.1 Description of Alternatives	2-1
2.1.1 Snowy Grouper Allocation Alternatives.....	2-1
2.1.2 Red Pogy Allocation Alternatives	2-2
2.1.3 Golden Tilefish Management Reference Point Alternatives	2-3
2.1.4 Modifications to the Sales Provisions.....	2-4
2.1.5 Monitor and Assess Bycatch.....	2-5
2.1.6 Sea Turtle and Smalltooth Sawfish Incidental Take Impact Minimization Measures	2-6
2.1.7 Permit Renewal.....	2-9
2.1.8 Permit Transferability	2-9
2.2 Comparison of Alternatives	2-11
2.2.1 Snowy Grouper Allocation Alternatives.....	2-11
2.2.2 Red Pogy Allocation Alternatives	2-13
2.2.3 Golden Tilefish Management Reference Point Alternatives	2-14
2.2.4 Modifications to the Sales Provisions.....	2-17
2.2.5 Monitor and Assess Bycatch.....	2-21
2.2.6 Sea Turtle and Smalltooth Sawfish Incidental Take Impact Minimization Measures	2-23
2.2.7 Permit Renewal.....	2-24
2.2.8 Permit Transferability	2-25
3 Affected Environment.....	3-1
3.1 Habitat.....	3-1
3.1.1 Inshore/Estuarine Habitat.....	3-1
3.1.2 Offshore Habitat.....	3-1
3.1.3 Essential Fish Habitat	3-3
3.1.3.1 Habitat Areas of Particular Concern.....	3-3
3.2 Biological/Ecological Environment.....	3-4
3.2.1 Species Most Impacted By This FMP Amendment.....	3-4
3.2.1.1 Snowy Grouper	3-4
3.2.1.2 Golden Tilefish	3-5
3.2.1.3 Red Pogy.....	3-5
3.2.2 Science Underlying the Management of Snapper Grouper Species Most Impacted By This FMP Amendment	3-6
3.2.2.1 Snowy Grouper	3-7
3.2.2.2 Golden Tilefish	3-8
3.2.2.3 Red Pogy.....	3-9

3.2.3	Other Affected Council-Managed Species	3-10
3.2.4	ESA-Listed Species	3-11
3.2.4.1	Sea Turtles	3-11
3.2.4.2	Marine Fish	3-13
3.2.4.3	South Atlantic Snapper Grouper Fishery Interactions with ESA-Listed Species	3-14
3.3	Administrative Environment.....	3-16
3.3.1	The Fishery Management Process and Applicable Laws	3-16
3.3.1.1	Federal Fishery Management.....	3-16
3.3.1.2	State Fishery Management.....	3-17
3.3.2	Enforcement.....	3-18
3.4	Human Environment.....	3-18
3.4.1	Description of the Fishery.....	3-18
3.4.1.1	Commercial Fishery.....	3-18
3.4.1.1.1	Gear and Fishing Behavior.....	3-18
3.4.1.1.2	Landings, Ex-vessel Value, Price, and Effort	3-19
3.4.1.1.3	The Snowy Grouper Fishery	3-27
3.4.1.1.4	The Red Porgy Fishery.....	3-32
3.4.1.1.5	The Tilefish Fishery	3-36
3.4.1.2	Recreational Fishery	3-40
3.4.1.2.1	Harvest	3-40
3.4.1.2.2	Effort	3-44
3.4.1.2.3	Permits.....	3-46
3.4.1.2.4	Economic Value and Expenditures	3-46
3.4.1.2.5	Financial Operations of the Charter and Headboat Sectors	3-48
3.4.2	Social and Cultural Environment.....	3-49
3.4.2.1	North Carolina	3-51
3.4.2.1.1	Statewide.....	3-51
3.4.2.1.2	Hatteras Village.....	3-53
3.4.2.1.3	Wanchese	3-55
3.4.2.1.4	Morehead City.....	3-57
3.4.2.1.5	Beaufort.....	3-58
3.4.2.1.6	Atlantic Beach.....	3-59
3.4.2.1.7	Sneads Ferry	3-61
3.4.2.2	South Carolina	3-63
3.4.2.2.1	Statewide.....	3-63
3.4.2.2.2	Little River	3-64
3.4.2.3	Georgia.....	3-66
3.4.2.3.1	Statewide.....	3-66
3.4.2.3.2	Townsend	3-67
3.4.2.4	Florida.....	3-68
3.4.2.4.1	Statewide.....	3-69
3.4.2.4.2	Cape Canaveral	3-70
3.4.2.4.3	Marathon	3-73
4	Environmental Consequences.....	4-1
4.1	Snowy Grouper Allocation Alternatives.....	4-1

4.1.1	Biological Effects of Allocation Alternatives.....	4-1
4.1.2	Economic Effects of Allocation Alternatives	4-2
4.1.3	Social Effects of Allocation Alternatives	4-4
4.1.4	Administrative Effects of Allocation Alternatives	4-5
4.1.5	Council Conclusions.....	4-5
4.2	Red Porgy Allocation Alternatives	4-5
4.2.1	Biological Effects of Allocation Alternatives.....	4-6
4.2.2	Economic Effects of Allocation Alternatives	4-7
4.2.3	Social Effects of Allocation Alternatives	4-8
4.2.4	Administrative Effects of Allocation Alternatives	4-9
4.2.5	Council Conclusions	4-9
4.3	Golden Tilefish Management Reference Point Alternatives	4-9
4.3.1	Biological Effects of Management Reference Point Alternatives	4-11
4.3.2	Economic Effects of Management Reference Point Alternatives.....	4-14
4.3.2.1	General Concepts	4-14
4.3.2.2	Comparison of Fishery with Management Reference Point Alternatives.....	4-16
4.3.3	Social Effects of Management Reference Point Alternatives.....	4-17
4.3.3.1	General Concepts	4-17
4.3.3.2	Comparison of Fishery with Management Reference Point Alternatives	4-18
4.3.4	Administrative Effects of Management Reference Point Alternatives.....	4-19
4.3.5	Council Conclusions	4-19
4.4	Modification to the Sales Provisions	4-19
4.4.1	Biological Effects of Modifications to the Sales Provisions Alternatives	4-20
4.4.2	Economic Effects of Modifications to the Sales Provisions Alternatives	4-21
4.4.3	Social Effects of Modifications to the Sales Provisions Alternatives.....	4-38
4.4.4	Administrative Effects of Modifications to the Sales Provisions Alternatives.....	4-41
4.4.5	Council Conclusions.....	4-41
4.5	Monitor and Assess Bycatch.....	4-42
4.5.1	Biological Effects of Monitor and Assess Bycatch Alternatives.....	4-50
4.5.2	Economic Effects of Monitor and Assess Bycatch Alternatives	4-51
4.5.3	Social Effects of Monitor and Assess Bycatch Alternatives	4-52
4.5.4	Administrative Effects of Monitor and Assess Bycatch Alternatives	4-53
4.5.5	Council Conclusions.....	4-53
4.6	Sea Turtle and Smalltooth Sawfish Incidental Take Impact Minimization Measures	4-54
4.6.1	Biological Effects of Sea Turtle and Smalltooth Sawfish Alternatives.....	4-57
4.6.2	Economic Effects of Sea Turtle and Smalltooth Sawfish Alternatives	4-57
4.6.3	Social Effects of Sea Turtle and Smalltooth Sawfish Alternatives.....	4-60
4.6.4	Administrative Effects of Sea Turtle and Smalltooth Sawfish Alternatives	4-61
4.6.5	Council Conclusions	4-62
4.7	Permit Renewal.....	4-62
4.7.1	Biological Effects of Permit Renewal Period Alternatives.....	4-62
4.7.2	Economic Effects of Permit Renewal Period Alternatives	4-63

4.7.3	Social Effects of Permit Renewal Period Alternatives	4-64
4.7.4	Administrative Effects of Permit Renewal Period Alternatives	4-64
4.7.5	Council Conclusions	4-65
4.8	Permit Transferability	4-65
4.8.1	Permit Transferability Example	4-67
4.8.2	Biological Effects of Permit Transferability Alternatives	4-69
4.8.3	Economic Effects of Permit Transferability Alternatives	4-70
4.8.4	Social Effects of Permit Transferability Alternatives	4-72
4.8.5	Administrative Effects of Permit Transferability Alternatives	4-73
4.8.6	Council Conclusions	4-73
4.9	Research Needs	4-73
4.9.1	Snowy Grouper	4-74
4.9.2	Golden Tilefish	4-74
4.9.3	Red Porgy	4-74
4.9.4	Sociocultural Research Needs	4-75
4.10	Cumulative Effects	4-78
4.10.1	Biological	4-79
4.10.2	Socioeconomic	4-89
4.11	Bycatch Practicability Analysis	4-91
4.11.1	Population Effects for the Bycatch Species	4-92
4.11.1.1	Background	4-92
4.11.1.2	Commercial Fishery	4-93
4.11.1.3	Recreational Fishery	4-99
4.11.1.4	Finfish Bycatch Mortality	4-101
4.11.1.5	Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality	4-101
4.11.2	Ecological Effects Due to Changes in Bycatch	4-103
4.11.3	Changes in Bycatch of Other Fish Species and Resulting Population and Ecosystem Effects	4-103
4.11.4	Effects on Marine Mammals and Birds	4-104
4.11.5	Changes in Fishing, Processing, Disposal, and Marketing Costs	4-105
4.11.6	Changes in Fishing Practices and Behavior of Fishermen	4-105
4.11.7	Changes in Research, Administration, and Enforcement Costs and Management Effectiveness	4-106
4.11.8	Changes in the Economic, Social, or Cultural Value of Fishing Activities and Non-Consumptive Uses of Fishery Resources	4-106
4.11.9	Changes in the Distribution of Benefits and Costs	4-106
4.11.10	Social Effects	4-107
4.11.11	Conclusion	4-107
4.12	Unavoidable Adverse Effects	4-108
4.13	Effects of the Fishery on the Environment	4-109
4.14	Damage to Ocean and Coastal Habitats	4-109
4.15	Relationship of Short-Term Uses and Long-Term Productivity	4-110
4.16	Irreversible and Irrecoverable Commitments of Resources	4-111
4.17	Mitigation Measures	4-111
5	Regulatory Impact Review	5-1

5.1	Introduction.....	5-1
5.2	Problems and Objectives.....	5-1
5.3	Methodology and Framework for Analysis.....	5-1
5.4	Description of the Fishery.....	5-2
5.5	Impacts of Management Measures.....	5-2
5.5.1	Snowy Grouper Allocation.....	5-2
5.5.2	Red Porgy Allocation.....	5-2
5.5.3	Golden Tilefish Management Reference Points.....	5-2
5.5.4	Modification of Sales Provisions.....	5-3
5.5.5	Monitor and Assess Bycatch.....	5-6
5.5.6	Sea Turtle and Smalltooth Sawfish Incidental Take Impact Minimization.....	5-7
5.5.7	Permit Renewal.....	5-7
5.5.8	Permit Transferability.....	5-7
5.6	Public and Private Costs of Regulations.....	5-8
5.7	Summary of Economic Impacts.....	5-8
5.8	Determination of Significant Regulatory Action.....	5-9
6	Regulatory Flexibility Act Analysis.....	6-1
6.1	Introduction.....	6-1
6.2	Statement of Need for, Objectives of, and Legal Basis for the Rule.....	6-1
6.3	Identification of All Relevant Federal Rules Which May Duplicate, Overlap, or Conflict with the Proposed Rule.....	6-2
6.4	Description and Estimate of the Number of Small Entities to Which the Proposed Rule will Apply.....	6-2
6.5	Description of the Projected Reporting, Record-keeping and Other Compliance Requirements of the Proposed Rule, Including an Estimate of the Classes of Small Entities Which will be Subject to the Requirement and the Type of Professional Skills Necessary for the Preparation of the Report or Records.....	6-3
6.6	Substantial Number of Small Entities Criterion.....	6-5
6.7	Significant Economic Impact Criterion.....	6-5
6.8	Description of Significant Alternatives.....	6-7
7	Fishery Impact Statement (FIS).....	7-1
7.1	Introduction.....	7-1
7.2	Problems and Methods.....	7-1
7.3	Social Impact Assessment Data Needs.....	7-2
7.4	Note for CEQ Guidance to Section 1502.22.....	7-4
7.5	E.O. 12898: Environmental Justice.....	7-4
7.6	Social Impact Assessment Summary.....	7-5
8	Other Applicable Law.....	8-1
8.1	Administrative Procedure Act.....	8-1
8.2	Coastal Zone Management Act.....	8-1
8.3	Endangered Species Act.....	8-1
8.4	Executive Order 12612: Federalism.....	8-2
8.5	Executive Order 12866: Regulatory Planning and Review.....	8-2
8.6	Executive Order 12962: Recreational Fisheries.....	8-3
8.7	Executive Order 13089: Coral Reef Protection.....	8-3
8.8	Executive Order 13158: Marine Protected Areas.....	8-4

8.9	Marine Mammal Protection Act	8-4
8.10	Migratory Bird Treaty Act and Executive Order 13186	8-5
8.11	National Environmental Policy Act	8-6
8.12	National Marine Sanctuaries Act	8-6
8.13	Paperwork Reduction Act	8-7
8.14	Regulatory Flexibility Act	8-7
8.15	Small Business Act	8-7
8.16	Public Law 99-659: Vessel Safety	8-8
9	List of Preparers	9-1
10	List of Agencies, Organizations, and Persons To Whom Copies of the Statement Are Sent	10-1
11	References	11-1
12	Index	12-1

LIST OF APPENDICES

- Appendix A** Alternatives the Council considered but eliminated from detailed study, and a brief discussion of the reasons for their elimination.
- Appendix B** Glossary
- Appendix C** Essential Fish Habitat and Movement towards Ecosystem-Based Management
- Appendix D** Text of 50 CFR 635.21 (a)(3), (c)(5)(i) and (c)(5)(ii)
- Appendix E** Careful Release Protocols for Sea Turtle Release with Minimal Injury
- Appendix F** Sea Turtle Handling/Release Guidelines: Quick Reference for the Snapper grouper Fishery
- Appendix G** Sawfish Handling and Release Guidelines for the Snapper grouper Fishery

LIST OF FIGURES

Figure 1-1. Jurisdictional boundaries of the South Atlantic Fishery Management Council.	1-1
Figure 3-1. Average composition of headboat harvest, 1999-2003.....	3-42
Figure 3-2. Average composition of charterboat harvest, 1999-2003.....	3-43
Figure 3-3. Average composition of private harvest, 1999-2003.....	3-43
Figure 3-4. North Carolina communities with substantial fishing activity, as identified by South Atlantic Advisory Panels.....	3-51
Figure 3-5. Hatteras Island and Village, Outer Banks, North Carolina.....	3-53
Figure 3-6. Map of Roanoke Island, North Carolina, showing Wanchese and Manteo.....	3-55
Figure 3-7. Area of Carteret County, North Carolina, showing Morehead City, Atlantic Beach (at the red star), and Beaufort.....	3-57
Figure 3-8. General area of Sneads Ferry, North Carolina.....	3-61
Figure 3-9. South Carolina communities with substantial fishing activity, as identified by South Atlantic Advisory Panels.....	3-63
Figure 3-10. Little River, South Carolina, and surrounding area.....	3-65
Figure 3-11. Florida communities with substantial fishing activity. Identified by South Atlantic Advisory Panels.....	3-68
Figure 3-12. Area map of Cape Canaveral, Florida.....	3-70
Figure 3-13. Marathon, Florida.....	3-72

LIST OF TABLES

Table 1. Comparison of sea turtle release gear requirements under Alternatives 2 and 3. Gear descriptions based on 50 CFR 635.21(c)(5)(A-L) (Appendix D).....	XXXIII
Table 2. Permit sub-alternatives.....	XXXVI
Table 1-1. Species in the Snapper Grouper Fishery Management Unit (FMU).....	1-2
Table 1-2. The average number of fish released by commercial and recreational fishermen per year during 2001-2005 for three species in the South Atlantic and the release mortality associated with each.....	1-7
Table 1-3. History of management.....	1-11
Table 2-1. MSY alternatives under consideration for golden tilefish.....	2-3
Table 2-2. OY alternatives under consideration for golden tilefish.....	2-3
Table 2-3. MSST alternatives under consideration for golden tilefish.....	2-3
Table 2-4. Criteria used to determine the overfished and overfishing status of golden tilefish from SEDAR 4 (2004). Actions were taken in Amendment 13C to end overfishing of golden tilefish in 2007.....	2-4
Table 2-5. Comparison of sea turtle release gear requirements under Alternatives 2 and 3. Gear descriptions based on 50 CFR 635.21(c)(5)(A-L) (Appendix D).....	2-8
Table 2-6. Permit sub-alternatives.....	2-11
Table 2-7. Summary of effects of allocation alternatives for snowy grouper.....	2-11
Table 2-8. Summary of effects of allocation alternatives for red porgy.....	2-13
Table 2-9. Summary of effects of MSY alternatives under consideration for golden tilefish.....	2-15

Table 2-10. Summary of effects of OY alternatives under consideration for golden tilefish.	2-15
Table 2-11. Summary of effects of MSST alternatives under consideration for golden tilefish.	2-15
Table 2-12. Alternatives under consideration for changing the sales provisions.	2-17
Table 2-13. Alternatives under consideration for monitoring bycatch.	2-21
Table 2-14. Alternatives under consideration to minimize the impacts of incidental take on sea turtles and smalltooth sawfish.	2-23
Table 2-15. Alternatives under consideration for changing the renewal period for commercial snapper grouper permits.	2-24
Table 2-16. The effects comparison for permit transferability alternatives.	2-25
Table 3-1. Sea turtle incidental take data from the Supplementary Discard Data Program (SDDP) for the Southeast U.S. Atlantic.	3-15
Table 3-2. Three-yr South Atlantic anticipated takes of ESA-Listed species for snapper grouper gears.	3-15
Table 3-3. Annual landings and dockside (ex-vessel) revenues for trips with at least 1 pound of species in the snapper grouper fishery management unit in the south Atlantic.	3-20
Table 3-4. Fishing effort and distribution of catch for trips with at least 1 pound of species in the snapper grouper fishery management unit in the south Atlantic.	3-22
Table 3-5. Annual landings and dockside revenues for trips with at least 1 pound of species in the snapper grouper fishery, 2001-2005 averages by state.	3-24
Table 3-6. Annual landings and dockside revenues for trips with at least 1 pound of species in the snapper grouper fishery, 2001-2005 averages by primary gear. Landings are reported as millions of pounds, whole weights, and dockside revenues are reported as millions of dollars.	3-26
Table 3-7. Annual landings, dockside (ex-vessel) revenues, and fishing effort for snowy grouper, 2001-2005.	3-29
Table 3-8. Description of fishing activities for trips with at least 1 pound of snowy grouper, by primary gear, 2001-2005 averages.	3-30
Table 3-9. Annual landings and dockside revenues for trips with at least 1 pound of snowy grouper, 2001-2005 averages by state.	3-31
Table 3-10. Annual landings, dockside (ex-vessel) revenues, and fishing effort for red porgy, 2001-2005.	3-33
Table 3-11. Description of fishing activities for trips with at least 1 pound of red porgy, by primary gear, 2001-2005 averages.	3-34
Table 3-12. Annual landings and dockside revenues for trips with at least 1 pound of red porgy, 2001-2005 averages by state.	3-35
Table 3-13. Annual landings, dockside (ex-vessel) revenues, and fishing effort for golden tilefish, 2001-2005.	3-37
Table 3-14. Description of fishing activities for trips with at least 1 pound of golden tilefish, by primary gear, 2001-2005 averages.	3-38
Table 3-15. Annual landings and dockside revenues for trips with at least 1 pound of tilefish, 2001-2005 averages by state.	3-39
Table 3-16. Harvest of snapper grouper species by mode in the South Atlantic.	3-41
Table 3-17. Average harvest (lbs) of species in this amendment by sector, 2001-2005	3-42

Table 3-18. South Atlantic average recreational effort for species in the snapper grouper fishery management unit ¹ , 2001-2005.	3-44
Table 3-19. Estimated headboat angler days for the U.S. South Atlantic.	3-45
Table 3-20. South Atlantic 2001-2005 average recreational effort.	3-45
Table 3-21. Snapper grouper for-hire permits by homeport state.	3-46
Table 3-22. Summary of expenditures on saltwater trips.	3-47
Table 4-1. MSY alternatives under consideration for golden tilefish.	4-9
Table 4-2. OY alternatives under consideration for golden tilefish.	4-10
Table 4-3. MSST alternatives under consideration for golden tilefish.	4-10
Table 4-4. Criteria used to determine the overfished and overfishing status of golden tilefish from SEDAR 4 (2004). Actions were taken in Amendment 13C to end overfishing of golden tilefish in 2007.	4-10
Table 4-5. Snapper grouper harvest and value by permit type (2004-2006 average, state trip ticket data).	4-25
Table 4-6. Snapper grouper harvest and value by permit type and waterbody (2004-2006 average, state trip ticket data).	4-26
Table 4-7. All species harvest and value by permit type (2004-2006 average, state trip ticket data).	4-27
Table 4-8. Snapper grouper harvest and value by permit type and dealer type (2004-2006 average, state trip ticket data).	4-29
Table 4-9. Snapper grouper bag limit sales by permit type and dealer type (2004-2006 average, state trip ticket data).	4-30
Table 4-10. The degree that the ACCSP requirements have been fulfilled in the South Atlantic in terms of bycatch reporting.	4-49
Table 4-11. Comparison of sea turtle release gear requirements under Alternatives 2 and 3. Gear descriptions based on 50 CFR 635.21(c)(5)(A-L) (Appendix D).	4-56
Table 4-12. Release gear requirements and costs (2006 dollars).	4-59
Permit transferability alternatives are summarized in Table 4-13.	4-66
Table 4-13. Permit sub-alternatives.	4-67
Table 4-14. Landings associated with retired permits for the full year prior to retirement.	4-69
Table 4-15. Landings (whole weight, pounds from logbook) associated with any permit that was retired during 1999-2004. Data includes Monroe County and all species (including unclassified) in snapper grouper FMU. Gear types restricted to hook and line, longline, and pots.	4-70
Table 4-16. The cause and effect relationship of fishing and regulatory actions within the time period of the Cumulative Effects Analysis (CEA).	4-84
Table 4-17. Percentage of recreational and commercial landings of species in Amendment 15B for 2001-2005.	4-92
Table 4-18. Discard logbook gross effort for South Atlantic.	4-93
Table 4-19. Snapper grouper fishery effort for South Atlantic.	4-93
Table 4-20. Annual number of trips reporting discards of selected species in the South Atlantic.	4-95
Table 4-21. Percentage of trips that discarded selected species in the South Atlantic.	4-95
Table 4-22. Average number of species discarded per trip in the South Atlantic.	4-96
Table 4-23. Expanded number of discarded species for the South Atlantic.	4-96

Table 4-24. The 50 most commonly discarded species during 2001-2005 in order of occurrence from highest number of trips to lowest for the South Atlantic. Count is number of trips that reported discarding the species. Sum is the reported number discarded. These values are not expanded.	4-97
Table 4-25. The 50 most commonly discarded species during 2001-2005 based on number of fish discarded ordered from highest to lowest for the South Atlantic. Count is number of trips that reported discarding the species. Sum is the reported number discarded from 20% of the fishermen. These values are not expanded... ..	4-98
Table 4-26. Total number (A+B1+B2) of fish caught from MRFSS interviews, estimated total number of fish released (B2), percent released, and estimate total number of dead discards during 2001-2005.	4-100
Table 4-26a. Total number of fish released alive or dead on sampled headboat trips during 2004-2006.	4-100
Table 4-27. Composition of reef fish catch with longline gear in the South Atlantic during 2001-2005.	4-102

TABLE OF CONTENTS FOR THE ENVIRONMENTAL IMPACT STATEMENT

Abstract..... XIII

Summary..... XXVI

Purpose and need..... 1-1

Alternatives..... 2-1

Affected environment..... 3-1

Environmental consequences..... 4-1

List of preparers..... 9-1

List of agencies, organizations, and persons
to whom copies of the statement are sent..... 10-1

Index..... 12-1

SOCIAL IMPACT ASSESSMENT

This integrated document contains all elements of the Plan Amendment, Final Environmental Impact Statement (FEIS), Draft Biological Assessment (DBA), Initial Regulatory Flexibility Analysis (IRFA), Regulatory Impact Review (RIR), Social Impact Assessment (SIA), and Fishery Impact Statement (FIS). The table of contents for the SIA is provided separately to aid the reviewer in referencing corresponding sections of the Amendment.

TABLE OF CONTENTS	SECTION	PAGE
Introduction	7.1	7-1
Problems and Methods	7.2	7-1
Social Impact Assessment Data Needs	7.3	7-2
Description of the Social and Cultural Environment	3.4.2	3-49
Social Impacts of the Proposed Actions		
Action 1 (Snowy grouper allocation)	4.1.3	4-4
Action 2 (Red porgy allocation)	4.2.3	4-8
Action 3 (Golden tilefish management reference points)	4.3.3	4-17
Action 4 (Modification to sales provisions)	4.4.3	4-38
Action 5 (Monitor and assess bycatch)	4.5.3	4-52
Action 6 (Incidental take minimization measures)	4.6.3	4-60
Action 7 (Permit renewal)	4.7.3	4-64
Action 8 (Permit transferability)	4.8.4	4-72

SUMMARY

Purpose and Need

The need for action through Amendment 15B is due to the continually changing nature of the fishery. 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, 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:

- Define allocations for snowy grouper and red porgy;
- Update management reference points for golden tilefish;
- Modify sale restrictions;
- Implement a plan to monitor and assess bycatch;
- Implement measures to minimize the impacts of incidental take on sea turtles and smalltooth sawfish; and
- Modify permit renewal and transferability requirements.

Alternatives

Snowy Grouper Allocation Alternatives

Alternative 1 (no action). Do not define allocations for snowy grouper.

Alternative 2 (preferred). Define allocations for snowy grouper based upon landings from the ALS, MRFSS, and headboat databases. The allocations would be based on landings from the years 1986-2005. The allocations would be 95% commercial and 5% recreational. Beginning in 2009, the commercial quota would be 82,900 lbs gutted weight and the recreational allocation would be 523 fish (4,400 lbs gutted weight). The commercial quota and recreational allocation specified for 2009 would remain in effect beyond 2009 until modified.

Alternative 3. Define allocations for snowy grouper based upon landings from the ALS, MRFSS, and headboat databases. The allocations would be based on landings from the years 1992-2005. The allocations would be 93% commercial and 7% recreational. Beginning in 2009, the commercial quota would be 81,200 lbs gutted weight and the recreational allocation would be 6,100 lbs gutted weight. The commercial quota and recreational allocation specified for 2009 would remain in effect beyond 2009 until modified.

Alternative 4. Define allocations for snowy grouper based upon landings from the ALS, MRFSS, and headboat databases. The allocations would be based upon landings from 2005. Define allocations for snowy grouper as 88% commercial and 12% recreational. Beginning in 2009, the commercial quota would be 76,800 lbs gutted weight and the recreational allocation would be 10,500 lbs gutted weight. The commercial quota and recreational allocation specified for 2009 would remain in effect beyond 2009 until modified.

Red Porgy Allocation Alternatives

Alternative 1 (no action). Do not define allocations for red porgy.

Alternative 2. Define allocations for red porgy based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 1986-2005. The allocation would be 68% commercial and 32% recreational. The commercial quota in 2009 and 2010 would be 258,500 lbs gutted weight each year. The recreational allocation in 2009 and 2010 would be 121,600 lbs gutted weight each year. The commercial quota and recreational allocation specified for 2010 would remain in effect beyond 2010 until modified.

Alternative 3. Define allocations for red porgy based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 1999-2005. The allocation would be 44% commercial and 56% recreational. The commercial quota in 2009 and 2010 would be 167,200 lbs gutted weight each year. The recreational allocation in 2009 and 2010 would be 212,900 lbs gutted weight each year. The commercial quota and recreational allocation specified for 2010 would remain in effect beyond 2010 until modified.

Alternative 4 (preferred). Define allocations for red porgy as 50% commercial and 50% recreational. The commercial quota in 2009 and 2010 would be 190,050 lbs gutted weight each year. The recreational allocation in 2009 and 2010 would be 190,050 lbs gutted weight each year. The commercial quota and recreational allocation specified for 2010 would remain in effect beyond 2010 until modified.

Golden Tilefish Management Reference Point Alternatives

MSY alternatives under consideration for golden tilefish.

Alternatives	MSY equation	F _{MSY} equals	MSY value
Alternative 1 (no action)	The yield produced by F _{MSY} . F _{30%SPR} is used as the F _{MSY} proxy for all stocks.	0.38*	Not specified
Alternative 2 (preferred)	MSY equals the yield produced by F _{MSY} . MSY and F _{MSY} are defined by the most recent SEDAR.	0.043**	336,425 lbs whole weight
*Source: Powers 1999 **Source: SEDAR 4 (2004)			

OY alternatives under consideration for golden tilefish.

Alternatives	OY equation	F _{OY} equals	OY value
Alternative 1 (no action)	OY equals the yield produced by F _{OY} . F _{40%SPR} is used as the F _{OY} proxy.	0.26*	not specified
Alternative 2	OY equals the yield produced by F _{OY} . Note: If a stock is overfished, F _{OY} equals the fishing mortality rate specified by the rebuilding plan designed to rebuild the stock to SSB _{MSY} within the approved schedule. After the stock is rebuilt, F _{OY} = a fraction of F _{MSY} . Golden tilefish is not overfished.	(65%)(F _{MSY})	314,894 lbs whole weight**
Alternative 3 (preferred)		(75%)(F _{MSY})	326,554 lbs whole weight**
Alternative 4		(85%)(F _{MSY})	332,835 lbs whole weight**
*Source: Powers 1999 **Calculated based on Council's preferred MSY value in which F _{MSY} equals 0.043 for Alternatives 2-4 (SEDAR 4 2004)			

MSST alternatives under consideration for golden tilefish.

Alternatives	MSST equation	M equals	MSST value
Alternative 1 (no action)	MSST equals SSB _{MSY} ((1-M) or 0.5, whichever is greater)	0.08*	1,783,650 lbs whole weight**
Alternative 2	MSST equals SSB _{MSY} (0.5)	n/a	969,375 lbs whole weight**
Alternative 3 (preferred)	MSST equals SSB _{MSY} (0.75)	n/a	1,454,063 lbs whole weight**
*Source: Recommendation from SEFSC based on the results from SEDAR 4 (2004). **Source: Calculated based on Council's preferred MSY value in which SSB _{MSY} equals 1,938,750 lbs. whole weight (SEDAR 4 2004).			

Modifications to the Sales Provisions

Alternative 1 (no action). Allow species in the snapper grouper management unit taken from the South Atlantic EEZ, up to the allowed bag limit, to be sold to a licensed dealer if the seller possesses a state-issued license to sell fish.

Alternative 2 (preferred). A South Atlantic Snapper Grouper harvested or possessed in the EEZ onboard a vessel that does not have a valid Federal Commercial Permit for South Atlantic Snapper Grouper, or a South Atlantic Snapper Grouper possessed under the bag limits, may not be sold or purchased. A person onboard a vessel with both a Federal For-Hire Vessel Permit and a Federal Commercial Snapper Grouper Permit is considered to be fishing as for-hire when fishing as described in 50 CFR §622.2. Snapper Grouper harvested or possessed on such a trip may not be sold or purchased, regardless of where it is harvested.

50 CFR §622.2 specifies that a charter vessel means a vessel less than 100 gross tons (90.8 mt) that is subject to the requirements of the United States Coast Guard (USCG) to carry six or fewer passengers for hire and that engages in charter fishing at any time

during the calendar year. A charter vessel with a commercial permit, as required under Sec. 622.4(a)(2), is considered to be operating as a charter vessel when it carries a passenger who pays a fee or when there are more than three persons aboard, including operator and crew. However, a charter vessel that has a charter vessel permit for Gulf reef fish, a commercial vessel permit for Gulf reef fish, and a valid Certificate of Inspection (COI) issued by the USCG to carry passengers for hire will not be considered to be operating as a charter vessel provided--

(1) It is not carrying a passenger who pays a fee; and

(2) When underway for more than 12 hours, that vessel meets, but does not exceed the minimum manning requirements outlined in its COI for vessels underway over 12 hours; or when underway for not more than 12 hours, that vessel meets the minimum manning requirements outlined in its COI for vessels underway for not more than 12-hours (if any), and does not exceed the minimum manning requirements outlined in its COI for vessels that are underway for more than 12 hours.

50 CFR §622.2 specifies that a headboat means a vessel that holds a valid Certificate of Inspection (COI) issued by the USCG to carry more than six passengers for hire.

(1) A headboat with a commercial vessel permit, as required under Sec. 622.4(a)(2), is considered to be operating as a headboat when it carries a passenger who pays a fee or--

(i) In the case of persons aboard fishing for or possessing South Atlantic snapper grouper, when there are more persons aboard than the number of crew specified in the vessel's COI.

Alternative 3. Require a Federal charter/headboat snapper grouper permit or Federal commercial snapper grouper permit to sell snapper grouper species from the South Atlantic EEZ up to the bag limit of snapper grouper species.

Monitor and Assess Bycatch

Alternative 1 (no action). Utilize existing information to estimate and characterize bycatch.

Alternative 2 (preferred). Adopt the Atlantic Coastal Cooperative Statistics Program (ACCSP) Release, Discard and Protected Species Module as the preferred methodology. Until this module is fully funded, require the use of a variety of sources to assess and monitor bycatch including: observer coverage on vessels; logbooks; electronic logbook; video monitoring; MRFSS; state cooperation; and grant funded projects. After the ACCSP Bycatch Module is implemented, continue the use of technologies to augment and verify observer data. Require that commercial vessels with a snapper grouper permit, for-hire vessels with a for-hire permit, and private recreational vessels if fishing for snapper grouper species in the EEZ, if selected, shall use observer coverage, logbooks, electronic logbooks, video monitoring, or any other method deemed necessary to measure bycatch by NOAA Fisheries.

Alternative 3. Adopt the Atlantic Coastal Cooperative Statistics Program Release, Discard and Protected Species Module as the preferred methodology. Require that commercial vessels with a snapper grouper permit, for-hire vessels with a for-hire permit, and private recreational vessels if fishing for snapper grouper species in the EEZ, if selected, shall use observer coverage, logbooks, electronic logbooks, video monitoring, or any other method deemed necessary to measure bycatch by NOAA Fisheries.

Alternative 4. Require the use of a variety of sources to assess and monitor bycatch including: observer coverage on vessels; logbooks; electronic logbook; video monitoring; MRFSS; state cooperation; and grant funded projects. Require that commercial vessels with a snapper grouper permit, for-hire vessels with a for-hire permit, and private recreational vessels if fishing for snapper grouper species in the EEZ, if selected, shall use observer coverage, logbooks, electronic logbooks, video monitoring, or any other method deemed necessary to measure bycatch by NOAA Fisheries.

Sea Turtle and Smalltooth Sawfish Incidental Take Impact Minimization Measures

Alternative 1 (no action). Do not implement additional management measures to minimize the impacts of incidental take on sea turtles or smalltooth sawfish caught in the South Atlantic snapper grouper fishery.

Alternative 2 (preferred). Require all vessels with commercial and for-hire snapper grouper vessel permits, carrying hook-and-line gear onboard, to: (1) immediately release incidentally caught smalltooth sawfish by following the latest NOAA Fisheries Service approved guidance on smalltooth sawfish release techniques (see Appendix G); (2) have a copy of the document, provided by NOAA Fisheries Service, titled “Careful Release Protocols for Sea Turtle Release with Minimal Injury” (Appendix E) posted inside the wheelhouse, or within a waterproof case in a readily accessible area; (3) post the NOAA Fisheries Service provided sea turtle handling and release guideline placard (see Appendix F) inside the wheelhouse, or in an easily viewable area if there is no wheelhouse; (4) tend to incidentally caught sea turtle in a manner consistent with the protocols specified in 50 CFR 635.21(c)(5)(ii) (see Appendix D). These vessels must also carry the following sea turtle release equipment:

- a long-handled line clipper or cutter,
- a long-handled dehooker for ingested hooks,
- a long-handled dehooker for external hooks,
- a long-handled device to pull an “inverted V”,
- a dipnet,
- a tire (or other comparable cushioned, elevated surface that immobilizes boated sea turtles),
- a short-handled dehooker for ingested hooks,
- a short-handled dehooker for external hooks,
- long-nose or needle-nose pliers,
- bolt cutters,
- monofilament line cutters, and
- at least two types of mouth openers/mouth gags.

This equipment must meet the specifications described in 50 CFR 635.21(c)(5)(i)(A-L) (see Appendix D) with the following modification: any other comparable, cushioned, elevated surface that allows boated sea turtles to be immobilized, may be used as an alternative to the requirement in 50 CFR 635.21(c)(5)(i)(F) to have a tire on board.

Alternative 3. Require all vessels with commercial and for-hire snapper grouper vessel permits, carrying hook-and-line gear onboard, to: (1) immediately release incidentally caught smalltooth sawfish by following the latest NOAA Fisheries Service approved guidance on smalltooth sawfish release techniques (see Appendix G); (2) have a copy of the NOAA Fisheries Service provided document titled “Careful Release Protocols for Sea Turtle Release with Minimal Injury” (Appendix E) posted inside the wheelhouse, or within a waterproof case in a readily accessible area; (3) post the NOAA Fisheries Service provided sea turtle handling and release guideline placard (see Appendix F) inside the wheelhouse, or in an easily viewable area if there is no wheelhouse; (4) tend to incidentally caught sea turtle in a manner consistent with the protocols specified in 50 CFR 635.21(c)(5)(ii) (see Appendix D). Depending on the vessel’s freeboard height, the following sea turtle release equipment would be required:

For vessels with a freeboard height of **four feet or less**:

- a dipnet,
- a tire (or other comparable cushioned, elevated surface that immobilizes boated sea turtles),
- a short-handled dehooker,
- long-nose or needle-nose pliers,
- bolt cutters,
- monofilament line cutters, and
- at least two types of mouth openers/mouth gags.

This equipment must meet the specifications described in 50 CFR 635.21(c)(5)(i)(E-L) with the following modifications: the dipnet handle can be of variable length, only one NOAA Fisheries Service approved short-handled dehooker is required (i.e., 50 CFR

635.21(c)(5)(i)(G or H)); any other comparable, cushioned, elevated surface that allows boated sea turtles to be immobilized, may be used as an alternative to the requirement in 50 CFR 635.21(c)(5)(i)(F) to have a tire on board.

For vessels with a freeboard height of **greater than four feet**:

- a dipnet,
- a tire (or other comparable cushioned, elevated surface that immobilizes boated sea turtles),
- a long-handled line clipper,
- a long-handled device for pulling an inverted “V”,
- a short-handled dehooker
- a long-handled dehooker,
- long-nose or needle-nose pliers,
- bolt cutters,
- monofilament line cutters, and
- at least two types of mouth openers/mouth gags.

This equipment must meet the specifications described in 50 CFR 635.21(c)(5)(i) (A-L) with the following modifications: only one NOAA Fisheries Service approved long-handled dehooker (50 CFR 635.21(c)(5)(i)(B or C)) and one NOAA Fisheries Service approved short-handled dehooker (50 CFR 635.21(c)(5)(i)(G or H)) are required; any other comparable, cushioned, elevated surface that allows boated sea turtles to be immobilized, may be used as an alternative to the requirement in 50 CFR 635.21(c)(5)(i)(F) to have a tire on board.

Table 1. Comparison of sea turtle release gear requirements under Alternatives 2 and 3. Gear descriptions based on 50 CFR 635.21(c)(5)(A-L) (Appendix D).

Sea Turtle Release Gear	Alternative 2 (preferred)	Alternative 3	
		< 4 feet freeboard	>4 feet freeboard
Long-handled line clippers ¹	X		X
Dipnet	X ¹	X ²	X ¹
Long-handled dehooker for ingested hooks ^{1,3}	X		X ⁵
Long-handled dehooker for external hooks ^{1,3}	X ⁴		X ⁵
Long-handled device to pull an inverted “V” ¹	X		X
Tire (standard passenger sized) ⁶	X	X	X
Short-handled dehooker for ingested hooks ⁸	X	X ⁷	X ⁷
Short-handled dehooker for external hooks ⁸	X ⁴	X ⁷	X ⁷
Long-nose or needle-nose pliers	X	X	X
Bolt cutters	X	X	X
Monofilament line cutters	X	X	X
Mouth openers/mouth gags	X	X	X

¹ handle length 6 feet or 150% of freeboard – whichever is greater.

² handle length optional.

³ may substitute short-handle dehooker if used with appropriate length handle extender.

⁴ may substitute ingested dehooker if the dehooker also meets the criteria for an external dehooker.

⁵ only one NOAA Fisheries Service approved long-handled dehooker is required, may choose either internal, external or one that can act as both.

⁶ may use other comparable, cushioned, elevated surface.

⁷ only one NOAA Fisheries Service approved short-handled dehooker is required, may choose either internal, external or one that can act as both.

⁸ handle length should be 16-24 inches

Permit Renewal

Alternative 1 (no action). Retain the requirement that the Regional Administrator must receive an application for renewal within 60 days of the commercial permit's expiration date.

Alternative 2. Extend the renewal period on commercial snapper grouper permits to 6 months after the permit expires.

Alternative 3 (preferred). Extend the renewal period on commercial snapper grouper permits to one year after the permit expires.

Permit Transferability

Permit Transferability Alternative 1 (no action). A holder of an individual limited access transferable vessel permit must buy an additional individual limited access transferable vessel permit and exchange the two individual permits for one new permit in order to incorporate their business operation and change the ownership of the permitted vessel.

The applicable sections of the current snapper grouper limited access transfer regulations at 50 C.F.R. 622.18(e) are stated below:

“(e) Transfers of permits. A snapper grouper limited access permit is valid only for the vessel and owner named on the permit. To change either the vessel or the owner, an application for transfer must be submitted to the RA. (1) Transferable permits. (i) An owner of a vessel with a transferable permit may request that the RA transfer the permit to another vessel owned by the same entity. (ii) A transferable permit may be transferred upon a change of ownership of a permitted vessel with such permit from one to another of the following: Husband, wife, son, daughter, brother, sister, mother, or father. . . (iv) Except as provided in paragraphs (e)(1)(i), (ii), and (iii) of this section, a person desiring to acquire a limited access, transferable permit for South Atlantic snapper grouper must obtain and exchange two such permits for one new permit.”

Permit Transferability Alternative 2 (preferred). Allow an individual to transfer his or her individual limited access transferable vessel permit to a corporation whose shares are all held by the individual or the individual and one or more of his or her immediate family members. Immediate family members include only the following: husband, wife, son, daughter, brother, sister, mother, or father. Such transfer may be done on a one to one permit transfer basis. At the time of permit renewal, the corporation must also submit to NOAA Fisheries Service a current annual report, which specifies all shareholders of the corporation.

Sub-Alternatives for Permit Transferability Alternative 2 that specifies various renewal/transfer consequences if the annual report to NOAA Fisheries Service includes shareholders not listed on original application.

Permit Sub-Alternative 2-A. Permit is renewed or transferred according to current regulations, regardless of whether new shareholders have been added to the family corporation as reflected in the annual report. Note: this would then treat family corporations no different than other corporations.

Permit Sub-Alternative 2-B. If the annual report shows a shareholder other than the shareholders listed in the original corporate documentation, the permit shall not be renewed or transferred.

Permit Sub-Alternative 2-C. If the annual report shows a shareholder other than the shareholders listed in the original corporate documentation, the permit shall not be renewed or transferred on a one to one permit basis; the corporation must obtain another limited access, transferable snapper grouper permit, and exchange those two such permits for one new permit.

Permit Sub-Alternative 2-D. If the annual report shows a shareholder other than the shareholders listed in the original corporate documentation, the permit shall not be renewed or transferred on a one to one permit basis; the corporation must obtain another limited access, transferable snapper grouper permit, and exchange those two such permits for one new permit or allow transfer back to an individual who is an immediate family member of the permit holder who originally transferred the vessel permit to the family corporation.

Permit Sub-Alternative 2-E (preferred). If the annual report shows a shareholder other than the shareholders listed in the original corporate documentation, the permit shall not be renewed unless such new shareholder is an immediate family member of the individual who originally transferred the vessel permit to the family corporation.

Table 2. Permit sub-alternatives.

Sub-Alternative	If the annual report includes shareholder not listed on original application...
2-A	permit may be renewed or not renewed according to the regulations, regardless of whether new shareholders have been added as reflected in the annual report.
2-B	permit shall not be renewed.
2-C	permit shall not be renewed, must do 2 for 1.
2-D	permit shall not be renewed, must do 2 for 1; BUT can transfer back to individual immediate family member of the original individual permit holder on 1 for 1 basis.
2-E (preferred)	permit shall not be renewed, unless new shareholder is an immediate family member of the original individual permit holder on 1 for 1 basis.

Permit Transferability Alternative 3. Repeal the 2 for 1 permit transfer provision as described at 50 C.F.R. 622.18(e)(1)(iv):

“(iv) Except as provided in paragraphs (e)(1)(i), (ii), and (iii) of this section, a person desiring to acquire a limited access, transferable permit for South Atlantic snapper grouper must obtain and exchange two such permits for one new permit.”

Affected Environment

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. A larger area could be affected. In light of the available information, the extent of the boundaries would depend upon the degree of fish immigration/emigration and larval transport. Tagging work conducted by the Marine Resources Monitoring, Assessment and Prediction (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 red porgy has not been documented (McGovern and Meister 1999). Tagging studies have not been conducted on snowy grouper; however, it is believed that movement of this species is limited. Snowy grouper and red porgy 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. For example, eggs and larvae from spawning fish in the Gulf of Mexico or Caribbean may be passively transported into the South Atlantic. Alternatively, early life stages of fishes spawned in the South Atlantic could be transported by currents to other areas such as the mid-Atlantic. Furthermore, some fishermen may fish in and out of the federal 200-mile limit off of North Carolina, South Carolina, Georgia, and east Florida.

Section 3.1 provides a description of the essential fish habitat. The biological environment is described in Section 3.2. A description of the human environment is described in Sections 3.4.

Environmental Consequences

Snowy grouper Allocation Alternatives

Biological Effects

Snowy grouper alternatives that allocate a greater portion of the harvest to the commercial sector could have a greater negative impact on habitat as longline gear is considered to do greater damage to hard bottom habitat than vertical hook and line gear (SAFMC 2007b). Allocating a small percentage to the recreational sector may not be effective in reducing mortality since some snowy grouper will continue to be caught and killed when fishermen target co-occurring species.

Economic/Social Effects

Because of data and modeling issues quantitative assessment of the expected impacts of the allocation alternatives has not been attempted. Qualitatively, it is difficult to identify the best allocation alternative. No alternative to the status quo would benefit one sector while having no impact on the other sector. In fact, since each alternative to the status quo would increase the recreational snowy grouper allocation at the expense of the commercial sector, in all instances the recreational sector would be expected to gain economic/social benefits while the commercial sector would lose benefits. If it is believed that adverse effects are compounded the greater the deviation from status quo; large changes in the allocation from the status quo would not be recommended. As such, **Preferred Alternative 2 and Alternative 3** may be preferable to **Alternative 4** since they would result in only marginal changes in the allocation, 1 and 3 percentage points, respectively, whereas **Alternative 4** would impose an 8 percentage point change in the allocation.

While none of the allocation alternatives to the status quo (96% commercial/4% recreational based on landings between 1999-2003) would be neutral to either sector, lower overall adverse social impacts to the affected sectors and associated industries and communities may be expected to accrue to those alternatives that result in the lowest allocation away any individual sector.

Red Porgy Allocation Alternatives

Biological Effects

Alternative 1 would not specify a commercial or recreational allocation for red porgy. If an allocation was not specified then it would not be possible to identify the allowable catch in the recreational sector. The commercial quota could be specified, however, as Amendment 13C used landings from 2001-2003 to establish the commercial quota (49% commercial/51% recreational).

If commercial allocations are higher than 50% commercial, the Total Allowable Catch (TAC) may not adequately take into consideration the increased dead discards in the commercial sector associated with a higher release mortality rate.

Economic/Social Effects

Because of data and modeling issues quantitative assessment of the expected impacts of the allocation alternatives has not been attempted. Qualitatively, it is difficult to identify the best red porgy allocation alternative. None of the alternatives to the status quo would benefit one sector while having no impact on the other sector. **Preferred Alternative 4** would establish an allocation closest to that of **Alternative 1** (49% commercial/51% recreational based on landings between 2001-2003), differing by only one percentage point, the least change from the status quo. **Alternative 2** would substantially increase the commercial allocation by 19 percentage points from status quo, resulting in an increase in commercial revenues at the expense of recreational benefits, while **Alternative 3** would decrease the commercial allocation by 15 percentage points from status quo, with the recreational sector expected to gain net benefits. From the perspective that unquantifiable adverse effects are compounded the greater the deviation from status quo, large changes in the allocation from the status quo would not be recommended. As such, **Preferred Alternative 4** would be preferable to **Alternatives 2 and 3** since it would result in only a small change in the allocation, while both **Alternatives 2 and 3** would impose large changes in current harvest allowances.

While none of the allocation alternatives as compared to the status quo would be neutral to either sector, lower overall adverse social impacts to the affected sectors and associated industries and communities may be expected to accrue to those alternatives that result in the lowest allocation to any individual sector.

Golden Tilefish Management Reference Point Alternatives

Biological Effects

There are no direct effects from redefining and/or updating MSY, OY, and MSST because these parameters simply provide fishery managers with targets and thresholds

that will be used to assess the status and performance of the fishery. However, these management reference points indirectly benefit the biological and ecological environments by influencing the development of fishery management measures, which directly affect golden tilefish and other species.

Economic/Social Effects

In summary, no direct economic or social effects are expected to accrue to any of the alternative benchmark parameter specifications. Indirect effects could accrue if future assessment of the stock relative to the benchmarks identifies a need for restrictive management. The magnitude of these effects, however, will depend on the nature of the specific management measures adopted. These effects will be quantified when such action is prepared, if necessary.

Modifications to the Sales Provisions

Biological Effects

The no action **Alternative 1** would allow the continued sale of snapper grouper species from the South Atlantic EEZ up to the allowed bag limit. The Council's **Preferred Alternative 2** would require a valid Federal Commercial Permit for South Atlantic Snapper Grouper to sell South Atlantic snapper and groupers. South Atlantic snappers and groupers possessed under the bag limits would not be able to be sold or purchased. Some recreational fishermen may intentionally catch more fish than they can consume with the intent to sell. Therefore, **Preferred Alternative 2** could have a minor biological benefit if it results in a decrease in fishing effort. Similarly, **Alternative 3**, which would require a Federal charter/headboat snapper grouper permit or Federal commercial snapper grouper permit to sell snapper grouper species from the South Atlantic EEZ up to the bag limit of snapper grouper species, could also have minor biological benefits if it resulted in a reduction in fishing effort.

Economic/Social Effects

Assuming compatible regulations are adopted by all states, **Preferred Alternative 2** would eliminate all bag limit sales by these entities, estimated at approximately \$2.4 million in annual nominal ex-vessel value. This would constitute a reduction of approximately \$316,000 per year, or a 17-percent reduction in average annual gross revenues per vessel, associated with fish sales by vessels in the for-hire fishery and approximately \$2.085 million per year, or a 7-percent reduction in gross revenues per year, in seafood harvests for commercial vessels that do not possess a Federal commercial snapper grouper permit.

Alternative 3 would allow continued snapper grouper bag limit sales by vessels that possess a Federal for-hire snapper grouper permit. As a result, only the harvests and

revenues discussed above associated with vessels without either of the Federal snapper grouper permits would be affected. These values are approximately \$2.085 million (nominal ex-vessel value) per year, or a 7-percent reduction in gross revenues per year, in seafood harvests assuming compatible regulations are adopted by all states; if compatible regulations are not adopted, reductions of approximately \$1.246 million to \$1.483 million (nominal ex-vessel value) per year, or a 4-5 percent reduction in average annual revenues would result.

Social conflict between the competing harvest sectors would be expected to worsen under **Alternative 1**. The contentious relationship between the competing commercial sectors and between the commercial and recreational sectors would continue. **Preferred Alternative 2** would eliminate all snapper grouper bag limit sales. Since this would result in winners and losers in the bag limit sales debate, all conflict between the sectors would not totally dissipate, but a certain degree of finality to the issue would be reached, at least for the snapper grouper fishery (sales of other species may still be allowed), allowing the respective parties to move forward. The social impacts of **Alternative 3** are expected to be intermediate to those of **Alternative 1** and **Preferred Alternative 2** since **Alternative 3** would reduce, yet not totally eliminate, bag limit snapper grouper sales.

Monitor and Assess Bycatch

Biological Effects

Alternative 1 would have adverse effects on the biological environment compared to the other alternatives since it would not implement a plan to monitor and assess bycatch in the South Atlantic snapper grouper fishery. Indirect impacts resulting from **Alternatives 2, 3, and 4** would provide a better understanding of the composition and magnitude of 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.

Economic/Social Effects

Quantitatively distinguishing the differences in the costs and impacts of **Alternatives 2-4** is not possible at this time since the full costs of neither the ACCSP module or interim methods are available. It can be reasonably stated, however, since each of **Alternatives 2-4** would impose increased bycatch reporting requirements, the costs associated with the requirements of **Alternatives 2-4** exceed that of **Alternative 1**.

Despite the higher costs relative to **Alternative 1**, the expectation and assumption is that the improved bycatch information expected to be generated by these methods would result in improved stock assessments, more appropriate management measures, quicker rebuilding, where appropriate, and, overall, increased net biological, economic, and social

benefits. Since **Preferred Alternative 2** and **Alternative 3** end with the same system in the long-term, the long-term benefits of these two alternatives are presumed equal, though the net benefits of **Preferred Alternative 2** are assumed to be less than those of **Alternative 3** due to the delay in implementing the preferred data program. Since the preferred monitoring and assessment program would never be achieved under **Alternative 4**, the conclusion is that the long-term net economic and social benefits of this alternative are less than those of both **Preferred Alternative 2** and **Alternative 3**.

Sea Turtle and Smalltooth Sawfish Incidental Take Impact Minimization Measures

Biological Effects

Alternative 1 would have adverse effects on the biological environment compared to the other alternatives since it would not implement management measures to minimize the impacts of incidental take on sea turtles or smalltooth sawfish caught in the South Atlantic snapper grouper fishery. **Preferred Alternative 2** would have slightly greater biological benefit than **Alternative 3** as gear requirements are independent of freeboard height.

Economic/Social Effects

Meeting the gear requirements of **Preferred Alternative 2** is estimated to cost vessels from \$617-\$1,115 (2006 dollars). The estimated aggregate cost of the gear requirements of **Preferred Alternative 2** is approximately \$1.32-\$2.38 million (2006 dollars). The minimization of impacts from incidental take on sea turtles and smalltooth sawfish may result in increased economic benefits relative to the status quo in the form of enhanced existence value and increased economic and community activity of industries that benefit from enhanced or recovered resources, such as diving or nest site tours. Additionally, while this action will not lead to species recovery, minimization of the impacts of incidental take may contribute to species recovery and recovery may support increased economic benefits from directed harvest, should such harvest be determined to be appropriate.

Out-of-pocket release gear expenses per vessel for **Alternative 3** are estimated to range from \$324-\$987 (2006 dollars). The estimated aggregate cost of the gear requirements of this alternative on the participants in the fishery is approximately \$691,000-\$2.11 million (2006 dollars), or \$270,000-\$629,000 less than **Preferred Alternative 2**. The gear storage requirements of **Alternative 3** would also be less burdensome than those of **Preferred Alternative 2**.

Permit Renewal

Biological Effects

Permit Renewal Alternative 1 would have beneficial biological effects compared to the other alternatives. **Alternatives 2 and 3** would have adverse effects from fewer lost permits, while the effects from **Preferred Alternative 3** would be greater than **Alternative 2**.

Economic/Social Effects

Alternative 1 (status quo) would be expected to result in the continued loss of economic benefits from expiration of unlimited snapper grouper commercial permits due to the inability to renew permits within the current 60-day timeframe. Total losses as a result of these expirations and the net impact of future expirations cannot be determined.

Alternative 2 would be expected to reduce the incidence of unintentional permit expiration since the renewal period would be three times longer than under the status quo and, thus, result in unquantifiable net economic and social gains relative to the status quo. Fishing operations would have longer to adjust to unexpected disruptions, such as illness or severe weather events, reducing the jeopardy of their permit. **Preferred Alternative 3** would allow the longest period for permit renewal and would, therefore, be expected to minimize the incidence of unintentional permit expiration relative to **Alternatives 1 and 2** and result in the largest gain in net economic and social benefits relative to the status quo. Additional unquantifiable economic and social benefits may accrue to both fishery participants and the administrative environment through standardization of renewal periods since most other permits have similar 1-year renewal periods.

Permit Transferability

Biological Effects

Some degree of beneficial indirect effects to the stock and ecological environment would be expected from the continued implementation of the 2 for 1 permit system (**Alternative 1**) and associated reduction in fishing effort from the removal of permits. The biological effects to the stock and associated ecological environment from **Preferred Alternative 2** (and Sub-Alternatives 2A-E) are expected to be the same as **Alternative 1**. **Alternative 3** would repeal the 2 for 1 permit transfer provision. The beneficial biological effects as described under **Alternative 1** would no longer exist. In general, the biological benefits are greatest with the sub-alternatives that place the greatest restrictions on permit renewal.

Economic/Social Effects

Under **Alternative 1**, holders would not be able to receive the tax and liability benefits associated with incorporation. **Preferred Alternative 2** (and Sub-Alternatives 2A-E) would allow incorporation and the realization of associated benefits without the requirement to obtain a second permit, subject to the incorporation being limited to ownership by the original permit holder and immediate family members. **Preferred Alternative 2** (and Sub-Alternatives 2A-E) would, therefore, result in greater unquantifiable economic and social benefits than **Alternative 1**. **Alternative 3** would eliminate the two-for-one permit transfer requirement, thus, eliminating all impediments to incorporation and accommodating the realization of all incorporation benefits. Permit prices would be expected to increase since a single permit would reflect the full value of fishery participation instead of two permits. Thus, while the total cost of the permit to the entering entity may remain largely unchanged, exiting participants should be able to receive higher individual payments. To the extent that sufficient contraction of the fleet to realize optimal economic and social benefits of the fishery has not yet occurred, **Alternative 3** may result in less net economic benefits relative to **Preferred Alternative 2** since some continued fleet contraction would be expected under **Preferred Alternative 2** regardless of the sub-alternative implemented.

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.

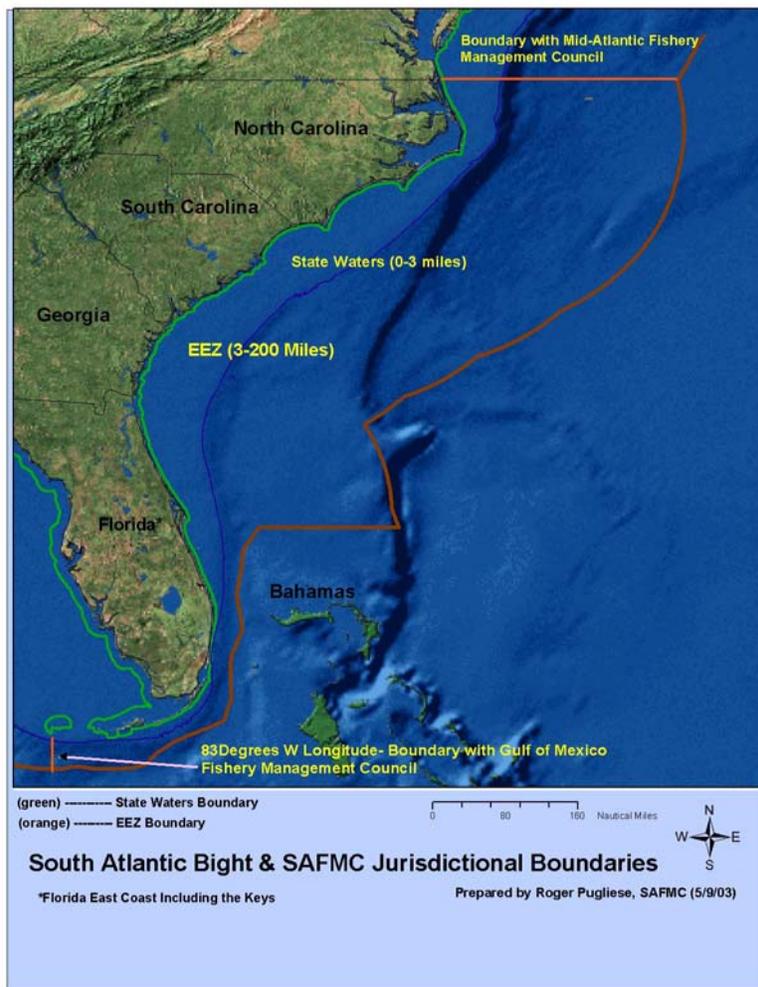


Figure 1-1. Jurisdictional boundaries of the South Atlantic Fishery Management Council.

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

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

1.2 Purpose and Need

The need for action through Amendment 15B is due to the continually changing nature of the fishery. 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, 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:

- Define allocations for snowy grouper and red porgy;
- Update management reference points for golden tilefish;
- Modify sale restrictions;
- Implement a plan to monitor and assess bycatch;
- Implement measures to minimize the impacts of incidental take on sea turtles and smalltooth sawfish; and
- Modify permit renewal and transferability requirements.

Management Reference Points

The Magnuson-Stevens Act requires each FMP define four **management reference points**. Reference points are biological signposts against which the status of a stock can be judged and allow managers to measure fishery status and performance. More specifically, by evaluating the current stock biomass (B) and fishing mortality rate (F) in relation to these reference points, fishery managers can determine whether a fishery is overfished or undergoing overfishing, and whether current management measures are sufficient to prevent overfishing and achieve the optimum yield (OY).

The four reference points are **maximum sustainable yield (MSY), optimum yield (OY), minimum stock size threshold (MSST), and maximum fishing mortality threshold (MFMT)**. MSST and MFMT are benchmarks used by fishery managers to indicate if a fishery is overfished and if overfishing is occurring, respectively (see box for definitions). When the rate of mortality on a stock caused by fishing activities exceeds MFMT, **overfishing** is occurring. When the stock biomass is below MSST, the stock is considered **overfished**.

Definitions

MSST. The biomass level below which a stock is considered overfished.

MFMT. The maximum level of fishing mortality that a stock or complex can withstand, while still producing MSY on a continuing basis. Fishing above this level results in overfishing.

In the past for snapper grouper species, the Council has specified either numeric values, proxies, or formulas for the four reference points described above. A recent stock assessment of golden tilefish has provided numerical values for the benchmarks. The Council is proposing the following changes based on the golden tilefish assessment:

- Biomass-based management reference points for the golden tilefish stock based on the best available scientific information;
- OY redefinition for the golden tilefish stock to be more consistent with the National Standard Guidelines related to that parameter; and
- MSST redefinition for the golden tilefish stock at a level that establishes a more appropriate difference between an overfished condition and the rebuilding goal.

In this amendment, the Council is also considering redefining MSST for the golden tilefish stock to a level that establishes a more appropriate difference between an overfished condition and the rebuilding goal. The MSST definition established in the Snapper Grouper FMP Amendment 11 sets MSST to at least one half of spawning stock biomass at the maximum sustainable yield (SSB_{MSY}), but allows for it to be greater than this value if natural mortality (M) is suitably low. If $(1-M)$ is less than or equal to 0.5, then $MSST = (1-M) * B_{MSY}$. However, M is very low (0.08) for golden tilefish. Therefore, using this formula, MSST would be very close to SSB_{MSY} . The closer MSST is to B_{MSY} , the shorter the time needed to rebuild the stock to B_{MSY} if the fishing mortality (F) is constrained below MFMT. However, because MSST would be so close to B_{MSY} , natural variation in recruitment could cause stock biomass to frequently alternate between an overfished and rebuilt condition, even if the fishing mortality rate applied to the stock was within the limits specified by the MFMT. Therefore, the Council is considering alternatives for MSST that would eliminate the potential administrative complications associated with setting MSST close to B_{MSY} by establishing a larger buffer between what is considered to be an overfished and rebuilt condition.

For more detail on the Council's reference points...

The Secretary of Commerce approved the numerical MSY, MSST, and MFMT estimates proposed in Snapper Grouper Amendments 11 (SAFMC 1998d) and 12 (SAFMC 2000a) for black sea bass and red porgy, respectively. OY was estimated for snowy grouper, black sea bass, and red porgy in Amendment 15A. Amendment 11 specified values and or formulas for these reference points for all snapper grouper species. The Snapper Grouper FMP currently defines MSY and OY for all other snapper grouper stocks as the yield produced by fishing at fixed exploitation rates (F_{MSY} and F_{OY} , respectively), which are designed to remove a constant fraction of the stocks each year. When F_{MSY} has not been estimated by a stock assessment, it is approximated as the fishing mortality rate that would reduce the long-term average level of spawning per recruit (static SPR) to 30-40% of the long-term average that would be expected in the absence of fishing. Similarly, F_{OY} is estimated as a rate of fishing that would reduce the long-term average level of static SPR to 40-50% of that which would be expected for a virgin stock. The MSST of snapper grouper stocks, except snowy grouper, is defined as one-half of the stock biomass at MSY (B_{MSY}), or the product of that biomass and one minus the natural mortality rate, whichever is greater. This definition is designed to specify a higher overfished threshold for less productive stocks relative to those stocks that are highly productive and capable of increasing in biomass more quickly. However, when the estimate of the natural mortality rate is small (i.e. snowy grouper and golden tilefish), the overfished threshold can be very close to the rebuilding goal of B_{MSY} . The Council currently defines MFMT as F_{MSY} or fishing mortality that will produce the MSY. The Council defined MSST as $0.75 \times B_{MSY}$ in Amendment 15A (SAFMC 2007b) for all species.

Allocations

The Council is considering setting the allocation between the commercial and recreational sectors for snowy grouper and red porgy. Amendment 15A specified rebuilding trajectories (essentially a total catch declared each year) for snowy grouper and red porgy as recent assessments have declared both stocks overfished. The specification of an allocation for a stock is needed to divide the future allowable harvest as designated in the rebuilding trajectory between the commercial and recreational sectors. Without the designation of an allocation, the Council is unable to identify the allowable catch in the recreational sector. The Council's objective when setting an allocation is to ensure the adverse socioeconomic impacts of ending overfishing and rebuilding overfished stocks are fairly and equitable distributed. The Council is considering basing interim allocations on the historical commercial and recreational landings.

Modifications to the Sales Provisions

Currently, fishermen with the proper state-issued licenses may sell snapper grouper species captured in an amount not exceeding applicable bag limits without the Federal Commercial Snapper Grouper Federal Permit. The Council is considering modifying the sales provisions in the South Atlantic for socio-economic, data quality, and enforcement reasons.

All landings that are sold are considered commercial harvest and count towards a species' commercial quota, independent of whether or not the fisherman has the federal permit. As bag limits for snapper grouper species are attributed to a person per day and the universe of recreational fishermen is relatively large, the Council is concerned that harvest from trips where fishermen are limited to the bag limit may constitute a significant portion of the commercial quota. The importance of this harvest becomes more significant as regulations for snapper grouper species have become increasingly restrictive over the years and more restrictions are anticipated for some species. For example, the Council implemented a commercial quota for black sea bass below historic harvest through Amendment 13C. Amendment 16, under development, proposes quotas for gag and vermillion snapper below historic harvest. The Council believes that removing the economic incentive to target fish by those without the Federal Commercial permit may avoid an early closure to the commercial fishery and possibly aid in the recovery of stocks currently undergoing overfishing and/or in an overfished state.

The Council concluded that implementation of this measure should improve the accuracy of data by eliminating harvest from a single trip counting towards both the commercial quota and recreational allocation. This practice, typically called "double counting" occurs when catches are reported through the Marine Recreational Fisheries Statistics Survey (MRFSS) and through commercial snapper grouper dealers.

The Council developed this action based on a recommendation from its Law Enforcement Advisory Panel (LEAP). At its October 2005, the LEAP made a motion to require the appropriate Federal Commercial Permit to sell any species under the Council's jurisdiction. The LEAP reported that such a measure would aid law enforcement as it would reduce the universe of people that officials have to enforce for sale. In addition, in order to sell fish caught in the Gulf of Mexico and in state waters off the east coast of Florida, a Federal Commercial Snapper Grouper Permit is required. Therefore, implementation of compatible regulations between jurisdictions would likely help improve the enforceability of sale of seafood products in the region.

Monitor and Assess Bycatch in the Snapper Grouper Fishery

A significant number of fish in the snapper grouper fishery management unit (FMU) are released by fishermen; Table 1-2 presents the average number of three heavily-exploited species released per year. Bycatch, or "fish which are harvested in a fishery, but which are not sold or kept for personal use", represents a significant portion of mortality for

many species in the snapper grouper fishery management unit. Bycatch has biological, social, and economic negative repercussions on the snapper grouper fishery. Biologically, bycatch may constitute a significant portion of the mortality rate for many species and cause ecological changes to the environment. If current practices do not adequately capture the true magnitude of bycatch, the quality of stock assessments may suffer, producing inadequate management, stock collapse or delayed recovery, and result in reduced or foregone economic and social benefits.

Table 1-2. The average number of fish released by commercial and recreational fishermen per year during 2001-2005 for three species in the South Atlantic and the release mortality associated with each.

	Commercial ¹	Recreational	Estimated Release Mortality (Comm./Rec.) ²
Black sea bass	50,283	2,004,710	15/25%
Red porgy	41,838	36,782	8/35%
Vermilion snapper	38,319	138,537	25/40%

¹Only 20% of fishermen are required to report discards each year. Values in Table 1-2 are expanded from 20% coverage to the entire fleet (100%).

²Release mortalities for black sea bass, red porgy, and vermilion snapper are from SEDAR 2 (2003b), SEDAR 1 (2002), and SEDAR 2 (2003a), respectively.

The first step in reducing and minimizing bycatch is to characterize the magnitude and species composition of animals that are discarded. The U.S. Congress established Section 303(a)(11) of the Magnuson-Stevens Act, which states that any FMP prepared by any Council, or by the Secretary of Commerce, with respect to any fishery, shall “establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery...”. To support this mandate, the National Standard Guidelines call for development of a database for each fishery to house bycatch and bycatch mortality information (63 FR 24212).

NOAA Fisheries defines a standard bycatch reporting methodology as a description of both the data collection and analyses used to estimate bycatch in a fishery. Development of a standardized reporting methodology will ensure the collection and distribution of timely, reliable, and standardized bycatch data to the public and policy decision-makers. Currently there is no such methodology fully implemented for the southeast snapper grouper fishery due to a lack of adequate funding. During the 1990s, there were a number of ad hoc studies to estimate bycatch in the South Atlantic. The Council is seeking to implement a long-term, standardized monitoring and assessment program as part of this snapper grouper amendment.

Sea Turtle and Smalltooth Sawfish Incidental Take Impact Minimization Measures

The Endangered Species Act (ESA) requires NOAA Fisheries to consult with the appropriate administrative agency (itself for marine species) when proposing an action

that “may affect” critical habitat or threatened or endangered species. Consultations are necessary to determine the potential impacts of the proposed action. Formal consultation, resulting in a biological opinion, are required when a proposed action is deemed “likely to adversely affect” threatened or endangered species, or adversely modify critical habitat (NMFS 2006).

On June 7, 2006, NOAA Fisheries Service completed a formal Section 7 consultation under the ESA (see Section 8.3 for further discussion of the ESA) on the South Atlantic Snapper Grouper fishery. The resulting biological opinion evaluated the effects of all fishing activities authorized under Snapper Grouper Fishery Management Plan and Amendment 13C on threatened or endangered species. The opinion stated that the vertical line and bottom longline gear used in the fishery were likely to adversely affect threatened or endangered sea turtles and smalltooth sawfish, via entanglement, hooking, and/or forced submergence. The opinion concluded these impacts would not jeopardize the continued existence of any of these species. The incidental take statement, outlining the anticipated amount and extent of incidental take, estimates 39 green, four hawksbill, 19 Kemp's ridley, 25 leatherback, and 202 loggerhead sea turtles, and eight smalltooth sawfish may be incidentally taken over any three year period by snapper grouper fishing (NMFS 2006).

One of the terms and conditions to implement a reasonable and prudent measure established under the biological opinion, requires NOAA Fisheries, in cooperation with the SAFMC, to 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 fisheries. Research conducted over 3 years in the Northeast Distant (NED) Closed Area, provided significant new information, techniques, and equipment to address sea turtles bycatch resulting in the current sea turtle release requirements in the Highly Migratory Species (HMS) Pelagic longline fishery. Similar release gear and protocol requirements have subsequently been adopted in HMS Shark Bottom longline and Gulf of Mexico Reef Fish Fisheries. The Council is considering alternatives in this amendment that would implement similar equipment, protocol, and guidelines to help minimize the impacts on sea turtles and smalltooth sawfish as required under the biological opinion.

Permit Renewal and Transferability

Currently, South Atlantic Federal commercial snapper grouper permits must be renewed within 60 days of the date they expire. The Council believes the 60-day requirement is overly restrictive (many other fisheries provide fishermen one year to renew their permits) and presents an unnecessary hardship to snapper grouper participants, some of which have reportedly lost their permits because personal hardships prevented them from complying with this short renewal timeframe. As a result, the Council is considering, in this amendment, extending the Federal commercial snapper grouper permit renewal deadline.

Additionally, the snapper grouper limited access program requires new entrants to purchase two Federal commercial snapper grouper permits in exchange for one permit. This requirement also applies to individual permit holders who want to incorporate their business. Some permit holders would like to incorporate their business and transfer their Federal commercial snapper grouper permits to new corporations without the need to buy a second permit. There are significant tax and liability benefits from doing so, including: limited liability to the shareholder for the corporation's debt; the corporation pays taxes separate from its owners; and a business owner who works in his/her fishing operation as an employee may be eligible for reimbursement or deduction of many types of expenses, including life and health insurance. As a result, the Council is considering, in this amendment, an action that would promote family-owned fishing businesses and extend tax and liability benefits to fishermen by allowing them to transfer individual Federal commercial snapper grouper permits to family-owned corporations on a one-for-one basis.

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 Fishery Management Plan (SAFMC 1983) included size limits for black sea bass (8"). Trawl gear primarily targeting vermilion snapper were 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" recreational vermilion snapper; 12" commercial vermilion snapper; 12" 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" size limit and 5 fish bag limit and commercial closure during March and April; black sea bass size limit increased to 10" 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, 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 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% 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 1-3.

Table 1-3. 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.
Regulatory Amendment #2 (1988a)	03/30/89	PR: 53 FR 32412 FR: 54 FR 8342	-Established 2 artificial reefs off Ft. Pierce, FL as SMZs.
Amendment #1 (1988b)	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.
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 (1990a)	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
Amendment #3 (1990b)	01/31/91	PR: 55 FR 39023 FR: 56 FR 2443	-Established management program for wreckfish: Added to FMU*; defined OY and overfishing; required permit to fish for, land or sell; collect data; established control date 03/28/90; fishing year beginning April 16*; process to set annual quota, with initial quota of 2 million lbs*; 10,000 lb. trip limit*; spawning season closure Jan 15-Apr 15. -Add wreckfish to the FMU; -Required permit to fish for wreckfish; -Required catch and effort reports from selected, permitted vessels; -Established a fishing year for wreckfish starting April 16; -Established 10,000 lb. trip limit; -Established a spawning season closure for wreckfish from January 15 to April 15; -Established a wreckfish quota and provisions for

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.
			closure of wreckfish fishery; -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.
Amendment #4 (1991a)	01/01/92	PR: 56 FR 29922 FR: 56 FR 56016	<ul style="list-style-type: none"> -Prohibited gear: fish traps except bsb 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. -established rebuilding timeframe: red snapper and groupers ≤ 15 years (year 1 = 1991); other snappers, greater amberjack, bsb, red porgy ≤ 10 years (year 1 = 1991) -Permit, gear, and vessel id requirements specified for bsb 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 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 -commercial permit regulations established

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 (1991b)	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
Regulatory Amendment #4 (1992a)	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 (1992b)	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 <i>Oculina</i> Experimental Closed Area -data collection needs specified for evaluation of possible future IFQ system
Amendment #7 (1994a)	01/23/95	PR: 59 FR 47833 FR: 59 FR 66270	-12" FL – hogfish -16" limit – 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 (1994b)	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	<ul style="list-style-type: none"> -established program to limit initial eligibility for s-g 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 \geq 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 (1998a)	01/29/99	PR: 63 FR 43656 FR: 63 FR 71793	-Established 10 SMZs at artificial reefs off South Carolina.
Amendment #9 (1998b)	2/24/99	PR: 63 FR 63276 FR: 64 FR 3624	<ul style="list-style-type: none"> -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. -bsb: 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 tomate 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 (1998b) resubmitted	10/13/00	PR: 63 FR 63276 FR: 65 FR 55203	-Commercial trip limit for greater amberjack
Emergency Interim Rule	09/08/99, expired	64 FR 48324 and	-Prohibited harvest or possession of red porgy.

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.
	08/28/00	65 FR 10040	
Amendment #10 (1998c)	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.
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 = $F > F_{40\%}$ static SPR; all other species: = $F > F_{30\%}$ static SPR Approved definitions for overfished and overfishing. $MSST = [(1-M) \text{ or } 0.5 \text{ whichever is greater}] * B_{msy}$. $MFMT = F_{msy}$
Amendment #12 (2000a)	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.
Regulatory Amendment #8 (2000b)	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
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 <i>Oculina</i> 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

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.
			fishery for snapper grouper species (excluding Wreckfish).
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.
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
Amendment #14 (2007a)	TBD	PR: 73 FR 32281	-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. -Sent to NMFS 7/18/07
Amendment #15A (2007b)	3/14/08	Notice of Agency Action: 73 FR 14942	-Establish rebuilding plans and SFA parameters for snowy grouper, black sea bass, and red porgy.
Amendment #15B (2007b)	TBD	TBD	-Update management reference points for the golden tilefish; Define allocations for snowy grouper and red porgy; Modify sales restrictions; Establish a method to monitor and assess bycatch in the snapper grouper fishery; Implement measures to minimize the impact of incidental take on sea turtles and smalltooth sawfish; Modify permit renewal and transferability requirements.
Amendment #16 (2008)	TBD	TBD	-End overfishing of gag and vermilion snapper.
Amendment #17 (2009)	TBD	TBD	-Establish ACLs and accountability measures for species experiencing overfishing, end overfishing and rebuild red snapper, extend management range of some snapper grouper species; regional quotas for snowy grouper; and reduce fishing mortality in the deep water, recreational fishery.

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 (SAFMC 1997).

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.

2 Alternatives

Section 2.1 outlines the 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 over a number of years, by numerous sources, and through multiple processes, including the scoping process conducted for Amendments 13 and 13B, public hearings and/or comments on Amendments 13, 13B, and 13C, 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.

Each alternative retained for analysis is designed to accomplish one of the following general categories of actions:

- Define allocations for snowy grouper and red porgy;
- Update management reference points for golden tilefish;
- Modify sale restrictions;
- Implement a plan to monitor and assess bycatch;
- Implement measures to minimize the impacts of incidental take on sea turtles and smalltooth sawfish; and
- Modify permit renewal and transferability requirements.

2.1 Description of Alternatives

2.1.1 Snowy Grouper Allocation Alternatives

Alternative 1 (no action). Do not define allocations for snowy grouper.

Alternative 2 (preferred). Define allocations for snowy grouper based upon landings from the ALS, MRFSS, and headboat databases. The allocations would be based on landings from the years 1986-2005. The allocations would be 95% commercial and 5% recreational. Beginning in 2009, the commercial quota would be 82,900 lbs gutted weight and the recreational allocation would be 523 fish (4,400 lbs gutted weight). The commercial quota and recreational allocation specified for 2009 would remain in effect beyond 2009 until modified.

Alternative 3. Define allocations for snowy grouper based upon landings from the ALS, MRFSS, and headboat databases. The allocations would be based on landings from the years 1992-2005. The allocations would be 93% commercial and 7% recreational. Beginning in 2009, the commercial quota would be 81,200 lbs gutted weight and the recreational allocation would be 6,100 lbs gutted weight. The commercial quota and recreational allocation specified for 2009 would remain in effect beyond 2009 until modified.

Alternative 4. Define allocations for snowy grouper based upon landings from the ALS, MRFSS, and headboat databases. The allocations would be based upon landings from 2005. Define allocations for snowy grouper as 88% commercial and 12% recreational. Beginning in 2009, the commercial quota would be 76,800 lbs gutted weight and the recreational allocation would be 10,500 lbs gutted weight. The commercial quota and recreational allocation specified for 2009 would remain in effect beyond 2009 until modified.

2.1.2 Red Porgy Allocation Alternatives

Alternative 1 (no action). Do not define allocations for red porgy.

Alternative 2. Define allocations for red porgy based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 1986-2005. The allocation would be 68% commercial and 32% recreational. The commercial quota in 2009 and 2010 would be 258,500 lbs gutted weight each year. The recreational allocation in 2009 and 2010 would be 121,600 lbs gutted weight each year. The commercial quota and recreational allocation specified for 2010 would remain in effect beyond 2010 until modified.

Alternative 3. Define allocations for red porgy based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 1999-2005. The allocation would be 44% commercial and 56% recreational. The commercial quota in 2009 and 2010 would be 167,200 lbs gutted weight each year. The recreational allocation in 2009 and 2010 would be 212,900 lbs gutted weight each year. The commercial quota and recreational allocation specified for 2010 would remain in effect beyond 2010 until modified.

Alternative 4 (preferred). Define allocations for red porgy as 50% commercial and 50% recreational. The commercial quota in 2009 and 2010 would be 190,050 lbs gutted weight each year. The recreational allocation in 2009 and 2010 would be 190,050 lbs gutted weight each year. The commercial quota and recreational allocation specified for 2010 would remain in effect beyond 2010 until modified.

2.1.3 Golden Tilefish Management Reference Point Alternatives

Table 2-1. MSY alternatives under consideration for golden tilefish.

Alternatives	MSY equation	F _{MSY} equals	MSY value
Alternative 1 (no action)	The yield produced by F _{MSY} . F _{30%SPR} is used as the F _{MSY} proxy for all stocks.	0.38*	Not specified
Alternative 2 (preferred)	MSY equals the yield produced by F _{MSY} . MSY and F _{MSY} are defined by the most recent SEDAR.	0.043**	336,425 lbs whole weight

*Source: Powers 1999 **Source: SEDAR 4 (2004)

Table 2-2. OY alternatives under consideration for golden tilefish.

Alternatives	OY equation	F _{OY} equals	OY value
Alternative 1 (no action)	OY equals the yield produced by F _{OY} . F _{40%SPR} is used as the F _{OY} proxy.	0.26*	not specified
Alternative 2	OY equals the yield produced by F _{OY} . Note: If a stock is overfished, F _{OY} equals the fishing mortality rate specified by the rebuilding plan designed to rebuild the stock to SSB _{MSY} within the approved schedule.	(65%)(F _{MSY})	314,894 lbs whole weight**
Alternative 3 (preferred)	After the stock is rebuilt, F _{OY} = a fraction of F _{MSY} . Golden tilefish is not overfished.	(75%)(F _{MSY})	326,554 lbs whole weight**
Alternative 4		(85%)(F _{MSY})	332,835 lbs whole weight**

*Source: Powers 1999 **Calculated based on Council's preferred MSY value in which F_{MSY} equals 0.043 for Alternatives 2-4 (SEDAR 4 2004)

Table 2-3. MSST alternatives under consideration for golden tilefish.

Alternatives	MSST equation	M equals	MSST value
Alternative 1 (no action)	MSST equals SSB _{MSY} ((1-M) or 0.5, whichever is greater)	0.08*	1,783,650 lbs whole weight**
Alternative 2	MSST equals SSB _{MSY} (0.5)	n/a	969,375 lbs whole weight**
Alternative 3 (preferred)	MSST equals SSB _{MSY} (0.75)	n/a	1,454,063 lbs whole weight**

*Source: Recommendation from SEFSC based on the results from SEDAR 4 (2004). **Source: Calculated based on Council's preferred MSY value in which SSB_{MSY} equals 1,938,750 lbs. whole weight (SEDAR 4 2004).

Table 2-4. Criteria used to determine the overfished and overfishing status of golden tilefish from SEDAR 4 (2004). Actions were taken in Amendment 13C to end overfishing of golden tilefish in 2007.

DETERMINATION	SSB _{CURR} (2003)	MSST (preferred)	F _{CURR} (2002)	MFMT	STATUS
OVERFISHED?	1,818,810 lbs	1,454,063 lbs			Not overfished (SSB _{CURR} /MSST = 1.25)
OVERFISHING?			0.066	0.043*	Overfishing (F _{CURR} /MFMT = 1.53)**
*Amendment 15B is not exploring alternatives for MFMT. F _{MSY} is used as a proxy for MFMT. All lbs are in whole weight. Note: This is not an action item. **Actions were taken in Amendment 13C to end overfishing in 2006.					

2.1.4 Modifications to the Sales Provisions

Alternative 1 (no action). Allow species in the snapper grouper management unit taken from the South Atlantic EEZ, up to the allowed bag limit, to be sold to a licensed dealer if the seller possesses a state-issued license to sell fish.

Alternative 2 (preferred). A South Atlantic Snapper Grouper harvested or possessed in the EEZ onboard a vessel that does not have a valid Federal Commercial Permit for the South Atlantic Snapper Grouper, or a South Atlantic Snapper Grouper possessed under the bag limits, may not be sold or purchased. A person onboard a vessel with both a Federal For-Hire Vessel Permit and a Federal Commercial Snapper Grouper Permit is considered to be fishing as for-hire when fishing as described in 50 CFR §622.2. Snapper Grouper harvested or possessed on such a trip may not be sold or purchased, regardless of where it is harvested.

50 CFR §622.2 specifies that a charter vessel means a vessel less than 100 gross tons (90.8 mt) that is subject to the requirements of the United States Coast Guard (USCG) to carry six or fewer passengers for hire and that engages in charter fishing at any time during the calendar year. A charter vessel with a commercial permit, as required under Sec. 622.4(a)(2), is considered to be operating as a charter vessel when it carries a passenger who pays a fee or when there are more than three persons aboard, including operator and crew. However, a charter vessel that has a charter vessel permit for Gulf reef fish, a commercial vessel permit for Gulf reef fish, and a valid Certificate of Inspection (COI) issued by the USCG to carry passengers for hire will not be considered to be operating as a charter vessel provided--

- (1) It is not carrying a passenger who pays a fee; and
- (2) When underway for more than 12 hours, that vessel meets, but does not exceed the minimum manning requirements outlined in its COI for vessels underway over 12 hours; or when underway for not more than 12 hours, that vessel meets the minimum manning requirements outlined in its COI for vessels underway for not more than 12-hours (if any), and does not exceed the minimum manning requirements outlined in its COI for vessels that are underway for more than 12 hours.

50 CFR §622.2 specifies that a headboat means a vessel that holds a valid Certificate of Inspection (COI) issued by the USCG to carry more than six passengers for hire.

(1) A headboat with a commercial vessel permit, as required under Sec. 622.4(a)(2), is considered to be operating as a headboat when it carries a passenger who pays a fee or--

(i) In the case of persons aboard fishing for or possessing South Atlantic snapper grouper, when there are more persons aboard than the number of crew specified in the vessel's COI.

Alternative 3. Require a Federal charter/headboat snapper grouper permit or Federal commercial snapper grouper permit to sell snapper grouper species from the South Atlantic EEZ up to the bag limit of snapper grouper species.

2.1.5 Monitor and Assess Bycatch

Alternative 1 (no action). Utilize existing information to estimate and characterize bycatch.

Alternative 2 (preferred). Adopt the Atlantic Coastal Cooperative Statistics Program (ACCSP) Release, Discard and Protected Species Module as the preferred methodology. Until this module is fully funded, require the use of a variety of sources to assess and monitor bycatch including: observer coverage on vessels; logbooks; electronic logbook; video monitoring; MRFSS; state cooperation; and grant funded projects. After the ACCSP Bycatch Module is implemented, continue the use of technologies to augment and verify observer data. Require that commercial vessels with a snapper grouper permit, for-hire vessels with a for-hire permit, and private recreational vessels if fishing for snapper grouper species in the EEZ, if selected, shall use observer coverage, logbooks, electronic logbooks, video monitoring, or any other method deemed necessary to measure bycatch by NOAA Fisheries.

Alternative 3. Adopt the Atlantic Coastal Cooperative Statistics Program Release, Discard and Protected Species Module as the preferred methodology. Require that commercial vessels with a snapper grouper permit, for-hire vessels with a for-hire permit, and private recreational vessels if fishing for snapper grouper species in the EEZ, if selected, shall use observer coverage, logbooks, electronic logbooks, video monitoring, or any other method deemed necessary to measure bycatch by NOAA Fisheries.

Alternative 4. Require the use of a variety of sources to assess and monitor bycatch including: observer coverage on vessels; logbooks; electronic logbook; video monitoring; MRFSS; state cooperation; and grant funded projects. Require that commercial vessels with a snapper grouper permit, for-hire vessels with a for-hire permit, and private recreational vessels if fishing for snapper grouper species in the EEZ, if selected, shall use observer coverage, logbooks, electronic logbooks, video monitoring, or any other method deemed necessary to measure bycatch by NOAA Fisheries.

2.1.6 Sea Turtle and Smalltooth Sawfish Incidental Take Impact Minimization Measures

Alternative 1 (no action). Do not implement additional management measures to minimize the impacts of incidental take on sea turtles or smalltooth sawfish caught in the South Atlantic snapper grouper fishery.

Alternative 2 (preferred). Require all vessels with commercial and for-hire snapper grouper vessel permits, carrying hook-and-line gear onboard, to: (1) immediately release incidentally caught smalltooth sawfish by following the latest NOAA Fisheries Service approved guidance on smalltooth sawfish release techniques (see Appendix G); (2) have a copy of the document, provided by NOAA Fisheries Service, titled “Careful Release Protocols for Sea Turtle Release with Minimal Injury” (Appendix E) posted inside the wheelhouse, or within a waterproof case in a readily accessible area; (3) post the NOAA Fisheries Service provided sea turtle handling and release guideline placard (see Appendix F) inside the wheelhouse, or in an easily viewable area if there is no wheelhouse; (4) tend to incidentally caught sea turtle in a manner consistent with the protocols specified in 50 CFR 635.21(c)(5)(ii) (see Appendix D). These vessels must also carry the following sea turtle release equipment:

- a long-handled line clipper or cutter,
- a long-handled dehooker for ingested hooks,
- a long-handled dehooker for external hooks,
- a long-handled device to pull an “inverted V”,
- a dipnet,
- a tire (or other comparable cushioned, elevated surface that immobilizes boated sea turtles),
- a short-handled dehooker for ingested hooks,
- a short-handled dehooker for external hooks,
- long-nose or needle-nose pliers,
- bolt cutters,
- monofilament line cutters, and
- at least two types of mouth openers/mouth gags.

This equipment must meet the specifications described in 50 CFR 635.21(c)(5)(i)(A-L) (see Appendix D) with the following modification: any other comparable, cushioned, elevated surface that allows boated sea turtles to be immobilized, may be used as an alternative to the requirement in 50 CFR 635.21(c)(5)(i)(F) to have a tire on board.

Alternative 3. Require all vessels with commercial and for-hire snapper grouper vessel permits, carrying hook-and-line gear onboard, to: (1) immediately release incidentally caught smalltooth sawfish by following the latest NOAA Fisheries Service approved guidance on smalltooth sawfish release techniques (see Appendix G); (2) have a copy of the NOAA Fisheries Service provided document titled “Careful Release Protocols for Sea Turtle Release with Minimal Injury” (Appendix E) posted inside the wheelhouse, or within a waterproof case in an readily accessible area; (3) post the NOAA Fisheries Service provided sea turtle handling and release guideline placard (see Appendix F) inside the wheelhouse, or in an easily viewable area if there is no wheelhouse; (4) tend to incidentally caught sea turtle in a manner consistent with the protocols specified in 50 CFR 635.21(c)(5)(ii) (see Appendix D). Depending on the vessel’s freeboard height, the following sea turtle release equipment would be required:

For vessels with a freeboard height of **four feet or less**:

- a dipnet,
- a tire (or other comparable cushioned, elevated surface that immobilizes boated sea turtles),
- a short-handled dehooker,
- long-nose or needle-nose pliers,
- bolt cutters,
- monofilament line cutters, and
- at least two types of mouth openers/mouth gags.

This equipment must meet the specifications described in 50 CFR 635.21(c)(5)(i)(E-L) with the following modifications: the dipnet handle can be of variable length, only one NOAA Fisheries Service approved short-handled dehooker is required (i.e., 50 CFR 635.21(c)(5)(i)(G or H)); any other comparable, cushioned, elevated surface that allows boated sea turtles to be immobilized, may be used as an alternative to the requirement in 50 CFR 635.21(c)(5)(i)(F) to have a tire on board.

For vessels with a freeboard height of **greater than four feet**:

- a dipnet,
- a tire (or other comparable cushioned, elevated surface that immobilizes boated sea turtles),
- a long-handled line clipper,
- a long-handled device for pulling an inverted “V”,
- a short-handled dehooker
- a long-handled dehooker,
- long-nose or needle-nose pliers,
- bolt cutters,
- monofilament line cutters, and
- at least two types of mouth openers/mouth gags.

This equipment must meet the specifications described in 50 CFR 635.21(c)(5)(i) (A-L) with the following modifications: only one NOAA Fisheries Service approved long-

handled dehooker (50 CFR 635.21(c)(5)(i)(B or C)) and one NOAA Fisheries Service approved short-handled dehooker (50 CFR 635.21(c)(5)(i)(G or H)) are required; any other comparable, cushioned, elevated surface that allows boated sea turtles to be immobilized, may be used as an alternative to the requirement in 50 CFR 635.21(c)(5)(i)(F) to have a tire on board.

Table 2-5. Comparison of sea turtle release gear requirements under Alternatives 2 and 3. Gear descriptions based on 50 CFR 635.21(c)(5)(A-L) (Appendix D).

Sea Turtle Release Gear	Alternative 2 (preferred)	Alternative 3	
		< 4 feet freeboard	>4 feet freeboard
Long-handled line clippers ¹	X		X
Dipnet	X ¹	X ²	X ¹
Long-handled dehooker for ingested hooks ^{1,3}	X		X ⁵
Long-handled dehooker for external hooks ^{1,3}	X ⁴		X ⁵
Long-handled device to pull an inverted “V” ¹	X		X
Tire (standard passenger sized) ⁶	X	X	X
Short-handled dehooker for ingested hooks ⁸	X	X ⁷	X ⁷
Short-handled dehooker for external hooks ⁸	X ⁴	X ⁷	X ⁷
Long-nose or needle-nose pliers	X	X	X
Bolt cutters	X	X	X
Monofilament line cutters	X	X	X
Mouth openers/mouth gags	X	X	X

¹ handle length 6 feet or 150% of freeboard – whichever is greater.

² handle length optional.

³ may substitute short-handle dehooker if used with appropriate length handle extender.

⁴ may substitute ingested dehooker if the dehooker also meets the criteria for an external dehooker.

⁵ only one NOAA Fisheries Service approved long-handled dehooker is required, may choose either internal, external or one that can act as both.

⁶ may use other comparable, cushioned, elevated surface.

⁷ only one NOAA Fisheries Service approved short-handled dehooker is required, may choose either internal, external or one that can act as both.

⁸ handle length should be 16-24 inches

2.1.7 Permit Renewal

Alternative 1 (no action). Retain the requirement that the Regional Administrator must receive an application for renewal within 60 days of the commercial permit's expiration date.

Alternative 2. Extend the renewal period on commercial snapper grouper permits to 6 months after the permit expires.

Alternative 3 (preferred). Extend the renewal period on commercial snapper grouper permits to one year after the permit expires.

2.1.8 Permit Transferability

Permit Transferability Alternative 1 (no action). A holder of an individual limited access transferable vessel permit must buy an additional individual limited access transferable vessel permit and exchange the two individual permits for one new permit in order to incorporate their business operation and change the ownership of the permitted vessel.

The applicable sections of the current snapper grouper limited access transfer regulations at 50 C.F.R. 622.18(e) are stated below:

“(e) Transfers of permits. A snapper grouper limited access permit is valid only for the vessel and owner named on the permit. To change either the vessel or the owner, an application for transfer must be submitted to the RA. (1) Transferable permits. (i) An owner of a vessel with a transferable permit may request that the RA transfer the permit to another vessel owned by the same entity. (ii) A transferable permit may be transferred upon a change of ownership of a permitted vessel with such permit from one to another of the following: Husband, wife, son, daughter, brother, sister, mother, or father. . . (iv) Except as provided in paragraphs (e)(1)(i), (ii), and (iii) of this section, a person desiring to acquire a limited access, transferable permit for South Atlantic snapper grouper must obtain and exchange two such permits for one new permit.”

Permit Transferability Alternative 2 (preferred). Allow an individual to transfer his or her individual limited access transferable vessel permit to a corporation whose shares are all held by the individual or the individual and one or more of his or her immediate family members. Immediate family members include only the following: husband, wife, son, daughter, brother, sister, mother, or father. Such transfer may be done on a one to one permit transfer basis. At the time of permit renewal, the corporation must also submit to NOAA Fisheries Service a current annual report, which specifies all shareholders of the corporation.

Sub-Alternatives for Permit Transferability Alternative 2 that specifies various renewal/transfer consequences if the annual report to NOAA Fisheries Service includes shareholders not listed on original application.

Permit Sub-Alternative 2-A. Permit is renewed or transferred according to current regulations, regardless of whether new shareholders have been added to the family corporation as reflected in the annual report. Note: this would then treat family corporations no different than other corporations.

Permit Sub-Alternative 2-B. If the annual report shows a shareholder other than the shareholders listed in the original corporate documentation, the permit shall not be renewed or transferred.

Permit Sub-Alternative 2-C. If the annual report shows a shareholder other than the shareholders listed in the original corporate documentation, the permit shall not be renewed or transferred on a one to one permit basis; the corporation must obtain another limited access, transferable snapper grouper permit, and exchange those two such permits for one new permit.

Permit Sub-Alternative 2-D. If the annual report shows a shareholder other than the shareholders listed in the original corporate documentation, the permit shall not be renewed or transferred on a one to one permit basis; the corporation must obtain another limited access, transferable snapper grouper permit, and exchange those two such permits for one new permit or allow transfer back to an individual who is an immediate family member of the permit holder who originally transferred the vessel permit to the family corporation.

Permit Sub-Alternative 2-E (preferred). If the annual report shows a shareholder other than the shareholders listed in the original corporate documentation, the permit shall not be renewed unless such new shareholder is an immediate family member of the individual who originally transferred the vessel permit to the family corporation.

Table 2-6. Permit sub-alternatives.

Sub-Alternative	If the annual report includes shareholder not listed on original application...
2-A	permit may be renewed or not renewed according to the regulations, regardless of whether new shareholders have been added as reflected in the annual report.
2-B	permit shall not be renewed.
2-C	permit shall not be renewed, must do 2 for 1.
2-D	permit shall not be renewed, must do 2 for 1; BUT can transfer back to individual immediate family member of the original individual permit holder on 1 for 1 basis.
2-E (preferred)	permit shall not be renewed, unless new shareholder is an immediate family member of the original individual permit holder on 1 for 1 basis.

Permit Transferability Alternative 3. Repeal the 2 for 1 permit transfer provision as described at 50 C.F.R. 622.18(e)(1)(iv):

“(iv) Except as provided in paragraphs (e)(1)(i), (ii), and (iii) of this section, a person desiring to acquire a limited access, transferable permit for South Atlantic snapper grouper must obtain and exchange two such permits for one new permit.”

2.2 Comparison of Alternatives

2.2.1 Snowy Grouper Allocation Alternatives

Table 2-7. Summary of effects of allocation alternatives for snowy grouper.

	Biological Effects	Economic, Social, and Administrative Effects
Alternative 1 (no action). Do not specify allocations for snowy grouper.	No measurable differences	+
Alternative 2 (preferred). Define allocations based upon landings from ALS, MRFSS, and headboat data during 1986-2005 (95% comm./5% rec.)	No measurable differences	+
Alternative 3. Define allocations based upon landings from ALS, MRFSS, and headboat data during 1992-2005 (93% comm./7% rec.)	No measurable differences	+
Alternative 4. Define allocations based upon landings from ALS, MRFSS, and headboat data during 2005 (88% comm./12% rec.)	No measurable differences	-

Alternative 1 would not specify a commercial or recreational allocation for snowy grouper. If an allocation was not specified then it would not be possible to identify the allowable catch in the recreational sector. The commercial quota could be specified, however, as Amendment 13C used landings from 1999-2003 to establish the commercial quota (96% commercial/4% recreational).

Alternatives that allocate a greater portion of the harvest to the commercial sector could have a greater negative impact on habitat as longline gear is considered to do greater damage to hard bottom habitat than vertical hook and line gear (SAFMC 2007b). However, allocating a small percentage to the recreational sector may not be effective in reducing mortality since some snowy grouper will continue to be caught and killed when fishermen target co-occurring species.

Because of data and modeling gaps, quantitative assessment of the expected impacts of the allocation alternatives has not been attempted. Qualitatively, it is difficult to identify the best allocation alternative. No alternative to the status quo would benefit one sector while having no impact on the other sector. In fact, since each alternative to the status quo would increase the recreational snowy grouper allocation at the expense of the commercial sector, in all instances the recreational sector would be expected to gain economic benefits while the commercial sector would lose benefits. If it is believed that adverse effects are compounded the greater the deviation from status quo, large changes in the allocation from the status quo would not be recommended. As such, **Preferred Alternative 2 and Alternative 3** may be preferable to **Alternative 4** since they would result in only marginal changes in the allocation from status quo, 1 and 3 percentage points, respectively, whereas **Alternative 4** would impose an 8 percentage point change in the allocation.

Appropriate changes in social benefits to the respective sectors and associated industries and communities would be expected to accrue to each alternative in the direction of economic effects. Assuming prosecution of the recreational fishery mirrors that of the commercial fishery, changes in absolute magnitude would occur primarily on Florida fishermen and communities.

Any allocation would be accompanied with effects that cannot be quantified. If these unquantifiable effects are compounded as the magnitude of the allocation increases, substantially increased positive social impacts could accrue to the recreational sector as a result of **Alternative 4** relative to the other alternatives since the recreational allocation would be the largest. Allocation away from historical distributions is a particularly divisive issue in fisheries, regardless of the amount of quantitative justification the allocation may appear to have. This is particularly true when incomes and livelihoods become affected. While appropriate data on business failure/exit do not exist, anecdotal information points to the increasing difficulty for-hire businesses have remaining in fisheries in general due to increased fuel costs, decreasing dock space, fewer or more restrictive species options, and generally more restrictive management measures. Similar and additional pressures exist for commercial operators. While none of the allocation alternatives to the status quo would be neutral to either sector, lower overall adverse

social impacts to the affected sectors and associated industries and communities may be expected to accrue to those alternatives that result in the lowest allocation away any individual sector.

2.2.2 Red Porgy Allocation Alternatives

Table 2-8. Summary of effects of allocation alternatives for red porgy.

	Biological Effects	Economic, Social, and Administrative Effects
Alternative 1 (no action). Do not specify allocations for red porgy.	No measurable differences	+
Alternative 2. Define allocations based upon landings from ALS, MRFSS, and headboat data during 1986-2005 (68% comm./32% rec.)	No measurable differences	-
Alternative 3. Define allocations based upon landings from ALS, MRFSS, and headboat data during 1999-2005 (44% comm./56% rec.)	No measurable differences	-
Alternative 4 (preferred). Define allocations for red porgy as 50% commercial and 50% recreational.	No measurable differences	+

Alternative 1 would not specify a commercial or recreational allocation for red porgy. If an allocation was not specified then it would not be possible to identify the allowable catch in the recreational sector. The commercial quota could be specified, however, as Amendment 13C used landings from 2001-2003 to establish the commercial quota (49% commercial/51% recreational).

SEDAR 1 (2002) estimated higher release mortality rates for red porgy (35%) for the commercial sector than for recreational sector (8%) since red porgy have a broad depth range and commercial fishermen fish in deeper water than recreational fishermen. Therefore, with allocations higher than 48% to 50% commercial, the TAC may not adequately take into consideration the increased dead discards in the commercial sector associated with a higher release mortality rate.

Qualitatively, it is difficult to identify the best red porgy allocation alternative. None of the alternatives to the status quo would benefit one sector while having no adverse impact on the other sector. **Preferred Alternative 4** would establish an allocation closest to that of **Alternative 1** (49% commercial/51% recreational based on landings between 2001-2003), differing by only one percentage point, resulting in the least change from the status quo. **Alternative 2** would substantially increase the commercial allocation over status quo, by 19 percentage points, resulting in an increase in commercial revenues at the expense of recreational benefits. **Alternative 3** would decrease the commercial allocation by 15 percentage points over status quo, with the recreational sector expected to gain net benefits. From the perspective that unquantifiable adverse effects are compounded the greater the deviation from the status quo, large changes in the allocation from the status quo would not be recommended. As such, **Preferred Alternative 4** would be preferable to **Alternatives 2 and 3** since it would result in only a small change

in the allocation, while both **Alternatives 2 and 3** would impose large changes in current harvest allowances.

Appropriate changes in social benefits to the respective sectors and associated industries and communities would be expected to accrue to each alternative in the direction of economic effects. Assuming prosecution of the recreational fishery mirrors that of the commercial fishery, changes in absolute magnitude would occur primarily on North Carolina and South Carolina, whereas on a percentage basis, the greatest effects would accrue to the Georgia-Northeast Florida fishermen and communities. Any allocation would be accompanied with effects that cannot be quantified. If these unquantifiable effects are compounded as the magnitude of the allocation increases, substantially increased adverse social impacts could accrue to the recreational sector as a result of **Alternative 2** relative to the other alternatives since the allocation would be lower. Allocation away from historical distributions is a particularly divisive issue in fisheries, regardless of the amount of quantitative justification the allocation may appear to have. This is particularly true when incomes and livelihoods become affected. While appropriate data on business failure/exit do not exist, anecdotal information points to the increasing difficulty for-hire businesses have remaining in fisheries in general due to increased fuel costs, decreasing dock space, fewer or more restrictive species options, and generally more restrictive management measures. Similar and additional pressures exist for commercial operators such that **Alternative 3** could be expected to have serious adverse economic and social consequences on the commercial sector and associated industries. **Preferred Alternative 4**, while not neutral with regards to current harvest ratios, would result in the smallest change relative to current harvests and, as such, would be expected to have the smallest adverse social impact. While none of the allocation alternatives to the status quo would be neutral to either sector, lower overall adverse social impacts to the affected sectors and associated industries and communities may be expected to accrue to those alternatives that result in the lowest allocation away any individual sector.

2.2.3 Golden Tilefish Management Reference Point Alternatives

There are no direct effects from redefining and/or updating MSY, OY, and MSST because these parameters simply provide fishery managers with targets and thresholds that will be used to assess the status and performance of the fishery. However, these management reference points indirectly benefit the biological and ecological environments by influencing the development of fishery management measures, which directly affect golden tilefish and other species. Tables 2-9 – 2-11 summarize and compare the effects expected from each alternative.

Table 2-9. Summary of effects of MSY alternatives under consideration for golden tilefish.

	Biological Effects	Economic, Social, and Administrative Effects
Alternative 1 (no action). Yield from F_{MSY} . (proxy of $F_{30\%SPR}$)	-	-
Alternative 2 (preferred). F_{MSY} as defined by SEDAR.	+	+

Table 2-10. Summary of effects of OY alternatives under consideration for golden tilefish.

	Biological Effects	Economic, Social, and Administrative Effects
Alternative 1 (no action). Yield from F_{OY} (proxy of $F_{40\%SPR}$)	-	-
Alternative 2: Yield from F_{OY} . $F_{OY}=(65\%)(F_{MSY})$	+++	+
Alternative 3 (preferred): Yield from F_{OY} . $F_{OY}=(75\%)(F_{MSY})$	++	++
Alternative 4: Yield from F_{OY} . $F_{OY}=(85\%)(F_{MSY})$	+	+

Table 2-11. Summary of effects of MSST alternatives under consideration for golden tilefish.

	Biological Effects	Economic, Social, and Administrative Effects
Alternative 1 (no action). $MSST=SSB_{MSY}((1-M) \text{ or } 0.5, \text{ whichever greater})$	+	-
Alternative 2. $MSST=SSB_{MSY}(0.5)$	-	-
Alternative 3 (preferred). $MSST=SSB_{MSY}(0.75)$	Intermediate	+

The Council’s **Preferred MSY Alternative 2** would improve the scientific basis for managing golden tilefish because it is a biomass-based estimate that utilizes the best available science. Although estimates are provided for F_{MSY} and F_{OY} , actual values for MSY and OY are not specified in alternatives describing the management reference points that would be retained if no action were taken through this amendment to redefine or update existing parameters. Since the MSY and OY in the action alternatives are based on a recent SEDAR stock assessment they would provide the best estimations of these parameters.

Managing the golden tilefish stock based on higher fishing mortality rates specified in MSY and OY **Alternative 1** rather than those derived from the recent stock assessment would likely result in indirect, adverse effects to the biological environment. Conversely, MSY and OY action alternatives would likely have beneficial effects as the F_{MSY} and F_{OY} estimates associated with these alternatives would support a lower fishing mortality rate relative to the status quo and would implement more precise estimations of management reference points based on a recent stock assessment. **OY Alternative 2** is the most precautionary OY alternative because it provides the largest buffer between MSY and OY. **Alternative 3** would reduce this safety margin, and **Alternative 4** is the least

conservative option of the action alternatives. While higher fishing mortality rates may benefit fishery participants, associated industries, and communities, in the short term by providing increased yields, they are expected to adversely affect the socioeconomic environment over the long term because such yields are not likely to be sustainable.

The MSST in **Alternative 1** is the most precautionary, **Alternative 2** the least conservative definition, and **Alternative 3** moderately conservative, from a biological perspective. Administratively, the greatest effects are associated with **Alternative 1** as natural variation in recruitment could cause stock biomass to more frequently alternate between an overfished and rebuilt condition, requiring fishery managers to apply scarce administrative resources to developing rebuilding plans even when the fishing mortality rate applied to the stock was within the accepted limits. The greater the likelihood of unintentional overexploitation, the greater the potential administrative burden.

Defining the MSY, OY and MSST of a species does not alter the current harvest or use of the resource. Specification of these measures merely establishes benchmarks for fishery and resource evaluation. Direct effects only accrue to actions that alter harvest or other use of the resource. Since there would be no direct effects on resource harvest or use, there would be no direct effects on fishery participants, associated industries or communities. Specifying MSY, OY, and MSST, however, has indirect impacts since it establishes the platform for future management, specifically from the perspective of bounding allowable harvest levels. The MSY specification in **Preferred Alternative 2** is equivalent to status quo harvest. **Alternative 1** would not specify an MSY. Since an MSY is a required component of an FMP, additional management action would be required to specify an MSY, with attendant duplication of time, effort, and administrative costs.

Alternative 1 would not specify a numerical value of OY for golden tilefish. Since an OY is a required component of an FMP, selection of **Alternative 1** would require additional management action, with associated duplication of time, effort, and administrative costs. Economic performance of the fishery, however, would not be affected. The OY specifications for **Alternatives 2-4** imply a harvest reduction of 1% to 6% relative to status quo harvests. **Alternative 2** would allow the lowest harvest and represents the most conservative vision of how the resource should be managed, encompassing the least likelihood, relative to the other alternatives, that excessive harvest will occur, and avoidance of the adverse economic and social consequences that would accrue to increased restrictions. It would also require the greatest reduction from status quo harvest, 6%, in allowable harvest. **Alternative 4** would support virtually status quo harvest, and represents the least conservative management approach. **Preferred Alternative 3** is intermediate to **Alternatives 2 and 4** and is believed to represent a reasonable compromise to the uncertainty associated with either alternative.

Preferred Alternative 3 is intermediate in the specification of the MSST relative to **Alternatives 1 and 2**. Thus, it reduces the likelihood the fishery would be declared overfished, which would be increased with **Alternative 1**, thereby avoiding the adverse economic and social impacts that would precipitate from additional resultant harvest

restrictions. **Preferred Alternative 3** also mitigates the potential problems of an insufficiently conservative MSST, which might be the case for **Alternative 2**, thereby avoiding the adverse economic and social impacts that would accrue to excessive reduction of the biomass.

2.2.4 Modifications to the Sales Provisions

Table 2-12. Alternatives under consideration for changing the sales provisions.

	Biological Effects	Economic, Social, and Administrative Effects
Alternative 1 (no action). Allow sale of recreationally-caught fish.	-	-
Alternative 2 (preferred). Commercial sale allowed with Federal Commercial Snapper Grouper Permit.	++	++
Alternative 3. Commercial and for-hire/charter sale allowed.	+	+

The no action **Alternative 1** would allow the continued sale of snapper grouper species from the South Atlantic EEZ up to the allowed bag limit. The Council's **Preferred Alternative 2** would require a valid Federal Commercial Snapper Grouper Permit to sell South Atlantic snapper and groupers. South Atlantic snapper and groupers possessed under the bag limits would not be able to be sold or purchased. Some recreational fishermen may intentionally catch more fish than they can consume with the intent to sell. Therefore, **Preferred Alternative 2** could have a minor biological benefit if it results in a decrease in fishing effort. Similarly, **Alternative 3**, which would require a Federal charter/headboat snapper grouper permit or Federal Commercial Snapper Grouper Permit to sell snapper grouper species from the South Atlantic EEZ up to the bag limit of snapper grouper species, could also have minor biological benefits if it resulted in a reduction in fishing effort.

The elimination of bag limit sales under **Preferred Alternative 2** or reduction of bag limit sales under **Alternative 3** could be biologically neutral if it simply results in transfer of harvest from fishermen without the appropriate Federal permit to permitted fishermen. However, it is also possible that restriction of bag limit sales could result in a biological gain with an associated increase in the mean age and size of the stock if not all the fish previously harvested and sold under the bag limit are harvested by fishermen with the Federal Commercial Snapper Grouper Permit. Conversely, restriction of bag limit sales could result in biological harm if those fishermen previously selling bag limit quantities continue to harvest these fish (which would be illegal) and harvest is not counted towards the commercial quota. While a biological gain or loss is possible with each scenario, neither effect is expected to be significant and, overall, the restriction of bag limit sales, under either alternative, is expected to be biologically neutral.

Alternative 1 would allow all customary bag limit sales activity to continue unaffected. Current estimates of annual bag limit sales are approximately 16 percent of total snapper grouper sales, or approximately 1.4 million pounds valued at approximately \$2.4 million (nominal ex-vessel value). To the extent that recreational trip demand is influenced by the ability to subsidize the cost of a fishing trip through the sales of bag limit-fish, under the status quo, angler trip demand under **Alternative 1** should remain unchanged. However, the increased harvest restrictions contained in Snapper Grouper Amendment 13C (SAFMC 2006) may induce operational change of for-hire vessels that either operate in the Federal snapper grouper fishery or possess an appropriate state license resulting in increased sales of bag limit fish as for-hire vessels compete for reduced commercial quota. Fish harvested and marketed in this manner, whether harvested on for-hire vessel trips or by private anglers, may be counted as both recreational and commercial harvests, complicating fishery assessments and resulting in accelerated quota closures. These sales reduce the amount and value of harvests allocated to the Federal commercial snapper grouper fishery, resulting in reduced revenues for the sector these quotas were intended for. Accelerated closures impose additional economic losses through market disruption (decreased period of time when fresh domestic product is available) and forced alteration of fishing practices, including effort transfer to other resources that may be less valuable and/or more expensive to catch, and fishing in new areas or with other gears to avoid the bycatch of non-marketable species. This effort transfer may result in increased harvest stress to these alternative species, harming the status of these resources, inducing restrictive management, and diminishing the economic value of these fisheries.

Under **Alternative 1**, the Federal commercial snapper grouper sector would continue to be denied access to snapper grouper species that are currently or will be under quota management since these fish will be harvested by non-Federally permitted fishermen and counted against the commercial quota. Bag-limit sales that are not marketed through non-Federally permitted dealers can also lead to quota overages since commercial quotas are monitored through Federally permitted dealers. Although snapper grouper sales through dealers that only possess state licenses ultimately get captured through summation of state trip tickets and reporting into the Federal Accumulated Landing System, such reporting does not meet the demands of quota monitoring time constraints and quota closure projections may not be able to accurately account for these sales, leading to quota overages, and the adverse socioeconomic effects of subsequent corrective action.

The Federal sector would continue to have to bear the losses associated with recent management action, notably Amendment 13C, which imposed a variety of quotas, trip limits, bag limits, and minimum size limits on the respective commercial and recreational sectors for snowy grouper, golden tilefish, vermilion snapper, black sea bass, and red porgy without the potential offset relief of protected access to fish intended for the Federally permitted commercial sector. The estimated effects of Amendment 13C on the commercial Federally permitted snapper grouper fishery was a short-term annual loss of \$0.735 million in net revenues the first year, or approximately 12 percent to total net revenues for trips that harvested any of the affected species, increasing to \$1.085 million by the third year after implementation due to progressive restrictions. Although not

implemented yet, additional harvest restrictions are anticipated for gag and red snapper through Snapper Grouper Amendments 16 and 17, respectively. The expected economic effects of these actions have not been determined yet.

Assuming compatible regulations are adopted by all states, **Preferred Alternative 2** would eliminate all bag limit sales by these entities, estimated at approximately \$2.4 million in annual nominal ex-vessel value. This would constitute a reduction of approximately \$316,000 per year, or a 17-percent reduction in average annual gross revenues per vessel, associated with fish sales by vessels in the for-hire fishery and approximately \$2.085 million per year, or a 7-percent reduction in gross revenues per year, in seafood harvests for commercial vessels that do not possess a Federal commercial snapper grouper permit.

Assuming compatible regulations are not adopted in any state, the estimated reduction in bag limit sales revenues under **Preferred Alternative 2** would be limited to those harvests that originate from the EEZ by all vessels, bag limit harvests from state waters by vessels with the Federal for-hire permit, and harvests that are marketed through dealers with a Federal permit. This would lower the reduction in bag limit sales to approximately \$1.562-\$1.799 million, accounting for the estimated portion of bag limit sales by the non-Federal sector that originate in state waters (approximately 8 percent; Table 4-6), the estimated portion of bag limit sales by entities without a Federal permit that are marketed through dealers without Federal licenses (approximately 23-35 percent), and total bag limit sales by vessels in the Federal for-hire fleet. This would result in approximately a 17 percent reduction in average annual for-hire fish-sales revenues and approximately a 4-5 percent reduction in average annual non-Federally permitted revenues. **Preferred Alternative 2** may also result in a reduction in angler demand due to the elimination of the ability to subsidize the cost of a fishing trip through the sales of snapper grouper or increases in charter fees.

Alternative 3 would allow continued snapper grouper bag limit sales by vessels that possess a Federal for-hire snapper grouper permit. As a result, only the harvests and revenues discussed above associated with vessels without either of the Federal snapper grouper permits would be affected. These values are approximately \$2.085 million (nominal ex-vessel value) per year, or a 7-percent reduction in gross revenues per year, in seafood harvests assuming compatible regulations are adopted by all states; if compatible regulations are not adopted, reductions of approximately a \$1.246 million to \$1.483 million (nominal ex-vessel value) per year, or a 4-5 percent reduction in average annual revenues would result.

Preferred Alternative 2 and, to a lesser extent, **Alternative 3**, would be expected to offset the adverse economic effects described above. As discussed, approximately \$2.4 million in nominal ex-vessel value snapper grouper sales are estimated to occur on an annual basis. If transferred to the Federal commercial snapper grouper sector, these revenues would more than offset the projected annual losses associated with Amendment 13C and improve the ability of the commercial sector to weather any short-term adverse economic effects of future regulation. Even absent full transference of these revenues,

the Federally permitted commercial sector would achieve a stronger financial position. The bag limit sales restrictions are also expected to help avoid the adverse economic effects of potential incentives to increase bag limit sales activity as a result of recent or future management measures for individual species and/or generally worsening economic conditions. The Federal management measures, notably quotas and seasons, are designed to meet resource goals, while achieving the best economic and social outcome. Respective Federal commercial quotas are intended for use by Federally permitted commercial vessels. Increased harvest pressure from non-Federally permitted commercial entities or for-hire operations can result in earlier than expected quota closures, market disruptions, revenue loss, and increased likelihood of business failure within the Federal fleet.

While a prohibition on bag limit sales may result in biological gain or harm to individual species, the likelihood of adverse effects accruing to increased total harvests will be reduced by the accountability measures that will be developed in Snapper Grouper Amendment 17. These accountability measures will ensure harvests are maintained below specified levels, overages are not persistent, and adverse effects are minimized. Overall, neither effect, either a biological gain or loss, with associated economic effects, is expected to be significant and, overall, the restriction of bag limit sales, under either alternative, is expected to be biologically neutral. As a result, any economic effects associated with the biological effects of any restriction of bag limit sales are also expected to be neutral.

Social conflict between the competing harvest sectors would be expected to worsen under **Alternative 1**. The contentious relationship between the competing commercial sectors and between the commercial and recreational sectors would continue. The increased harvest restrictions contained in Amendment 13C are expected to worsen this situation as fishermen compete for reduced commercial quota. The resultant accelerated closures and other adverse economic pressures on the Federal commercial snapper grouper fleet are expected to impose additional economic losses and social disruption. Thus, **Alternative 1** would result in the continuation of this conflict between the competing sectors.

Preferred Alternative 2 would eliminate all snapper grouper bag limit sales. Since this would result in winners and losers in the bag limit sales debate, all conflict between the sectors would not totally dissipate, but a certain degree of finality to the issue would be reached, at least for the snapper grouper fishery (sales of other species may still be allowed), allowing the respective parties to move forward. To the extent that having a decision is less contentious than ongoing debate, the social impacts of this alternative should be more positive than **Alternative 1**. If bag limit-sales underpin a substantial portion of operational profits, for-hire pricing structure, or recreational trip demand, revenues, expenditures, and profits could be adversely affected, with concurrent affects on fishing businesses and associated industries, communities, and social structures. While for-hire crew could still have their pay subsidized with fish, the fish would have to be accepted as table-fare rather than a good to be converted to cash. Such would likely not be totally acceptable since it is likely that many vessels generate more “fish for pay” than can reasonably be consumed. Elimination of the additional pressure on accelerated

closures would allow avoidance of the adverse economic and social disruptions associated with such closures. Available data also indicates that snapper grouper sales constitute a significantly greater portion of total revenues for vessels in the Federal commercial snapper grouper fleet than in the Federal for-hire fleet or for vessels without either Federal permit. Thus, it could be concluded that gains or losses of snapper grouper to the Federal fleet are relatively more important to these vessels. However, over twice as many entities engage in bag limit sales than operate in the Federal commercial fishery, so if social effects are more strongly influenced by the number of business or social pathways than simply the volume of sales, then a redistribution of harvests to the Federal commercial fleet could have net adverse social consequences.

The social impacts of **Alternative 3** are expected to be intermediate to those of **Alternative 1** and **Preferred Alternative 2** since **Alternative 3** would reduce, yet not totally eliminate, bag limit snapper grouper sales. Economic losses to vessels that currently sell bag limit quantities of snapper grouper would still be expected, but would not be as great as under **Preferred Alternative 2**, while accelerated closure pressure would be reduced, yet not eliminated. Thus, disruption of activities and relationships associated with bag limit sales would be reduced relative to **Preferred Alternative 2**, while full avoidance of the adverse social consequences of accelerated commercial closure and other adverse economic pressures on the Federal commercial snapper grouper fleet would not be achieved. The bag limit sales debate would continue.

2.2.5 Monitor and Assess Bycatch

Table 2-13. Alternatives under consideration for monitoring bycatch.

	Biological Effects	Economic, Social, and Administrative Effects
Alternative 1 (no action). Utilize existing information.	-	-
Alternative 2 (preferred). Adopt ACCSP. Until this module is fully funded, require the use of a variety of sources.	++	++
Alternative 3. Adopt ACCSP.	++ (higher if funds available for implementation)	+++
Alternative 4. Require the use of a variety of sources.	+	+

Alternative 1 would not provide additional bycatch information as it would utilize existing programs. **Alternative 1** would have adverse effects on the biological environment compared to the other alternatives since it would not implement a plan to monitor and assess bycatch in the South Atlantic snapper grouper fishery. **Preferred Alternative 2** would allow for the implementation of interim programs to monitor and assess bycatch in the South Atlantic snapper grouper fishery until the Atlantic Coastal Cooperative Statistics Program (ACCSP) Release, Discard and Protected Species (Bycatch) Module can be fully funded. **Preferred Alternative 2** differs from **Alternative 3** in that **Preferred Alternative 2** would implement **Alternative 4** as an

interim program (the first phase) until funds are available to fully implement the ACCSP Bycatch Module. After the implementation of the ACCSP bycatch module, **Preferred Alternative 2** would require that snapper grouper vessels carry observers, use logbooks, electronic logbooks, and video monitoring if selected. Alternatively, **Alternative 3** would require the immediate implementation of the ACCSP bycatch module. **Alternatives 2, 3, and 4** provide the basic options available to the Council and NOAA Fisheries Service to monitor bycatch in the South Atlantic snapper grouper fishery. There are no direct biological impacts from establishing a standardized reporting methodology to estimate bycatch. However, indirect impacts resulting from **Alternatives 2, 3, and 4** would provide a better understanding of the composition and magnitude of 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.

Alternative 1 would not result in any direct adverse economic impacts on these entities. However, if current practices do not adequately capture the true magnitude of bycatch, the quality of stock assessments may suffer, producing inadequate management, stock collapse or delayed recovery, and result in reduced or foregone economic and social benefits.

Quantitatively distinguishing the differences in the costs and impacts of **Alternatives 2-4** is not possible at this time since the full costs of neither the ACCSP module or interim methods are available. It can be reasonably stated, however, since each of **Alternatives 2-4** would impose increased bycatch reporting requirements, the costs associated with the requirements of **Alternatives 2-4** exceed that of **Alternative 1**. The absence of full funding of the ACCSP module suggests that it costs more than the proposed alternatives. Thus, from a program cost perspective, in the short term it is assumed that the lowest costs are associated with **Alternative 4** and **Preferred Alternative 2**, and the highest costs associated with **Alternative 3**. In the long term, **Alternative 4** would remain the lowest cost program, with **Preferred Alternative 2** and **Alternative 3** equal in cost. Overall (short and long term), the cost of **Preferred Alternative 2** would be more than **Alternative 4** but less than **Alternative 3**.

Despite the higher costs relative to **Alternative 1**, the expectation and assumption is that the improved bycatch information expected to be generated by these methods will result in improved stock assessments, more appropriate management measures, quicker rebuilding, where appropriate, and, overall, increased net biological, economic, and social benefits. Since **Preferred Alternative 2** and **Alternative 3** end with the same system in the long term, the long term benefits of these two alternatives are presumed equal, though the net benefits of **Preferred Alternative 2** are assumed to be less than those of **Alternative 3** due to the delay in implementing the preferred data program. Since the preferred monitoring and assessment program would never be achieved under **Alternative 4**, the conclusion is that the long term net economic and social benefits of this alternative are less than those of both **Preferred Alternative 2** and **Alternative 3**.

2.2.6 Sea Turtle and Smalltooth Sawfish Incidental Take Impact Minimization Measures

Table 2-14. Alternatives under consideration to minimize the impacts of incidental take on sea turtles and smalltooth sawfish.

	Biological Effects	Economic, Social, and Administrative Effects
Alternative 1 (no action).	-	-
Alternative 2 (preferred). Regulations for commercial and for-hire (See Table 2-15).	++	++
Alternative 3. Regulations for commercial and for-hire (See Table 2-15). Gear requirements are dependent upon freeboard height.	+	+

Alternative 1 (status quo) would have adverse effects on the biological environment compared to the other alternatives since it would not implement management measures to minimize the impacts of incidental take on sea turtles or smalltooth sawfish caught in the South Atlantic snapper grouper fishery. **Preferred Alternative 2** would have slightly greater biological benefit than **Alternative 3** as gear requirements are independent of freeboard height.

Alternative 1 (status quo) would not impose any additional management measures on participants in the snapper grouper fishery and would not, therefore, result in any direct adverse economic impacts on these entities. However, sea turtle and smalltooth sawfish incidental take would be expected to continue at current levels, resulting in unquantifiable reductions in economic and social benefits associated with minimizing the impacts of incidental take on these species. Further, an increase in incidental take of these species, beyond those estimated in the biological opinion could precipitate more restrictive controls than those proposed, resulting in greater adverse economic and social impacts on fishery participants than **Preferred Alternative 2** and **Alternative 3**.

Meeting the gear requirements of **Preferred Alternative 2** is estimated to cost vessels from \$617-\$1,115 (2006 dollars). The estimated aggregate cost of the gear requirements of **Preferred Alternative 2** is approximately \$1.32-\$2.38 million (2006 dollars). The minimization of impacts from incidental take on sea turtles and smalltooth sawfish may result in increased economic benefits relative to the status quo in the form of enhanced existence value and increased economic and community activity of industries that benefit from enhanced or recovered resources, such as diving or nest site tours. Additionally, while this action will not lead to species recovery, minimization of the impacts of incidental take may contribute to species recovery and recovery may support increased economic benefits from directed harvest, should such harvest be determined to be appropriate.

Out-of-pocket release gear expenses per vessel for **Alternative 3** are estimated to range from \$324-\$987 (2006 dollars). The estimated aggregate cost of the gear requirements of this alternative on the participants in the fishery is approximately \$691,000-\$2.11 million (2006 dollars), or \$270,000-\$629,000 less than **Preferred Alternative 2**. The gear storage requirements of **Alternative 3** would also be less burdensome than those of **Preferred Alternative 2**. Relative to the status quo, **Alternative 3** is expected to reduce the impacts of incidental take on sea turtles and smalltooth sawfish, resulting in increased economic benefits associated with species protection, though not necessarily to the same extent as **Preferred Alternative 2**. The release gear requirements of **Alternative 3** are less than those of **Preferred Alternative 2** and incorporate practicability considerations of the differences of the fleet characteristics between the snapper grouper fleet and the Highly Migratory Pelagics pelagic longline fleet. As a result, while the direct economic burden to fishery participants is expected to be reduced, the resultant reduction in impacts from incidental take may not be as great. The extent to which these two alternatives minimize the impacts of incidental takes, and resultant difference in economic impacts, has not been quantified and cannot be determined at this time.

2.2.7 Permit Renewal

Table 2-15. Alternatives under consideration for changing the renewal period for commercial snapper grouper permits.

	Biological Effects	Economic, Social, and Administrative Effects
Alternative 1: (no action). Renewal period=60 days.	+	-
Alternative 2: Renewal period=6 months.	-	+
Alternative 3 (preferred): Renewal period=1 year.	--	++

Permit Renewal Alternative 1 would have beneficial biological effects compared to the other alternatives. **Alternatives 2 and 3** would have adverse effects from fewer lost permits; the effects from **Alternative 3** would be greater than **Alternative 2**.

Alternative 1 (status quo) would be expected to result in the continued loss of economic benefits from expiration of unlimited snapper grouper commercial permits due to the inability to renew permits within the current 60-day timeframe. Unlimited permits are estimated to have a market value ranging from \$9,000-\$16,000 (2006 dollars). Due to this market value, it is assumed that most permit expiration has been the result of an inability to renew the permit within the allowable timeframe, rather than intentional retirement from the fishery and expiration of the permit, though such cannot be totally discounted. Expiration of a permit will result in the loss of all future snapper grouper revenues, estimated to average approximately \$15,000 per year per vessel over 1999-2003. Total losses as a result of these expirations and the net impact of future expirations cannot be determined.

Alternative 2 would be expected to reduce the incidence of unintentional permit expiration since the renewal period would be three times longer than under the status quo and, thus, result in unquantifiable net economic and social gains relative to the status quo. Fishing operations would have longer to adjust to unexpected disruptions, such as illness or severe weather events, reducing the jeopardy of their permit.

Preferred Alternative 3 would allow the longest period for permit renewal and would, therefore, be expected to minimize the incidence of unintentional permit expiration relative to **Alternatives 1 and 2** and result in the largest gain in net economic and social benefits relative to the status quo. Additional unquantifiable economic and social benefits may accrue to both fishery participants and the administrative environment through standardization of renewal periods since most other permits have similar 1-year renewal periods.

2.2.8 Permit Transferability

Table 2-16. The effects comparison for permit transferability alternatives.

	Biological Effects	Economic, Social, and Administrative Effects
Alternative 1 (no action). Must do 2 for 1 to incorporate	+	-
Alternative 2. May transfer permit without 2 for 1. Must submit annual report. If the annual report includes shareholder not listed on original application...	+	
Subalternative 2A. May be renewed.	+ (comparing just sub-alternatives)	++++
Subalternative 2B. Not renewed.	+++ (comparing just sub-alternatives)	+
Subalternative 2C. To renew must do 2 for 1.	++ (comparing just sub-alternatives)	++
Subalternative 2D. Same as 2C but can transfer back to immediate family member.	+ (comparing just sub-alternatives)	++
Subalternative 2E. (preferred). Only renewed if new shareholder is immediate family member.	+ (comparing just sub-alternatives)	+++
Alternative 3: Repeal the 2 for 1 permit transfer provision as described at 50 C.F.R. 622.18(e)(1)(iv).	-	++

*Immediate family members include only the following: husband, wife, son, daughter, brother, sister, mother, or father.

Some degree of beneficial indirect effects to the stock and ecological environment would be expected from the continued implementation of the 2 for 1 permit system (**Alternative 1**) and associated reduction in fishing effort from the removal of permits. The biological effects to the stock and associated ecological environment from **Alternative 2** are expected to be the same as **Alternative 1**. **Alternative 3** would repeal the 2 for 1 permit transfer provision. The beneficial biological effects as described under **Alternative 1** would no longer exist. In general, the biological benefits are greatest with the sub-alternatives that place the greatest restrictions on permit renewal.

Alternative 1 (status quo) would preclude individual holders of unlimited transferable commercial snapper grouper permits from forming self or family owned corporations without obtaining a second permit to affect the current two-for-one transfer requirement, at the cost of \$9,000-\$16,000 (2006 dollars) for the second permit. Absent incurring this expense, these holders would not be able to receive the tax and liability benefits associated with incorporation.

Alternative 2 would allow incorporation and the realization of associated benefits without the requirement to obtain a second permit, subject to the incorporation being limited to ownership by the original permit holder and immediate family members. **Alternative 2** would, therefore, result in greater unquantifiable economic and social benefits than **Alternative 1**. Total net value of these benefits depends on renewal conditions, with the benefits assumed to be directly related to renewal flexibility. **Sub-Alternative 2-A** would have the most liberal renewal provisions since, after initial personal or family incorporation, renewal requirements would be the same for all corporations. This alternative would maintain the current situation that allows one-for-one effective transfer if an entity purchases a corporation and its permit assets. Since the permit is owned by the corporation and not the shareholder, transfer/sale of the corporation does not constitute transfer of the permit. Thus, participants would benefit from both the incorporation benefits and renewal flexibility. **Preferred Sub-Alternative 2-E** would be the second-most flexible and beneficial since new immediate family members could be added as shareholders without renewal penalty. This would particularly benefit individuals who marry or have new children whom they wish to add as shareholders. **Sub-Alternative 2-D** would be the third-most beneficial since it would allow transfer back to an immediate family member of the original permit in lieu of invoking a two-for-one requirement. **Sub-Alternative 2-C** would be less flexible than **Sub-Alternative 2-D** since it would not allow any shareholder addition without invoking a two-for-one permit transferal requirement and, thus, be expected to result in less economic benefits. **Sub-Alternative 2-B** would be the most restrictive and result in the lowest economic and social benefits since no shareholder additions would be allowed.

Alternative 3 would eliminate the two-for-one permit transfer requirement, thus, eliminating all impediments to incorporation and accommodating the realization of all incorporation benefits. Permit prices would be expected to increase since a single permit would reflect the full value of fishery participation instead of two permits. Thus, while the total cost of the permit to the entering entity may remain largely unchanged, exiting participants should be able to receive higher individual payments. To the extent that sufficient contraction of the fleet to realize optimal economic and social benefits of the fishery has not yet occurred, **Alternative 3** may result in less net economic benefits relative to **Alternative 2** since some continued fleet contraction would be expected under **Alternative 2** regardless of the sub-alternative implemented. Among the sub-alternatives, **Sub-Alternatives 2-B and 2-C** would be expected to result in equal rates of contraction and would, therefore, be expected to equally contribute to fleet contraction needs.

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° to 81° F) due to the proximity of the Gulf Stream, with lower shelf habitat temperatures varying from 11° to 14° C (52° to 57° 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 boarded 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 km²) of the area between the 27 and 101 meters (89 and 331 feet) isobaths from Cape Hatteras to Cape Canaveral is reef habitat. Although the benthic communities found in water depths between 100 and 300 meters (328 and 984 feet) from Cape Hatteras to Key West 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) showing 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 through 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).

3.2 Biological/Ecological Environment

3.2.1 Species Most Impacted By This FMP Amendment

3.2.1.1 Snowy Grouper

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). Snowy grouper are found at depths of 30-525 meters (98-1,722 feet). Adults occur offshore over rocky bottom habitat. Juveniles are often observed inshore and occasionally in estuaries (Heemstra and Randall 1993).

Snowy grouper are protogynous (changing sex from female to male with increasing size and age). The smallest, youngest male examined by Wyanski *et al.* (2000) was 72.7 centimeters (28.8”) total length and age 8. The median size and age of snowy grouper was 91.9 centimeters (34.5”) and age 16. The largest specimen observed was 122 centimeters (48”) total length and 30 kilograms (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 snow grouper may live for as long as 40 years (Harris, South Carolina Department of Natural Resources, personal communication). Wyanski *et al.* (2000) report 50% of the females are mature at 54.1 centimeters (21.3”) total length and 5 years of age. The smallest mature female was 46.9 centimeters (18.5”) total length, and the largest immature female was 57.5 centimeters (22.6”) total length.

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). Snowy grouper spawn at depths from 176 to 232 m (577 to 761 ft) off South Carolina and North Carolina (Wyanski *et al.* 2000). Adults feed on fishes, gastropods, cephalopods, and crustaceans (Heemstra and Randall 1993).

3.2.1.2 Golden Tilefish

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). 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 United States from March through late July, with a peak in April (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).

3.2.1.3 Red Porgy

Red porgy occurs in the Eastern and Western Atlantic Oceans. In the Western Atlantic, it ranges from New York to Argentina, including the northern Gulf of Mexico. Adults are found in deepwater near the continental shelf, over rock, rubble or sand bottoms, to depths as great as 280 meters (918 feet). Red porgy are most commonly captured at depths of 25-90 meters (82-295 feet). Young occur in water as shallow as 18 meters (59 feet) (Robins and Ray 1986), and are sometimes observed over seagrass beds (Bauchot and Haureau 1990).

Maximum reported size is 91.0 centimeters (36.0”) total length (Robins and Ray 1986) and 7.7 kilograms (17.1 lbs) (Bauchot and Haureau 1990). Maximum reported age of red porgy in the South Atlantic is 18 years and maximum reported length is 73.3 centimeters (28.9”) total length (Potts and Manooch 2002). Based on histological examination of reproductive tissue, red porgy spawn from December through May off the southeastern United States, with a peak in January and February (Harris and McGovern 1997; Daniel 2003). Based on macroscopic examination of the ovaries, Manooch (1976) reports peak spawning of red porgy during March and April.

During 1995-2000, females first became mature at 20.1-22.4 centimeters (8.0-8.9”) total length, and at age 0. Size and age at 50% maturity was 28.9 centimeters (11.5”) total length and 1.5 years, respectively (Harris and McGovern 1997). Red porgy are protogynous (changing sex from female to male with increasing size and age). At 35.1-40.0 centimeters (13.9-15.9”) total length, 72% of all individuals collected during 1995-2000 were male; by age 9, 100% of all individuals were males. There was a much greater percentage of males in smaller size classes during recent years, than during the early 1980s (Daniel 2003). Red porgy feed on crustaceans, fishes, and mollusks (Bauchot and Haureau 1990).

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

The status of snowy grouper, golden tilefish, vermilion snapper, and red porgy has been recently assessed through the Southeast Data, Assessment, and Review process. 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, fishermen, 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 report of the stock assessment review workshop is then reviewed by the Council’s Scientific and Statistical Committee (SSC).

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 4.9 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 Snowy Grouper

A 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 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 at the beginning of 2002 (the end of the assessment period) was analyzed relative to the benchmarks listed above. The maximum fishing mortality threshold (MFMT; limit reference point in F) is assumed equal to E_{MSY} or F_{MSY} , depending on the preferred measure of exploitation. Fishing status was determined relative to these. Overfishing of snowy grouper began in the mid 1970's and has continued since. Current F is 0.154, while F_{MSY} is 0.05. The response to fishing pressure was a steady population decline to levels below SSB_{MSY} starting in the early 1980's.

The Assessment Workshop concluded snowy grouper was overfished and overfishing was occurring in 2002. 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 [$SSB(2002)/SSB_{virgin}$] 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.

3.2.2.2 Golden Tilefish

There were 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 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 10th to 90th 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.

3.2.2.3 Red Porgy

Red porgy was the subject of the first SEDAR assessment (SEDAR 1 2002, which updated previous assessments conducted by Vaughan *et al.* (1992), Huntsman *et al.* (1994), and Vaughan (1999). Data for the assessment were assembled and reviewed at a data workshop during the week of March 11, 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. Four abundance indices were developed: two indices derived from CPUE in the NOAA Fisheries Service headboat survey (1976-1991; 1992-1998), and two derived from CPUE observed by the South Carolina MARMAP fishery-independent monitoring program ("Florida" trap index, 1983-1987; and chevron trap index, 1990-2001).

At the assessment workshop, age-structured and production models were applied to available data. Although the Assessment Workshop determined that the age-structured model provided the most definitive view of the population, both models provide a similar picture of the status of red porgy. SEDAR 1 (2002) indicated that, given the different assumptions used by each type of model and the lack of age structure in the production models, this degree of agreement increased confidence in the assessment results.

Selectivity in the fisheries were estimated to have shifted towards smaller fish, but to have shifted back towards larger fish with recent management measures. The model estimates that SSB had declined to about 10% of its 1972 value and that resulting recruitment had declined to about one-third of its 1972 value. Forward-projection models tend towards greatest uncertainty in the earliest years, and that catch sampling and catch statistics are thought least reliable from that time, as well. The stock in 1972 had many

large fish that were gradually removed by the fisheries and not replaced as fishing mortality rates increased (SEDAR 1 2002).

Exploitation rate over time is estimated to have peaked around 1990 at about 35% in weight (about 18% in numbers), and has dropped in recent years to less than 10% in numbers or in weight. The rate is higher in weight than numbers because the smallest fish are not taken in the fishery. Estimates from the base run suggest that the moratorium (September, 1999–August, 2000) and Amendment 12 (SAFMC 200a; September 2000–present) have lowered the fishing mortality rate to about 45% of F_{MSY} in 2001, but that 2001 spawning biomass was only about 43% of SSB_{MSY} , which is below MSST, which the SAFMC has set at $MSST = 0.75 B_{MSY}$. In terms of the Sustainable Fisheries Act, results imply the fishery in 2001 was not undergoing overfishing, but the red porgy stock was overfished (depleted) in that year. The run using the lower range of the commercial and headboat coefficient of variations (CVs) on landings instead of the upper ranges (run x57) produced essentially the same estimates as the base run.

When the length-to-age information from North Carolina, which tends to assign older ages, was used, the estimate of F_{MSY} increased slightly and the estimate of the ratio F_{2001}/F_{MSY} declined slightly. The estimate of stock status (B_{2001}/B_{MSY}) did not change appreciably; the most marked change was that MSY was estimated somewhat higher than in the base run. Use of North Carolina aging in combination with low CVs (run x59) produced essentially the same results. The sensitivity runs encompassed many changes to input data or model assumptions, yet the model estimates of stock status and fishery status did not change very much. The Stock Assessment Workshop believes that this occurred because the signal in the abundance indices and patterns of size composition over time are so strong that only one interpretation is consistent with the observed data. That interpretation is a severe decline in abundance of the stock over time, with signs of increase from the recent moratorium and Amendment 12 (SEDAR 1 2002).

In May 2006, an update of the red porgy assessment was conducted (SEDAR Update #2 2006). Results suggest that spawning stock biomass has increased since the benchmark assessment in 2001. The 2001 estimate of SSB is about 42% of SSB_{MSY} , and the 2005 estimate is about 66% of SSB_{MSY} . This 2005 estimate corresponds to about 85% of MSST, by the Council's usual definition of MSST as $(1 - M)SSB_{MSY}$. The 2004 estimate of fishing mortality rate is about 39% of F_{MSY} , where F_{MSY} is the MFMT. These results indicate that the stock is below its biomass limit, but is not undergoing overfishing.

3.2.3 Other Affected Council-Managed Species

Snowy grouper, vermilion snapper, and golden tilefish are targeted by fishermen and are commonly taken on trips together. However, these species occupy different habitats and do not co-occur. Silk snapper and queen snapper are taken as incidental catch when fishermen target snowy grouper. Vermilion snapper, black sea bass, and red porgy are targeted by fishermen, co-occur and are taken on trips together. Gag, red grouper, scamp, blue-line tilefish, red snapper, gray triggerfish, greater amberjack, white grunt, and others

are also targeted by commercial fishermen and are taken on trips with snowy grouper, vermilion snapper, black sea bass, red porgy and golden tilefish. Proposed actions that would specify management reference points, rebuilding schedules, and rebuilding strategies would likely affect other target and non-target snapper grouper species through bycatch and effort shifting. A detailed description of the life history of these species is provided in the Snapper Grouper SAFE report (NMFS 2005).

3.2.4 ESA-Listed Species

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 below.

Subsequent to the June 7, 2006, biological opinion, two species of coral (*Acropora cervicornis* and *Acropora palmata*) were listed as threatened. However, in a consultation memorandum dated July 9, 2007, NOAA Fisheries Service concluded that the continued authorization of the snapper grouper fishery is not likely to adversely affect these *Acropora* species.

3.2.4.1 Sea Turtles

Green, hawksbill, leatherback, loggerhead, and Kemp's ridley 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 more thoroughly the biology and ecology of these species (i.e., Lutz and Musick (eds.) 1997, Lutz *et al.* (eds.) 2002).

Green sea turtle (*Chelonia mydas*) 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 known 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** sea turtle's (*Eretmochelys imbricata*) 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 calcereous 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).

Leatherback sea turtles (*Dermochelys coriacea*) 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 sea turtle (*Caretta caretta*) 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).

Kemp's ridley sea turtle (*Lepidochelys kempii*) 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).

3.2.4.2 Marine Fish

The historical range of the **smalltooth sawfish** (*Pristis pectinata*) 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 of 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 m (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 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.

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 3-1).

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 do 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 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
<i>Vertical Hook-and-Line Sea Turtle Catch Data</i>					
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
<i>Bottom Longline Sea Turtle Catch Data</i>					
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-yr 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 Magnuson-Stevens Act and with other applicable laws summarized in Section 8.0. 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 (SSC) 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’s 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 \$130,000 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 Amendment 13C (SAFMC 2006) and is incorporated herein by reference. The following sections summarize key information relevant to this action.

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 (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 attached. 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 (December through March). Some fishermen stop bandit fishing to target king mackerel when they are running.

The Council allows the use of bottom longlines in depths greater than 50 fathoms and north of St. Lucie Inlet, Florida. 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 only 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 in South Carolina and 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 over 87% of tags in April, 2003 were for vessels with home ports 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), relatively few pots per boat, and 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 have a duration of 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 6.91 million pounds between 2001 and 2005, with an average annual dockside value of \$13.03 million (Table 3-3). Fishermen also landed an average of 1.79 million pounds of other species worth \$1.90 million on trips that landed at least one pound of species in the management unit. Landings and dockside revenues declined between 2001 and 2005 for species in the snapper grouper management unit (Table 3-3). Part of the declines appear to be attributable to variation in 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

vermillion snapper increased in 2004 and 2005, but not to the levels experienced in 2001 and 2002.

Table 3-3. Annual landings and dockside (ex-vessel) revenues for trips with at least 1 pound of species in the snapper grouper fishery management unit in the south Atlantic.

Item	2001	2002	2003	2004	2005	Average
Trips with at least 1 pound of snapper grouper species						
Snapper grouper landings (million pounds, whole wgt)	7.60	7.36	6.50	6.70	6.39	6.91
Dockside revenue from snapper grouper species (million dollars)	\$13.95	\$13.55	\$12.12	\$12.69	\$12.83	\$13.03
Dockside revenue in constant 2005 dollars (millions)*	\$15.38	\$14.71	\$12.87	\$13.12	\$12.83	\$13.78
Price/lb (whole wgt) for snapper grouper species	\$1.83	\$1.84	\$1.86	\$1.89	\$2.01	\$1.89
Price/lb in constant 2005 dollars*	\$2.02	\$2.00	\$1.98	\$1.96	\$2.01	\$1.99
Producer price index for #2 diesel fuel, adjusted to constant 2005 price levels (index=100 for 2005)	44.1	41.2	53.1	67.8	100.0	61.2
Landings of other species on these trips (million lbs)	1.71	1.76	2.10	1.65	1.71	1.79
Dockside revenue from other species on these trips (million \$)	\$1.97	\$1.96	\$1.92	\$1.78	\$1.89	\$1.90
Dockside revenue from other species in constant 2005 dollars (millions)	\$2.17	\$2.13	\$2.04	\$1.85	\$1.89	\$2.02

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center.

* The Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

According to trip reports submitted to the NOAA Fisheries Service logbook program, an average of 934 boats averaged 15,962 trips per year on which at least one pound of snapper grouper species was landed (Table 3-4). An average of 545 boats landed at least 1,000 pounds of snapper grouper species annually; 268 boats landed at least 5,000 pounds; 177

boats landed at least 10,000 pounds; and 26 boats landed at least 50,000 pounds of snapper grouper species.

Participation in the snapper grouper fishery has declined over time. The number of boats with snapper grouper permits declined from 1,264 in 2001 to 1,007 in 2005 (Table 3-4). Two types of permits were created with the limited access program for the snapper grouper fishery, which was implemented in 1998. The number of transferable permits allowing an unlimited harvest per trip declined from 959 in 2001 to 801 in 2005, while the number of vessels with non-transferable permits with a 225 pound trip limit declined from 305 in 2001 to 206 in 2005. The number of 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. Also, it is likely the number of vessels in the snapper grouper fishery declined for economic reasons. Average annual prices for species in the snapper grouper management unit remained relatively constant when adjusted for inflation, whereas fuel prices more than doubled since 2002 (Table 3-3). The net result has been a decline since 2001 in the number of vessels, trips and days fished for species in the snapper grouper management unit (Table 3-4). The decline in the number of vessels is evident in all harvest categories except for the highest producing category of 50,000 pounds or more per year. Despite the decline in the number of vessels active in the fishery, the number of fish dealers with permits to operate in the snapper grouper fishery increased from 252 in 2001 to 268 in 2005 (Table 3-4).

Table 3-4. Fishing effort and distribution of catch for trips with at least 1 pound of species in the snapper grouper fishery management unit in the south Atlantic.

Item	2001	2002	2003	2004	2005	Average
Trips with at least 1 pound of snapper grouper species						
Number of trips	17,279	17,199	16,563	15,038	13,730	15,962
Days away from port	29,933	29,580	27,620	24,821	22,781	26,947
Average days per trip	1.7	1.7	1.7	1.7	1.7	1.7
Number of vessels landing snapper grouper species	1,004	976	932	905	855	934
Number of vessels with more than 100 lbs of snapper grouper species	869	829	792	749	719	791
Number of vessels with more than 1,000 lbs of snapper grouper species	594	589	547	523	475	545
Number of vessels with more than 5,000 lbs of snapper grouper species	288	280	277	261	238	268
Number of vessels with more than 10,000 lbs of snapper grouper species	196	198	173	165	153	177
Number of vessels with more than 50,000 lbs of snapper grouper species	26	27	20	32	29	26
Number of permitted vessels	1,264	1,174	1,123	1,066	1,007	1,127
Number of vessels with transferable permits	959	907	879	841	801	877
Number of vessels with non-transferable permits	305	267	244	225	206	250
Number of dealer permits	252	246	271	269	268	261

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center, and Southeast Regional Office permits database.

3.4.1.1.2.1 The Snapper Grouper Fishery by State

The following discussion provides annual averages from 2001 to 2005. 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.

Average quantities of snapper grouper species harvested from 2001-2005 included 1.85 million pounds worth \$3.40 million per year in North Carolina, 1.65 million pounds worth \$3.45 million in South Carolina, 0.85 million pounds worth \$1.68 million in Georgia and northeast Florida, and 2.55 million pounds worth \$4.50 million in central and south Florida (Table 3-5). Snapper grouper landings by state were not proportional to total days fished in each state. Boats in central and south Florida made 72% of the trips that landed species in the snapper grouper management unit and accounted for 37% 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 27% of the snapper grouper harvest. Boats in South Carolina made 6% of the trips and landed 24% of the harvest. Vessels in Georgia and northeast Florida made 4% of the trips landing 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. Fishermen in central and south Florida, especially in the Keys, tend to catch relatively larger quantities of non-snapper grouper species.

Table 3-5. Annual landings and dockside revenues for trips with at least 1 pound of species in the snapper grouper fishery, 2001-2005 averages by state.

Item	North Carolina	South Carolina	Georgia and Northeast Florida	Central and South Florida	Total
Trips with at least 1 pound of snapper grouper species					
Snapper grouper landings (million lbs)	1.85	1.65	0.85	2.55	6.91
Percent of total snapper grouper lbs	27%	24%	12%	37%	100%
Snapper grouper revenues (million \$)	\$3.40	\$3.45	\$1.68	\$4.50	\$13.03
Snapper grouper revenues in constant 2005 dollars	\$3.59	\$3.64	\$1.78	\$4.76	\$13.78
Pct of total snapper grouper revenues	26%	27%	13%	34%	100%
Landings other species (million lbs)	0.27	0.14	0.07	1.30	1.78
Dockside revenues other spp. (million \$)	\$0.32	\$0.18	\$0.16	\$1.25	\$1.91
Dockside revenues other species in constant 2005 dollars	\$0.33	\$0.19	\$0.17	\$1.32	\$2.01
Number of boats*	170	66	51	662	934
Number of trips	2,838	968	590	11,565	15,962
Percent of trips	18%	6%	4%	72%	100%
Number of days	5,004	4,756	2,427	14,760	26,947
Percent of days	18%	18%	9%	55%	100%
Trips per boat	16.7	14.7	11.7	17.7	17.1
Days per trip	1.8	4.9	4.1	1.3	1.7

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center.

* Some boats land in more than one state.

3.4.1.1.2.2 The Snapper Grouper Fishery by Gear

The following discussion provides annual averages from 2001 to 2005. To maintain 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, and other gears.

Most snapper grouper harvest 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. Bottom 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 2001-2005 included 5.48 million pounds worth \$10.54 million per year with vertical lines, 0.54 million pounds worth \$1.01 million with longlines, 0.53 million pounds worth \$0.81 million with black sea bass pots, and 0.35 million pounds worth \$0.66 million with other gear (Table 3-6). Trips with vertical lines accounted for 78% of all trips that landed species in the snapper grouper management unit and 79% of the total snapper grouper harvest. Trips with longlines accounted for 2% of the trips and 8% of the snapper grouper harvest, while trips with black sea bass pots represented 5% of the trips and accounted for 8% of the harvest. Trips with other gears represented 15% of the trips and 5% of the harvest. Trips with longlines tend to be longer than trips with other gears.

Table 3-6. Annual landings and dockside revenues for trips with at least 1 pound of species in the snapper grouper fishery, 2001-2005 averages by primary gear. Landings are reported as millions of pounds, whole weights, and dockside revenues are reported as millions of dollars.

Item	Vertical Lines	Longlines	Traps / Pots	Other Gears	Total
Trips with at least 1 pound of snapper grouper species					
Snapper grouper landings (million lbs)	5.48	0.54	0.53	0.35	6.90
Percent of total snapper grouper lbs	79%	8%	8%	5%	100%
Snapper grouper revenues (million \$)	\$10.54	\$1.01	\$0.81	\$0.66	\$13.02
Snapper grouper revenues in constant 2005 dollars	\$11.14	\$1.08	\$0.87	\$0.70	\$13.79
Pct of total snapper grouper revenues	81%	8%	6%	5%	100%
Landings other species (million lbs)	0.57	0.37	0.03	0.82	1.79
Dockside revenues other spp. (million \$)	\$0.73	\$0.20	\$0.03	\$0.95	\$1.91
Dockside revenues other species in constant 2005 dollars	\$0.78	\$0.21	\$0.03	\$1.00	\$2.01
Number of boats*	756	35	53	314	934
Number of trips	12,450	304	802	2,406	15,962
Percent of trips	78%	2%	5%	15%	100%
Number of days	21,698	1,310	1,014	2,925	26,947
Percent of days	80%	5%	4%	11%	100%
Trips per boat	16.7	14.7	11.6	17.5	17.1
Days per trip	1.7	4.3	1.3	1.2	1.7

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center.

* Some boats fish with more than one primary gear.

3.4.1.1.3 The Snowy Grouper Fishery

Landings of snowy grouper averaged 0.288 million pounds between 2001 and 2005, with average annual dockside revenues of \$0.644 million in current-year dollars and \$0.683 million in constant 2005 dollars (Table 3-7). Fishermen also landed an average of 1.416 million pounds of other species worth \$2.434 million in current-year dollars on trips that landed at least one pound of snowy grouper.

According to NOAA Fisheries Service logbook trip reports, an average of 190 boats per year landed at least one pound of snowy grouper (Table 3-7). On average, 56 boats landed at least 1,000 pounds of snowy grouper per year, 15 boats landed at least 5,000 pounds per year, and 6 boats landed at least 10,000 pounds of snowy grouper per year. Landings and fishing effort for snowy grouper declined from 2001 through 2005.

Logbook data for 2001-2005 provided information about the extent to which snowy grouper was a primary or secondary source of trip revenue. Fishing trips were classified as targeting a particular species if revenues from that species were greater than revenues from any other individual species.¹ (This is an imperfect measure of targeting behavior.) Snowy grouper were landed on an average of 1,332 trips per year, with less than 39% of them classified as targeted snowy grouper trips (Table 3-7). Targeted snowy grouper trips accounted for approximately 70% of total snowy grouper landings. Snowy grouper were caught frequently as a lesser source of revenue on trips for vermilion snapper, tilefishes, and other groupers, with the volume of secondary catch accounting for 30% of the average annual harvest of snowy grouper.

Snowy grouper are landed primarily with vertical lines and longlines. Trips with vertical lines accounted for 70% of landings of snowy grouper, while longlines accounted for 29% (Table 3-8). Approximately 48% of all trips with longlines that caught species in the snapper grouper management unit also caught snowy grouper, whereas approximately 9% of all trips with vertical lines in the snapper grouper fishery landed snowy grouper. Snowy grouper were landed as the primary revenue and secondary revenue species on trips with both gears. As a secondary-revenue species on trips with vertical lines, snowy grouper were landed frequently on trips that targeted vermilion snapper or other groupers. As a secondary-revenue species on trips with longlines, snowy grouper were landed on trips with golden tilefish.

On average from 2001-2005, snowy grouper were landed in approximately equal quantities in North Carolina, South Carolina and central-south Florida (Table 3-9). The greatest amount of fishing effort for snowy grouper occurred in central-south Florida, where snowy

¹ Fishermen 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 NMFS Accumulated Landings System.

grouper contributed about 3.8% to total snapper grouper landings. Snowy grouper represented 5% of total snapper grouper landings in North Carolina and 6% in South Carolina.

Table 3-7. Annual landings, dockside (ex-vessel) revenues, and fishing effort for snowy grouper, 2001-2005.

Item	2001	2002	2003	2004	2005	Average
Trips with at least 1 pound of snowy grouper						
Snowy grouper landings (million pounds, whole wgt)	0.352	0.311	0.287	0.239	0.249	0.288
Dockside revenue from snowy grouper (million dollars)	\$0.766	\$0.670	\$0.638	\$0.549	\$0.597	\$0.644
Dockside revenue in constant 2005 dollars (millions)*	\$0.844	\$0.728	\$0.678	\$0.568	\$0.598	\$0.683
Price/lb (whole wgt) for snowy grouper	\$2.17	\$2.16	\$2.22	\$2.29	\$2.40	\$2.24
Price/lb in constant 2005 dollars*	\$2.40	\$2.34	\$2.36	\$2.37	\$2.40	\$2.37
Landings of other species on trips with snowy grouper (million lbs)	1.848	1.566	1.403	1.159	1.105	1.416
Dockside revenue from other species on trips with snowy grouper (million \$)	\$3.183	\$2.641	\$2.170	\$2.055	\$2.122	\$2.434
Dockside revenue from other species in constant 2005 dollars (millions)	\$3.510	\$2.868	\$2.303	\$2.122	\$2.125	\$2.568
Number of boats that landed snowy grouper	226	206	189	167	163	190
Number of boats landing 1,000 lbs or more per year of snowy grouper	70	68	58	48	39	56
Number of boats landing 5,000 lbs or more per year of snowy grouper	17	15	14	18	13	15
Number of boats landing 10,000 lbs or more per year of snowy grouper	7	6	7	5	5	6
Number of trips with at least 1 pound of snowy grouper	1,721	1,552	1,347	1,060	980	1,332
Number of trips with snowy grouper as primary source of trip revenue	603	599	543	433	435	523
Number of trips with snowy grouper as a lesser source of trip revenue	1,118	953	804	627	545	809

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center.

* The Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-8. Description of fishing activities for trips with at least 1 pound of snowy grouper, by primary gear, 2001-2005 averages.

Item	Vertical Lines	Longlines	Other Gears	Total
Trips with at least 1 pound of snowy grouper				
Number of boats that landed snowy grouper*	173	23	18	190
Number of trips that landed snowy grouper	1,151	147	34	1,332
Percent of trips with snowy grouper, by gear	86.4%	11.0%	2.6%	100%
Trips with snowy grouper as percent of all snapper grouper trips with this gear	9.2%	48.4%	1.0%	8.3%
Landings of snowy grouper (million lbs)	0.201	0.083	0.004	0.288
Percent of snowy grouper landings by gear	69.8%	28.8%	1.4%	100%
Snowy grouper landings as percent of snapper grouper landings with this gear	3.7%	15.4%	0.4%	4.2%
Dockside revenues for snowy grouper (million \$)	\$0.442	\$0.194	\$0.007	\$0.644
Landings other species (million lbs)	0.986	0.408	0.022	1.416
Revenues other species (million \$)	\$1.830	\$0.577	\$0.027	\$2.434
Number of trips with snowy grouper as primary source of revenue	476	40	6	522
Number of trips with snowy grouper as a lesser source of trip revenue	675	107	28	810

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center.

* Some boats fish with more than one primary gear.

Table 3-9. Annual landings and dockside revenues for trips with at least 1 pound of snowy grouper, 2001-2005 averages by state.

Item	North Carolina	South Carolina	Georgia and Northeast Florida	Central and South Florida	Total
Trips with at least 1 pound of snowy grouper					
Number of boats that landed snowy grouper*	44	36	16	99	190
Number of trips that landed snowy grouper	378	205	88	661	1,332
Percent of trips with snowy grouper, by state	28.3%	15.4%	6.6%	49.7%	100%
Trips with snowy grouper as percent of all snapper grouper trips in this area	13.3%	21.2%	14.9%	5.7%	8.3%
Landings of snowy grouper (million lbs)	0.092	0.090	0.008	0.098	0.288
Percent of snowy grouper landings by area	32.0%	31.4%	2.5%	34.0%	100%
Snowy grouper landings as percent of snapper grouper landings with this gear	5.0%	5.5%	0.8%	3.8%	4.2%
Dockside revenues for snowy grouper (million \$)	\$0.189	\$0.217	\$0.017	\$0.221	\$0.644
Landings other species (million lbs)	0.362	0.536	0.220	0.295	1.413
Revenues other species (million \$)	\$0.600	\$0.976	\$0.422	\$0.432	\$2.430
Number of trips with snowy grouper as primary source of revenue	128	44	4	347	523
Number of trips with snowy grouper as a lesser source of trip revenue	250	161	84	314	809

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center.

* Some boats land in more than one state.

3.4.1.1.4 The Red Porgy Fishery

Landings of red porgy averaged 0.048 million pounds between 2001 and 2005, with average annual dockside revenues of \$0.065 million in current-year dollars and \$0.069 million in constant 2005 dollars (Table 3-10). Fishermen also landed an average of 2.025 million pounds of other species worth \$4.091 million in current-year dollars on trips that landed at least one pound of red porgy.

According to NOAA Fisheries Service logbook trip reports, an average of 179 boats per year landed at least one pound of red porgy (Table 3-10). Red porgy have been landed almost exclusively as an incidental species and secondary source of trip revenue since restrictive regulations were implemented in 1999. From 2001 through 2005, red porgy were landed on an average of 1,534 trips per year, with only 1% of them classified as trips for which red porgy was the single species with the largest source of revenue. Targeted trips accounted for 7% of total landings of red porgy. Approximately 84% of the total catch of red porgy between 2001 and 2005 occurred on trips for vermilion snapper or groupers, with the remaining 9% of red porgy caught on trips for a variety of other species.

Red porgy are landed primarily with vertical line gear (Table 3-11). Despite the restrictive regulatory environment on red porgy between 2001 and 2005, red porgy were landed on nearly 12% of all snapper grouper trips with vertical lines. Red porgy are landed primarily in North Carolina, South Carolina, and Georgia-northeast Florida (Table 3-12).

Table 3-10. Annual landings, dockside (ex-vessel) revenues, and fishing effort for red porgy, 2001-2005.

Item	2001	2002	2003	2004	2005	Average
Trips with at least 1 pound of red porgy						
Red porgy landings (million pounds, whole wgt)	0.052	0.057	0.045	0.045	0.040	0.048
Dockside revenue from red porgy (million dollars)	\$0.077	\$0.081	\$0.060	\$0.056	\$0.050	\$0.065
Dockside revenue in constant 2005 dollars (millions)*	\$0.084	\$0.088	\$0.064	\$0.058	\$0.050	\$0.069
Price/lb (whole wgt) for red porgy	\$1.46	\$1.43	\$1.34	\$1.27	\$1.25	\$1.36
Price/lb in constant 2005 dollars*	\$1.61	\$1.55	\$1.42	\$1.30	\$1.25	\$1.44
Landings of other species on trips with red porgy (million lbs)	2.337	1.978	1.915	1.894	2.002	2.025
Dockside revenue from other species on trips with red porgy (million \$)	\$4.527	\$3.887	\$3.868	\$3.858	\$4.317	\$4.091
Dockside revenue from other species in constant 2005 dollars (millions)	\$4.976	\$4.207	\$4.100	\$3.968	\$4.295	\$4.309
Number of boats that landed red porgy	200	180	175	174	167	179
Number of boats landing 1000 lbs or more per year of red porgy	6	7	4	**	**	**
Number of boats landing 5000 lbs or more per year of red porgy	0	0	0	0	0	0
Number of trips with at least 1 pound of red porgy	1,790	1,695	1,540	1,325	1,321	1,534
Number of trips with red porgy as primary source of trip revenue	11	41	11	8	9	16
Number of trips with red porgy as a lesser source of trip revenue	1,779	1,654	1,529	1,317	1,312	1,518

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center.

* The Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation. ** Numbers of boats fewer than 4 cannot be tabulated.

Table 3-11. Description of fishing activities for trips with at least 1 pound of red porgy, by primary gear, 2001-2005 averages.

Item	Vertical Lines	Other Gears	Total
Number of boats that landed red porgy*	169	26	179
Number of trips that landed red porgy	1,473	61	1,534
Percent of trips with red porgy, by gear	96.0%	4.0%	100%
Trips with red porgy as percent of all snapper grouper trips with this gear	11.8%	1.7%	9.6%
Landings of red porgy (million lbs)	0.047	0.001	0.048
Percent of red porgy landings by gear	97.9%	2.1%	100%
Red porgy landings as percent of snapper grouper landings with this gear	0.9%	< 0.1%	0.7%
Dockside revenues for red porgy (million \$)	\$0.064	\$0.001	\$0.065
Landings other species (million lbs)	1.963	0.062	2.025
Revenues other species (million \$)	\$3.964	\$0.127	\$4.091
Number of trips with red porgy as primary source of revenue	16	0	16
Number of trips with red porgy as a lesser source of trip revenue	1,457	61	1,518

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center.

* Some boats fish with more than one primary gear.

Table 3-12. Annual landings and dockside revenues for trips with at least 1 pound of red porgy, 2001-2005 averages by state.

Item	North Carolina	South Carolina	Georgia and Northeast Florida	Central and South Florida	Total
Trips with at least 1 pound of red porgy					
Number of boats that landed red porgy*	82	48	30	24	179
Number of trips that landed red porgy	833	425	196	80	1,534
Percent of trips with red porgy, by state	54.3%	27.7%	12.8%	5.2%	100%
Trips with red porgy as percent of all snapper grouper trips	29.4%	43.9%	33.2%	0.7%	9.6%
Landings of red porgy (million lbs)	0.026	0.013	0.007	0.002	0.048
Percent of red porgy landings by state	54.2%	27.1%	14.5%	4.2%	100%
Red porgy landings as percent of snapper grouper landings	1.4%	0.8%	0.8%	< 0.1%	0.7%
Dockside revenues for red porgy (million \$)	\$0.033	\$0.020	\$0.009	\$0.002	\$0.065
Landings other species (million lbs)	0.804	0.779	0.415	0.027	2.025
Revenues other species (million \$)	\$1.590	\$1.634	\$0.813	\$0.054	\$4.091
Number of trips with red porgy as primary source of revenue	5	1	0	10	16
Number of trips with red porgy as a lesser source of trip revenue	828	424	196	70	1,518

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center.

*Some boats land in more than one state.

3.4.1.1.5 The Tilefish Fishery

Landings of golden tilefish averaged 0.372 million pounds between 2001 and 2005, with average annual dockside revenues of \$0.695 million in current-year dollars and \$0.737 million in constant 2005 dollars (Table 3-13). Fishermen also landed an average of 0.307 million pounds of other species worth \$0.450 million in current-year dollars on trips that landed at least one pound of golden tilefish.

According to NOAA Fisheries Service logbook trip reports, an average of 73 boats per year landed at least one pound of golden tilefish (Table 3-13). On average, 25 boats landed at least 1,000 pounds of golden tilefish per year, 14 boats landed at least 5,000 pounds per year, and 10 boats landed at least 10,000 pounds of golden tilefish per year. Landings and fishing effort for golden tilefish declined from 2001 through 2005.

Logbook data for 2001-2005 provided information about the extent to which golden tilefish was a primary or secondary source of trip revenue. Fishing trips were classified as targeting a particular species if revenues from that species were greater than revenues from any other individual species. Golden tilefish were landed on an average of 426 trips per year, with 65% of them classified as targeted golden tilefish trips that accounted for approximately 90% of total golden tilefish landings (Table 3-13). Golden tilefish also were caught as a secondary source of revenue on trips for snowy grouper and yellowedge grouper, with the volume of secondary catch accounting for 10% of the average annual harvest of golden tilefish.

Boats with bottom longlines account for 91% of the total harvest of golden tilefish (Table 3-14). On average, 62% of golden tilefish were landed in central-south Florida, 33% in South Carolina, and 4% in North Carolina (Table 3-15).

Table 3-13. Annual landings, dockside (ex-vessel) revenues, and fishing effort for golden tilefish, 2001-2005.

Item	2001	2002	2003	2004	2005	Average
Trips with at least 1 pound of golden tilefish						
Golden tilefish landings (million pounds, whole wgt)	0.489	0.444	0.349	0.272	0.307	0.372
Dockside revenue from golden tilefish (million dollars)	\$0.869	\$0.797	\$0.630	\$0.510	\$0.668	\$0.695
Dockside revenue in constant 2005 dollars (millions)*	\$0.959	\$0.864	\$0.669	\$0.527	\$0.666	\$0.737
Price/lb (whole wgt) for golden tilefish	\$1.78	\$1.79	\$1.81	\$1.87	\$2.18	\$1.87
Price/lb in constant 2005 dollars*	\$1.96	\$1.94	\$1.92	\$1.94	\$2.17	\$1.98
Landings of other species on trips with golden tilefish (million lbs)	0.387	0.383	0.346	0.231	0.189	0.307
Dockside revenue from other species on trips with golden tilefish (million \$)	\$0.535	\$0.551	\$0.497	\$0.331	\$0.335	\$0.450
Dockside revenue from other species in constant 2005 dollars (millions)	\$0.591	\$0.596	\$0.526	\$0.343	\$0.335	\$0.478
Number of boats that landed golden tilefish	87	86	64	65	65	73
Number of boats landing 1,000 lbs or more per year of golden tilefish	29	26	20	24	24	25
Number of boats landing 5,000 lbs or more per year of golden tilefish	18	15	16	11	8	14
Number of boats landing 10,000 lbs or more per year of golden tilefish	14	12	12	7	6	10
Number of trips with at least 1 pound of golden tilefish	472	570	395	336	359	426
Number of trips with golden tilefish as primary source of trip revenue	295	362	236	233	250	275
Number of trips with golden tilefish as a lesser source of trip revenue	177	208	159	103	109	151

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center.

* The Consumer Price Index for all Urban Consumers was used to adjust dockside revenues and average annual prices for inflation.

Table 3-14. Description of fishing activities for trips with at least 1 pound of golden tilefish, by primary gear, 2001-2005 averages.

Item	Vertical Lines	Longlines	Other Gears	Total
Trips with at least 1 pound of golden tilefish				
Number of boats that landed tilefish*	54	21	9	73
Number of trips that landed golden tilefish	212	201	13	426
Percent of trips with golden tilefish, by gear	49.8%	47.2%	3.0%	100%
Trips with tilefish as pct of all snapper grouper trips with this gear	1.7%	66.1%	0.4%	2.7%
Landings of tilefish (million lbs)	0.031	0.340	0.002	0.372
Percent of tilefish landings by gear	8.3%	91.4%	0.3%	100%
Tilefish landings as percent of snapper grouper landings with this gear	0.6%	63.0%	0.2%	5.4%
Dockside revenues for tilefish (million \$)	\$0.057	\$0.633	\$0.004	\$0.695
Landings other species (million lbs)	0.045	0.257	0.004	0.307
Revenues other species (million \$)	\$0.085	\$0.359	\$0.005	\$0.450
Number of trips with tilefish as primary source of revenue	122	149	4	275
Number of trips with tilefish as a lesser source of trip revenue	90	52	9	151

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center.

* Some boats fish with more than one primary gear.

Table 3-15. Annual landings and dockside revenues for trips with at least 1 pound of tilefish, 2001-2005 averages by state.

Item	North Carolina	South Carolina	Georgia and Northeast Florida	Central and South Florida	Total
Trips with at least 1 pound of golden tilefish					
Number of boats that landed tilefish*	10	6	1	57	73
Number of trips that landed golden tilefish	22	59	2	343	426
Percent of trips with golden tilefish, by state	5.2%	13.8%	0.5%	80.5%	100%
Trips with tilefish as Pct of all snapper grouper trips win this state	0.8%	6.1%	0.3%	3.0%	2.7%
Landings of tilefish (million lbs)	0.016	0.122	0.003	0.231	0.372
Percent of tilefish landings by state	4.3%	32.8%	0.8%	62.1%	100%
Tilefish landings as percent of snapper grouper landings in this state	0.9%	7.4%	0.4%	9.1%	5.4%
Dockside revenues for tilefish (million \$)	\$0.035	\$0.203	\$0.006	\$0.451	\$0.695
Landings other species (million lbs)	0.035	0.155	0.003	0.114	0.307
Revenues other species (million \$)	\$0.047	\$0.258	\$0.006	\$0.139	\$0.450
Number of trips with tilefish as primary source of revenue	7	32	1	235	275
Number of trips with tilefish as a lesser source of trip revenue	15	27	1	108	151

Source: NOAA Fisheries Service logbook database as of April 5, 2007, Southeast Fisheries Science Center.

* Some boats land in more than one state.

3.4.1.2 Recreational Fishery

The South Atlantic 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 has been variable since 1986 with no discernable trend, varying from a low of 6.5 million pounds in 1998 to a high of 12.4 million pounds in 1988 (Table 3-16). Harvests in 2003 exceeded the historical average. The shore and private sector dominate the fishery, accounting for, on average, over two-thirds of the harvest.

Table 3-16. Harvest of snapper grouper species by mode in the South Atlantic.
 Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab and MRFSS database, NOAA Fisheries Service, SERO.

Year	Charterboat ¹	Headboat ²	Shore and Private/Rental Boat ¹	Total
1986	821,343	2,661,961	5,437,568	9,164,407
1987	2,201,804	3,227,294	6,258,376	11,981,897
1988	2,392,740	3,417,107	6,184,386	12,375,317
1989	1,752,468	2,574,910	6,064,567	10,693,382
1990	786,090	2,557,352	4,612,202	8,127,407
1991	1,029,716	2,713,513	6,339,784	10,269,025
1992	1,540,113	2,160,642	7,338,270	11,265,107
1993	1,142,815	2,328,911	5,854,258	9,491,894
1994	2,337,545	2,119,554	6,477,448	11,066,395
1995	1,681,809	1,990,254	5,996,957	9,860,827
1996	1,433,353	1,801,595	6,161,361	9,610,711
1997	1,216,907	1,751,509	4,700,150	7,761,398
1998	975,980	1,582,317	3,857,407	6,496,673
1999	2,341,051	1,603,627	4,966,208	8,995,706
2000	1,108,396	1,553,842	7,401,989	10,086,883
2001	1,347,783	1,655,941	7,984,642	11,062,432
2002	1,363,388	1,433,118	5,184,057	8,042,689
2003	1,580,336	1,375,908	7,284,329	10,240,573
Average 1999-2003**	1,548,191	1,524,487	6,564,245	9,685,657

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 NOAA Fisheries Service headboat survey.

Average annual harvests from 2001-2005 for the individual species addressed in this amendment are shown in Table 3-17. None of the species experience large recreational harvests, with red porgy harvests the largest among the three species at less than 85,000 pounds per year. Headboat harvests dominate the red porgy fishery, while charterboats harvest the most snowy grouper and golden tilefish.

Table 3-17. Average harvest (lbs) of species in this amendment by sector, 2001-2005. Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab and MRFSS database, NOAA Fisheries Service, SERO.

Sector	Red Porgy*	Snowy Grouper*	Golden Tilefish*
Charterboat	20,228	20,045	19,512
Headboat	41,169	801	0
Private	20,832	4,217	2,669

*Estimates of the total harvest of these species are based on very small sample sizes in the MRFSS. Also, in the headboat survey, harvest of snowy grouper and golden tilefish were reported on very few trips, and golden tilefish were reported on only two headboat trips in 1999.

Additional views of recreational harvest by sector are provided in Figures 3-1 through 3-3. For the headboat sector, vermilion snapper comprised 24% of the harvest from 1999-2003, whereas black sea bass accounted for 10%, and red porgy only accounted for 2%. For the charterboat sector, black sea bass and vermilion snapper comprised 5 percent and 6% of the harvest, respectively; During the same period, snowy grouper, red porgy, and golden tilefish in combination only accounted for 3% (Figure 3-2). For the private sector, combined harvests of snowy grouper, red porgy, and golden tilefish amount to approximately one-fifth of vermilion snapper harvest, which is only 2% to total snapper grouper harvests (Figure 3-3).

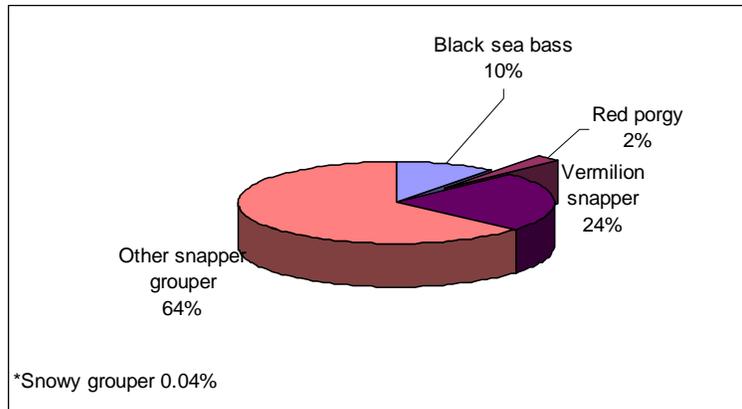


Figure 3-1. Average composition of headboat harvest, 1999-2003. Source: Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab.

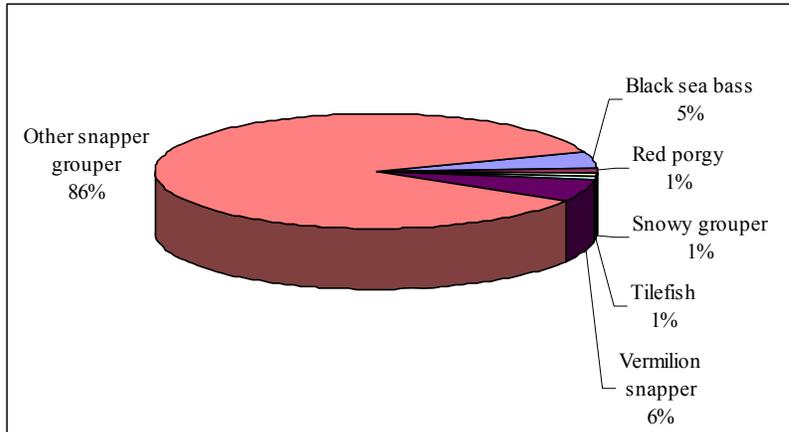


Figure 3-2. Average composition of charterboat harvest, 1999-2003.
Source: MRFSS database, NOAA Fisheries Service, SERO.

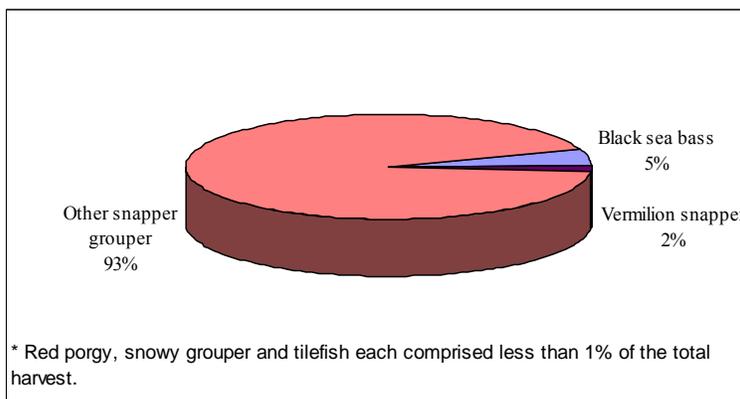


Figure 3-3. Average composition of private harvest, 1999-2003.
Source: MRFSS database, NOAA Fisheries Service, SERO.

Additional management measures have recently been implemented by the Council for the recreational sector of the species addressed by this amendment. Details of the management measures and expected impacts are provided in Amendment 13C (SAFMC 2006) and Amendment 15A (SAFMC 2007b) and are incorporated herein by reference. These measures established a new baseline condition for the respective fisheries that differs from the description thus far presented. In summary, reduced bag limits have been implemented for snowy grouper and golden tilefish, the minimum size limit has been increased for vermilion snapper, the red porgy bag limit has been increased, and a recreational allocation, decreasing over a three-year period, has been established for black sea bass, with accompanying minimum size limit and bag limit specifications to restrain harvest to the allocation. Neither snowy grouper or golden tilefish experience large recreational harvests (less than 5,000 fish per species per year) so, although some harvest reduction is expected due to the reduced bag limits, the expected reduction is minor relative to total snapper grouper harvest. The higher red porgy bag limit is expected to increase average annual red porgy harvests by 36%, or approximately 8,400 fish, compared to historic average harvests of 23,000 fish.

3.4.1.2.2 Effort

Recreational effort derived from the MRFSS can be characterized 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. Harvest 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 and harvested (not released).
4. Total recreational trips - The total estimated number of recreational trips in the South Atlantic, regardless of target intent or catch success.

Estimates of average private and charterboat effort for the entire snapper grouper fishery are provided in Table 3-18, and for the species addressed by this amendment in Table 3-20. Snapper grouper species were caught on 15% of all saltwater fishing trips during the period 1999-2003, while less than half these trips actually harvested any of these species (Table 3-18). Although catch and harvest trips involve the same anglers (an angler has to catch the fish in order to keep it), there is no similar complete linkage between target and catch trips (an angler may target a species without success, or catch a species without targeting). Nevertheless, although they do not necessarily encompass the same trips, the target effort for snapper grouper has only been about one fourth that of catch effort.

Similar analysis 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. From 2001-2005, an average of 232,000 angler days were recorded (Table 3-19). 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.

Table 3-18. South Atlantic average recreational effort for species in the snapper grouper fishery management unit¹, 2001-2005.

Source: MRFSS, Fisheries Economics Office, SERO, NOAA Fisheries Service.

Year	Target Effort		Catch Effort		Harvest Effort	
	Trips	% Total	Trips	% Total	Trips	% Total
2001-2005	823,332	3.98%	3,172,652	15.29%	1,408,390	6.78%

¹This includes all species in the snapper grouper fishery management unit.

Table 3-19. Estimated headboat angler days for the U.S. South Atlantic.
Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab.

YEAR	FLORIDA & GEORGIA	NORTH CAROLINA	SOUTH CAROLINA	TOTAL
1986	317,058	31,187	67,227	415,472
1987	329,799	34,843	78,806	443,448
1988	301,775	42,421	76,468	420,664
1989	316,864	32,933	62,708	412,505
1990	322,895	43,240	57,151	423,286
1991	280,022	40,936	67,982	388,940
1992	264,523	41,176	61,790	367,489
1993	236,973	42,786	64,457	344,216
1994	242,781	36,691	63,231	342,703
1995	210,066	40,295	61,739	312,100
1996	199,857	35,142	54,929	289,928
1997	173,273	37,189	60,150	270,612
1998	155,341	37,399	61,342	254,082
1999	164,052	31,596	55,499	251,147
2000	182,249	31,351	40,291	253,891
2001	163,389	31,779	49,265	244,433
2002	151,546	27,601	42,467	221,614
2003	145,011	22,998	36,556	204,565
2004	173,701	27,255	50,461	251,417
2005	171,078	31,573	34,036	236,687

For the three primary species addressed by this amendment, Table 3-20 provides estimates of average recreational effort for 2001-2005. Additional recreational effort information is provided in Amendment 13C (SAFMC 2006) and is incorporated herein by reference.

The results show that among the three species addressed by this action, red porgy garners the most effort in all categories except target effort. None of the three species, however, averages more than 1% of total recreational effort for any effort category.

Table 3-20. South Atlantic 2001-2005 average recreational effort.
Source: MRFSS database, NOAA Fisheries, SERO.

Year	Target Effort		Catch Effort		Harvest Effort	
	Trips	% Total	Trips	% Total	Trips	% Total
Snowy Grouper	648	0.00%	4,127	0.02%	3,313	0.02%
Golden Tilefish	434	0.00%	4,142	0.02%	3,763	0.02%
Red Porgy	224	0.00%	20,530	0.10%	26,399	0.13%

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 from 2001-2005 is provided in Table 3-21. 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. There has been an increasing trend in the number of permits issued in this fishery, with 1,328 permitted vessels in 2005 compared to 871 in 2001. Some for-hire vessels also hold commercial snapper grouper permits. The majority of snapper grouper for-hire permitted vessels are home-ported in Florida.

Table 3-21. Snapper grouper for-hire permits by homeport state.

Source: Southeast Permits Database, NOAA Fisheries, SERO.

Home Port State	# of Vessels Issued Snapper Grouper For-hire Permits					# of Vessels with Both Snapper Grouper For-hire & Commercial Permits				
	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005
EFlorida*	378	449	476	514	523	99	115	109	112	103
North Carolina	152	156	168	183	190	34	35	41	37	35
South Carolina	105	119	108	91	91	30	33	31	27	30
Georgia	22	24	25	26	23	4	4	5	2	2
Virginia	8	9	8	12	9	5	5	4	4	3
Other States	26	28	32	34	33	2	1	2	3	2
WFlorida**	150	191	256	374	397	16	21	26	28	26
AL-Texas	30	27	45	63	62					
Total	871	1,003	1,118	1,297	1,328	190	214	218	213	201

*includes Monroe County.

**includes non-coastal Florida.

The for-hire permit does not distinguish between whether the vessel operates as a charterboat or headboat. There are currently (2007), however, an estimated 82 headboats operating in the South Atlantic.

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). Haab *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 3-22). These estimates do not include expenditures in Monroe County, Florida or expenditures in the headboat sector.

Table 3-22. Summary of expenditures on saltwater trips.
Source: 1999 MRFSS add-on survey (Gentner *et al.* 2001).

Item	North Carolina		South Carolina		Georgia		Florida	
	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

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%) Florida charter operators offered half-day and full-day trips and about 15% of the fleet offered overnight trips. In comparison, only about 3% 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% higher for charterboats and 113% 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. Although more current statistics are not available, the reader should recognize that current financial statistics, including both fees and costs, are likely higher today than reported in the 1999 study.

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 U.S. 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). Amendment 8 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. Chevront 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 3-4. 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 3-4) 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 in North Carolina since 1999, with 194 unlimited commercial permits in 1999, but only 139 in 2004. Limited permits similarly declined from 36 to 16.

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% of surveyed fishermen were white and 58% had completed some college or have graduated from college. Of those who chose to answer the question, 27% of respondents reported a household income of less than \$30,000 per year, and 21% 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% of surveyed fishermen indicated year-round fishing. Gag is the fish most frequently targeted by these fishermen, with 61% 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%) 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% of fishermen targeting king mackerel between October and May. During the gag closed season, king mackerel are targeted by about 35% of the fishermen. Other snapper/grouper complex species landed by at least 5% of the fishermen in any given month were red grouper (39.5%), scamp (27.4%), snowy grouper (9.7%), grunts (14.5%), triggerfish (13.7%), and golden tilefish (5.6%). Non-snapper/grouper complex species landed by at least 5% 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 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 since 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% to 10.8%. 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 3-5 includes two maps detailing the area.



Figure 3-5. 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).

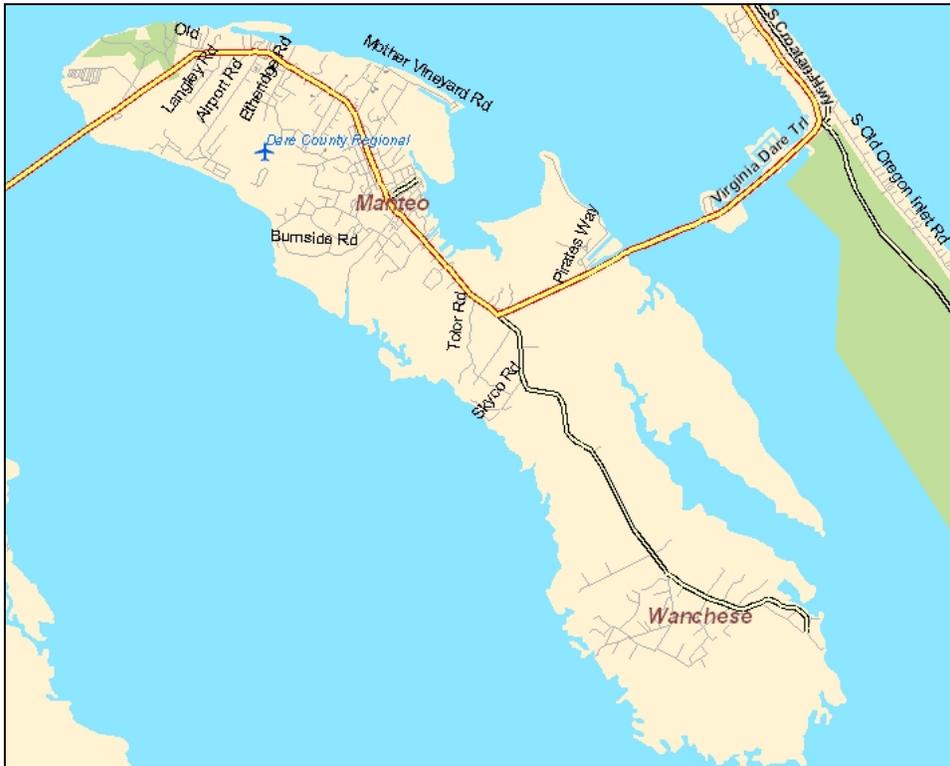


Figure 3-6. Map of Roanoke Island, North Carolina, showing Wanchese and Manteo. Source: Jepson *et al.* (2005).

Overview

Figure 3-6 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% – although even that number has decreased nearly 50% 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.

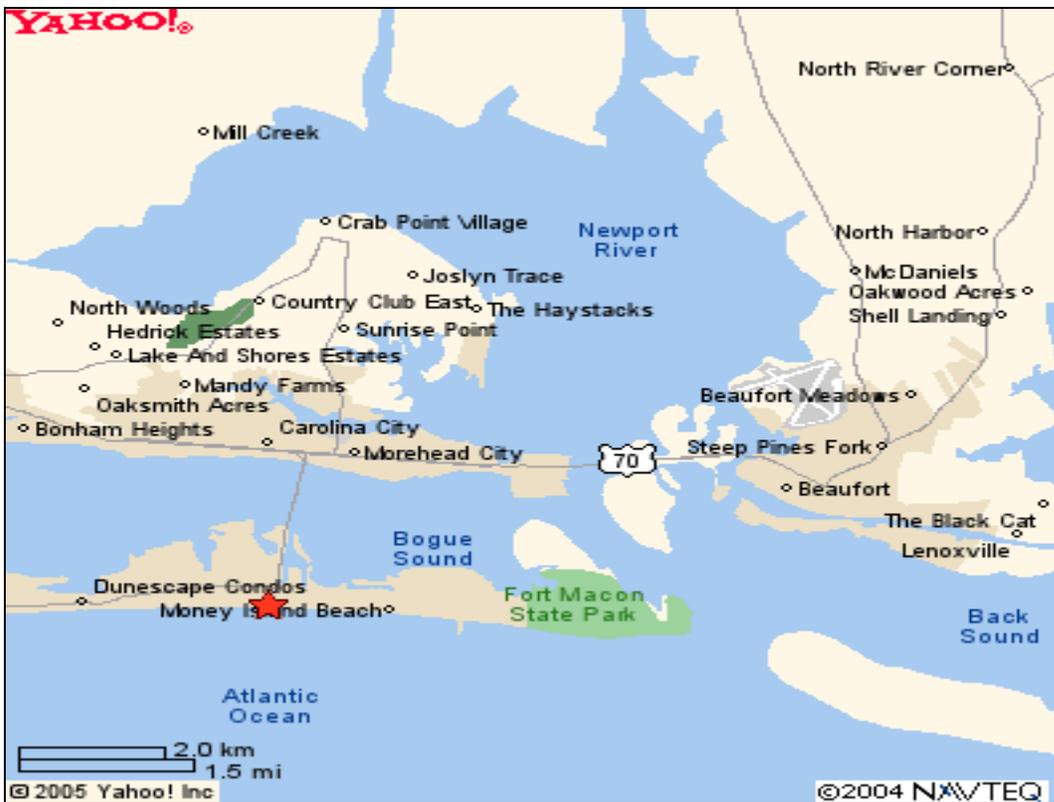


Figure 3-7. Area of Carteret County, North Carolina, showing Morehead City, Atlantic Beach (at the red star), and Beaufort.

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 3-7). 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%. The percentage of those completing high school increased by 10%, and there was a 7% 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 1% 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%) and fish and seafood (36%), with 16% 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 (Figure 3-7). 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 in 1999 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 (Figure 3-7). 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.asp).

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% 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 3-8. 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 3-8). 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.asp>). 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% 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% and the percent of residents with at least

a Bachelor's degree doubled, from 6% to 12.8%. The poverty level decreased from 20.9% to 13.5%, and the percentage of the population unemployed decreased from 8.3% to 2.2%. The percentage of residents employed in farming, fishing, and forestry decreased by half from 18.2% to 9%, while employment in sales and office occupations increased by over 17%. 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% 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% 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

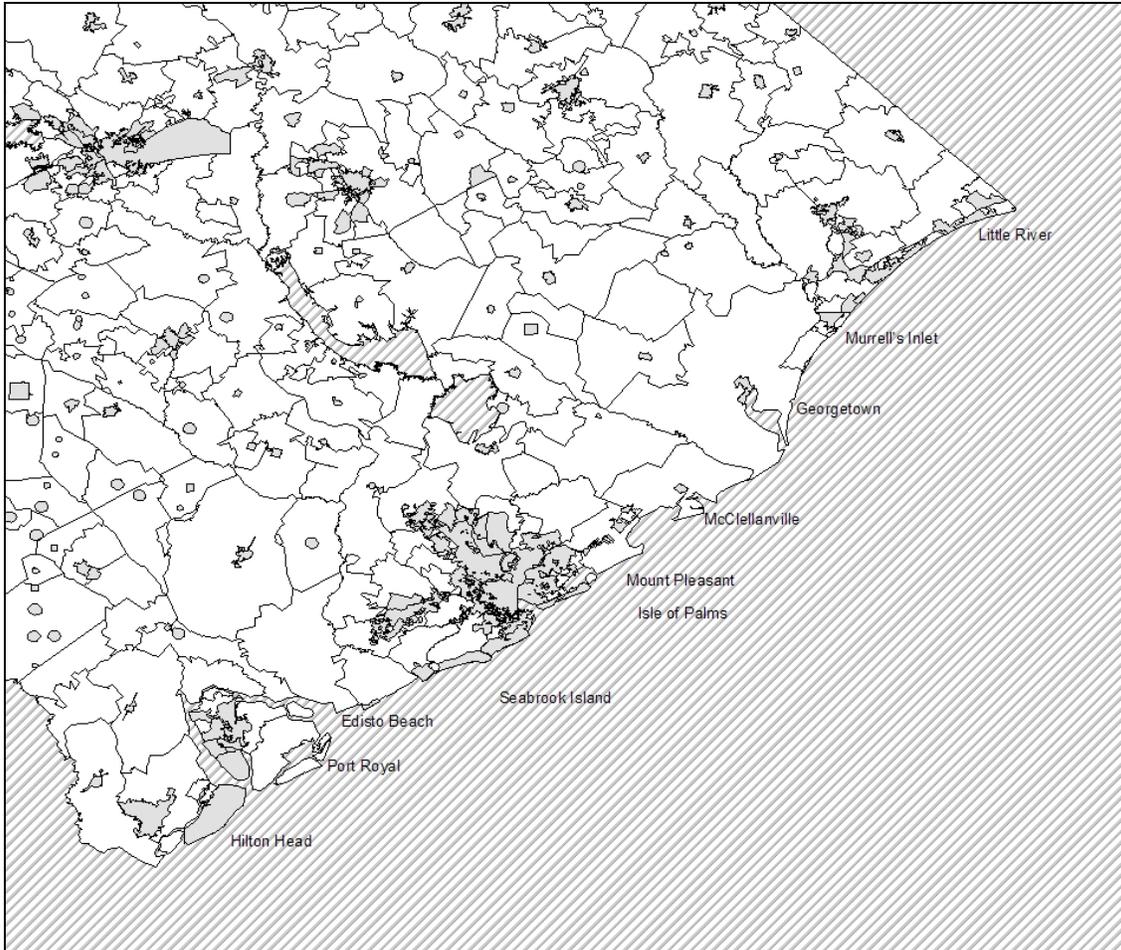


Figure 3-9. South Carolina communities with substantial fishing activity, as identified by South Atlantic Advisory Panels.

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 3-9). 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% 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 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 3-10. Little River, South Carolina, and surrounding area.
 Source: Yahoo Maps, <http://www.yahoo.com>.

Overview

Figure 3-10 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%, from nearly \$29,000 to over \$40,000. Median home value also increased by over 40%, and median rent increased by nearly 35%. 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%, and the percentage of the population unemployed decreased from 6.6% to 3.4%. The percentage of residents employed in farming, fishing, and forestry decreased from 3.6% to 0.9%.

Commercial Fishing

In 1998, 38 residents of Little River were employed in fishing related industry according to the U.S. Census, with 81% 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.

3.4.2.2.3 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% of residents had less than a 9th grade education, but by 2000 that number declined to 11.0%. The percentage of those completing high school increased by nearly 15%, while the percent receiving a bachelor's degree or higher remained about the same, from 8.4% to 8.9%. The population with an income below the poverty line decreased by 4%, but remained high at 14.6%. The unemployed population increased from 3.4% to 6.5%. There has been a sizeable decline of the population employed in manufacturing, from 29.0% to 16.2%, and the proportion of the population employed in farming, fishing, and industry remained unchanged at approximately 3%.

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 5%, 7%, and 2%, 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 permit data). The cause of this decline is unknown.

3.4.2.4 Florida

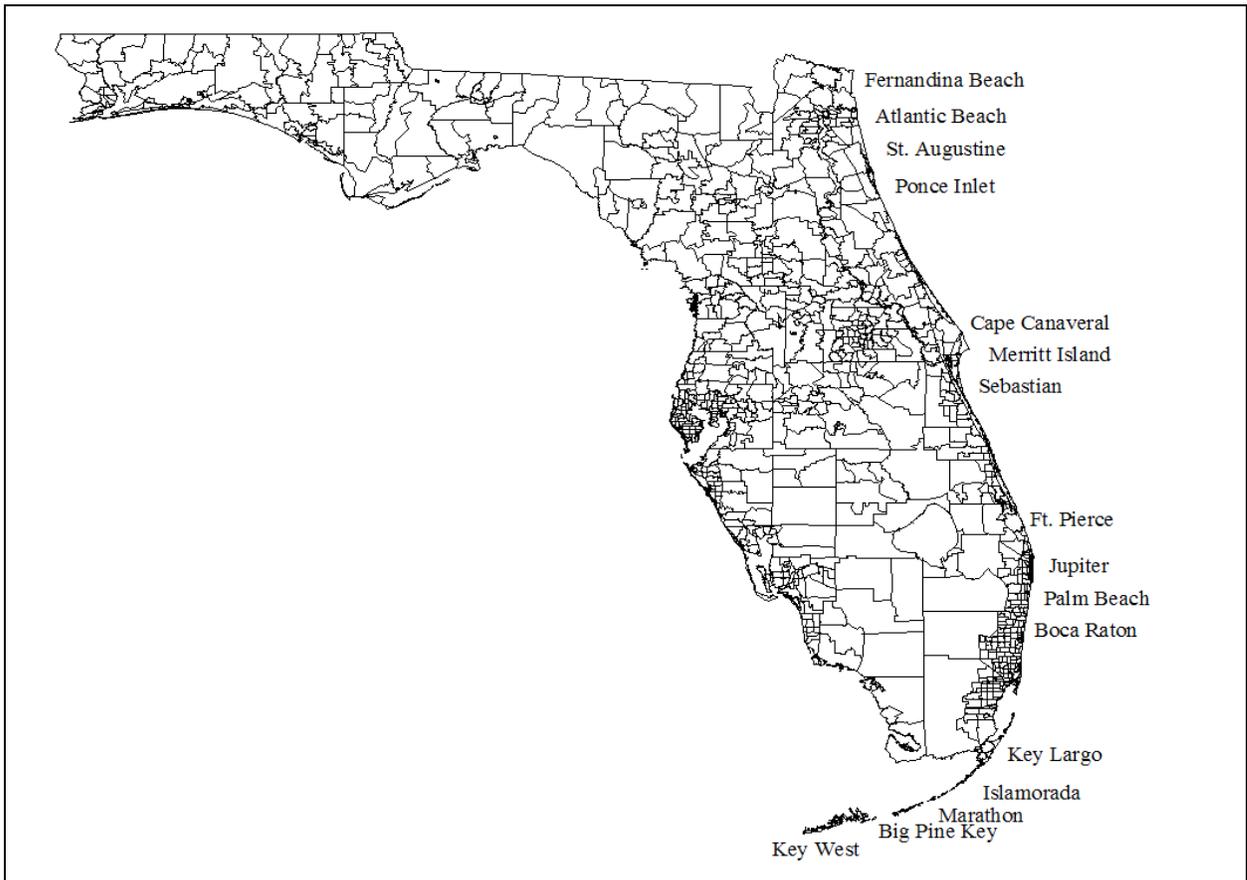


Figure 3-11. Florida communities with substantial fishing activity. Identified by South Atlantic Advisory Panels.

Source: Jepson et al. (2005)

3.4.2.3.2 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 (<http://marineeconomics.noaa.gov>).

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 3-11.

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 shown in Table 3-16, 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.

3.4.2.3.3 Cape Canaveral

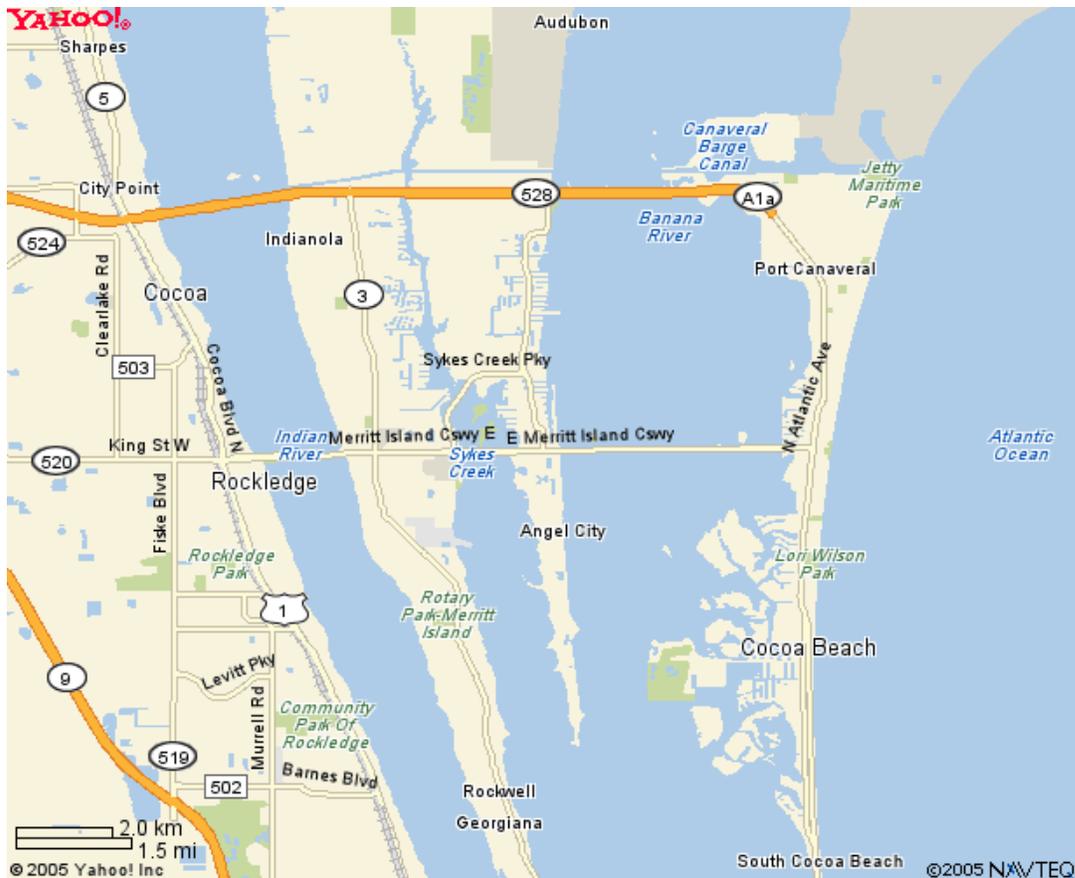


Figure 3-12. Area map of Cape Canaveral, Florida.

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 3-12.

Overview

Cape Canaveral has a fairly homogenous, aging population, with those 65 years and older growing from 16.1% of the population to 23.1% since 1990. Overall, educational attainment has increased. The number of persons who speak a language other than English at home has increased 2.5%, 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% to 20.4%, while there has been a sizeable decline in the percent of residents employed in forestry, mining, and fishing, from 2.7% in 1990 to 0.4% 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 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.

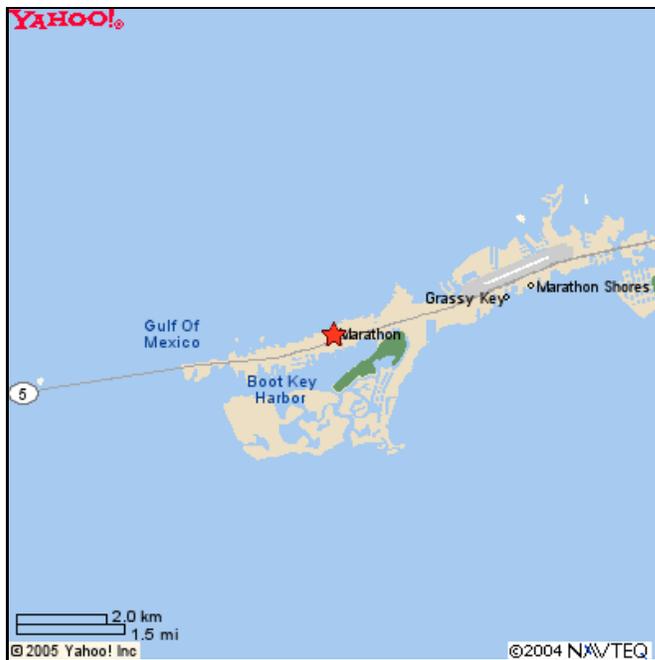


Figure 3-13. Marathon, Florida.

Source: Yahoo Maps, <http://www.yahoo.com>.

3.4.2.3.4 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 3-13 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% in 2000, involved in farming, fishing, and forestry, though the percentage has declined from 8.7% in 1990. Since there is little commercial farming and forestry occurring in the area, the decline can be assumed to relate to fishing activities. People that live below the poverty line decreased slightly from 15.1% in 1990 to 14.2% 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 Snowy Grouper Allocation Alternatives

Alternative 1 (no action). Do not define allocations for snowy grouper.

Alternative 2 (preferred). Define allocations for snowy grouper based upon landings from the ALS, MRFSS, and headboat databases. The allocations would be based on landings from the years 1986-2005. The allocations would be 95% commercial and 5% recreational. Beginning in 2009, the commercial quota would be 82,900 lbs gutted weight and the recreational allocation would be 523 fish (4,400 lbs gutted weight). The commercial quota and recreational allocation specified for 2009 would remain in effect beyond 2009 until modified.

Alternative 3. Define allocations for snowy grouper based upon landings from the ALS, MRFSS, and headboat databases. The allocations would be based on landings from the years 1992-2005. The allocations would be 93% commercial and 7% recreational. Beginning in 2009, the commercial quota would be 81,200 lbs gutted weight and the recreational allocation would be 6,100 lbs gutted weight. The commercial quota and recreational allocation specified for 2009 would remain in effect beyond 2009 until modified.

Alternative 4. Define allocations for snowy grouper based upon landings from the ALS, MRFSS, and headboat databases. The allocations would be based upon landings from 2005. Define allocations for snowy grouper as 88% commercial and 12% recreational. Beginning in 2009, the commercial quota would be 76,800 lbs gutted weight and the recreational allocation would be 10,500 lbs gutted weight. The commercial quota and recreational allocation specified for 2009 would remain in effect beyond 2009 until modified.

4.1.1 Biological Effects of Allocation Alternatives

The preferred rebuilding strategy in Amendment 15A (SAFMC 2007b) specifies a Total Allowable Catch (TAC) of 109,309 lbs whole weight (92,635 lbs gutted weight) in 2009. This TAC considers the increased commercial and recreational dead discards that may result from management measures implemented in 2007 as a result of Amendment 13C (SAFMC 2006).

Alternative 1 would not specify a commercial or recreational allocation for snowy grouper. If an allocation was not specified then it would not be possible to identify the allowable catch in the recreational sector. The commercial quota could be specified, however, as Amendment 13C used landings from 1999-2003 to establish the commercial quota (96% commercial/4% recreational). This alternative would also perpetuate the existing levels of risk to ESA-listed species.

Alternatives 2-4 would range from 88% commercial/12% recreational (**Alternative 4**) to 95% commercial/5% recreational (**Preferred Alternative 2**). Alternatives that allocate a greater portion of the harvest to the commercial sector could have a greater negative impact on habitat as longline gear is considered to do greater damage to hard bottom habitat than vertical hook and line gear (SAFMC 2007). However, damage to bottom habitat with longline gear has not been very well documented. Approximately 27% of the commercial catch of snowy grouper was with bottom longline gear during 1999-2003.

Allocating a small percentage to the recreational sector may not be effective in reducing mortality since some snowy grouper will continue to be caught and killed when fishermen target co-occurring species. Due to the reduction in the TAC needed to end overfishing, the allowable recreational take has become very small. Based on the allocations specified in **Alternatives 2-4**, the recreational portion of the TAC would range from 4,400 gutted weight or 523 fish (**Alternative 2**) to 10,500 lbs gutted weight (**Alternative 4**). During 1998-2005, recreational landings (MRFSS and Headboat) averaged 15,826 lbs gutted weight. Although Amendment 13C reduced the recreational bag limit of snowy grouper to 1 fish per person in the 5 grouper aggregate bag limit, landings higher than 4,400 lbs gutted weight could occur. Furthermore, there could be increased discards of dead snowy grouper resulting from the more restrictive bag limit. As harvest in the recreational sector is more difficult to control than the commercial sector, the allocation specified in **Alternative 4** could be considered to be reasonable even though it is based on one year of landings (2005).

The overall impacts of **Alternatives 2-4** on ESA-listed species are uncertain. Sea turtle abundance in the South Atlantic changes seasonally and the impacts of fishing effort shifts on ESA-listed species resulting from these alternatives, is difficult to quantify. However, 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.

4.1.2 Economic Effects of Allocation Alternatives

The alternative allocation ratios for snowy grouper were generated through the examination of sector harvests for different harvest years rather than an attempt to identify the allocation that maximized net benefits because application of the maximum benefit analysis is not possible at this time with available data. Because the alternatives are not the result of benefit maximization analyses, comparison of the alternatives is reduced to a simple benefit-cost analysis which, since any reallocation to one sector occurs at the expense of the other, consists of comparing the costs to the sector receiving the reduced allocation with the benefits to the sector receiving the increased allocation. The benefits of a new allocation would consist of the increase in consumer surplus to recreational anglers or consumers of purchased fish and increased profits for the suppliers of recreational access (for-hire vessels, gear suppliers, etc.), and entities in the commercial sector production chain (commercial vessels, distributors, retailers, etc.) that

accrue to the sector that receives an increased allocation. The costs of a new allocation would consist of the decrease in these variables to the sector that receives a decreases allocation.

Current economic models of the snapper grouper fisheries, as used and discussed in Amendment 15A (SAFMC 2007b), produce estimates of consumer surplus to recreational anglers and net operating revenue (returns to owner and captain/labor) to for-hire and commercial vessels. Due to data deficiencies, however, these models generate estimates of the potential costs and benefits of reallocation that inadequately characterize the potential impacts. For the recreational sector, a demand curve for snowy grouper or appropriate similar species does not exist due to insufficient data. A demand curve demonstrates how the value of each subsequent fish or pound of fish harvested (or any product/service consumed/used by an individual) is reduced relative to the previous fish or pound. This is referred to as the concept of declining marginal value. Because a demand curve has not been estimated, a fixed value must be used, resulting in overestimation of the consumer surplus. In addition to the absence of a demand curve, insufficient information on angler behavioral change exists to accurately model how trip demand would change with changes in fish biomass. The model currently allows unfettered behavioral change by allowing effort to increase with increased catch rates or harvest quotas as biomass improves under the snowy grouper rebuilding plan. Operationally, allowing effort to increase in this manner functionally assumes the relationship “provide the fish and they will come.” While such behavior is expected to be true to a point, effort expansion would not be expected to be continuous. Further, it is logical to expect that as catch rates and biomass increases, catch limits, specifically bag limits, would be increased such that some of the increased allowable harvest, and possibly a significant portion, would be harvested by base effort rather than new effort. Thus, while the value to base trips would still increase, resulting in increased benefits, due to improved fishing quality, the increase in value would not be as great as if these fish were harvested on new trips since new trips would generate increases in both consumer surplus to anglers and producer surplus for for-hire operators and others in the recreational industry. Because the model assumes linear expansion of recreational effort, the estimates of changes in net recreational benefits overstate what is likely to occur.

Similar problems exist for the commercial sector. Theoretically, changes in consumer surplus also occur as product supply to the market changes. However, the commercial reef fish market is dominated by species substitution and imports, such that market prices for domestic harvests are generally assumed to remain unchanged with changing harvest quantities. If this assumption is not correct, an impact assessment would underestimate the costs of reduced commercial allocation. Information on the profit situation for distributors and retailers of commercially caught fish is not currently available, so impacts of any reallocation on this sector cannot be quantified. Additionally, behavioral changes in the commercial sector cannot be modeled. The commercial model uses only the records of actual trips taken and does not allow fishermen to change fishing patterns (take more trips or target different species) in response to management changes or increased/decreased availability of catch. The model only allows a given trip to be taken, with historic, reduced, or increased harvests, or be cancelled entirely, with the loss of all

harvests for that trip (as well as cancellation of associated trip costs). No new trips can be generated, however, nor can target behavior be shifted to increase the harvest of other species in response to greater restrictions on a given species. Absent the ability of adaptive behavior in the commercial sector, the quantitative results likely understate benefits and overstate losses.

In light of these issues, quantitative assessment of the expected impacts of the allocation alternatives has not been attempted. Qualitatively, it is difficult to identify the best allocation alternative. No alternative to the status quo would benefit one sector while having no impact on the other sector. In fact, since each alternative to the status quo would increase the recreational snowy grouper allocation at the expense of the commercial sector, in all instances the recreational sector would be expected to gain economic benefits while the commercial sector would lose benefits. If it is believed that adverse effects are compounded the greater the deviation from status quo, large changes in the allocation from the status quo would not be recommended. As such, **Preferred Alternative 2 and Alternative 3** may be preferable to **Alternative 4** since they would result in only marginal changes in the allocation, 1 and 3 percentage points, respectively, whereas **Alternative 4** would impose an 8 percentage point change (8.33% total change) in the allocation.

While none of the allocation alternatives to the status quo (96% commercial/4% recreational based on landings between 1999-2003) would be neutral to either sector, lower overall adverse social impacts to the affected sectors and associated industries and communities may be expected to accrue to those alternatives that result in the lowest allocation away any individual sector.

4.1.3 Social Effects of Allocation Alternatives

As discussed in Section 4.1.2, each snowy grouper allocation alternative to the status quo would result in increased economic benefits to the recreational sector at the expense of the commercial sector. Appropriate changes in social benefits would be expected to similarly accrue. No alternative allocation has been identified that would benefit one sector while not harming the other sector.

Although the expected adverse economic effects on the commercial sector, the bulk of which accrue to Florida operations, are not great, any allocation would be accompanied with effects that cannot be quantified. If these unquantifiable effects are compounded as the magnitude of the allocation increases, substantially increased adverse social impacts could accrue to the commercial sector as a result of **Alternative 4** relative to the other alternatives. Allocation away from historical distributions is a particularly divisive issue in fisheries, regardless of the amount of quantitative justification the allocation may appear to have. This is particularly true when incomes and livelihoods become affected. While appropriate data on business failure/exit do not exist, anecdotal information point to the increasing difficulty commercial fishermen have remaining in fisheries in general due to increased fuel costs, stagnant or declining ex-vessel prices, decreasing dock space

and numbers of fish houses, fewer or more restrictive species options, and generally more restrictive management measures. Similar pressures exist for for-hire business operators. However, all of the allocation alternatives, while mitigating the effects of some of these pressures on the recreational sector, would exacerbate these pressures on the commercial sector. While none of the allocation alternatives to the status quo would be neutral to the commercial sector, lower adverse social impacts to the commercial sector and associated industries and communities would be expected to accrue to those alternatives that result in the lowest allocation away from the commercial sector.

4.1.4 Administrative Effects of Allocation Alternatives

Alternatives 2, 3, and 4 could increase the indirect administrative effects to NOAA Fisheries Service as landings would need to be monitored in relation to the commercial and recreational portion of the allocation for overage and commercial quota purposes. There would not be any measurable differences in the administrative effects between allocation **Alternatives 2, 3, and 4**.

4.1.5 Council Conclusions

The Council has proposed an interim allocation (**Alternative 2**) based on average landings from the years 1986-2005 because this reflects proportions taken over the longest time series of the alternatives. At their September 2007 meeting, the Snapper Grouper Advisory Panel supported Alternative 2 (95% commercial/5% recreational) as the allocation for snowy grouper. The Council concluded their proposed allocation is fair and equitable based on the information available.

4.2 Red Porgy Allocation Alternatives

Alternative 1 (no action). Do not define allocations for red porgy.

Alternative 2. Define allocations for red porgy based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 1986-2005. The allocation would be 68% commercial and 32% recreational. The commercial quota in 2009 and 2010 would be 258,500 lbs gutted weight each year. The recreational allocation in 2009 and 2010 would be 121,600 lbs gutted weight each year. The commercial quota and recreational allocation specified for 2010 would remain in effect beyond 2010 until modified.

Alternative 3. Define allocations for red porgy based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 1999-2005. The allocation would be 44% commercial and 56% recreational. The commercial quota in 2009 and 2010 would be 167,200 lbs gutted weight each year. The recreational allocation in 2009 and 2010 would be 212,900 lbs gutted weight each year. The commercial quota and recreational allocation specified for 2010 would remain in effect beyond 2010 until modified.

Alternative 4 (preferred). Define allocations for red porgy as 50% commercial and 50% recreational. The commercial quota in 2009 and 2010 would be 190,050 lbs gutted weight each year. The recreational allocation in 2009 and 2010 would be 190,050 lbs gutted weight each year. The commercial quota and recreational allocation specified for 2010 would remain in effect beyond 2010 until modified.

4.2.1 Biological Effects of Allocation Alternatives

The approved rebuilding strategy for red porgy in Amendment 15A is a constant $F < F_{MSY}$ strategy, which specifies an increase in TAC to 395,281 lbs whole weight (380,100 lbs gutted weight) in 2009. This rebuilding strategy allows harvest to increase throughout the rebuilding schedule as the stock rebuilds. Although the biological benefits to the stock from the approved rebuilding alternative would be less than the no action alternative contained in Amendment 15A, which would not have allowed for increases in catch, the approved rebuilding strategy from Amendment 15A requires lower catches in the early years of the rebuilding period than the constant catch strategy and therefore has a greater biological benefit. This TAC considers the increased commercial and recreational dead discards that may result from management measures implemented in 2007 as a result of Amendment 13C.

According to the projections provided by SEDAR 1 (2002), spawning stock biomass of red porgy was expected to increase as a result of management measures implemented through Amendment 12. MARMAP estimates of CPUE suggests the red porgy stock is rebuilding, which is confirmed by the red porgy assessment update (SEDAR Update #2 2006). The increased TAC in Amendment 15A (and associated quota and recreational allocation in Amendment 15B) is based on projections from the red porgy assessment update.

Although the TAC specified by Amendment 15A and the quota identified in Amendment 15B would be increased, fishing mortality would remain at a constant level, associated with a fishing mortality that would produce OY, thereby substantially decreasing the chances overfishing would occur. Since overfishing would not be occurring, it is expected that despite an increase in the allowable catch, the red porgy stock biomass would continue to grow, the average age and size structure of the population would increase, reproductive potential of the population would increase with the presence of a greater number of older and larger females, and recruitment would be enhanced.

Alternatives 2-4 specify how the increased TAC specified in Amendment 15A would be divided between the commercial and recreational sectors. **Alternative 1** would not specify a commercial or recreational allocation for red porgy. If an allocation was not specified then it would not be possible to identify the allowable catch in the recreational sector. The commercial quota could be specified, however, as Amendment 13C used landings from 2001-2003 to establish the commercial quota (49% commercial/51% recreational). This alternative would also perpetuate the existing levels of risk to ESA-listed species.

The biological effects of **Alternatives 2-4** would be similar ranging from 44% commercial/56% recreational (**Alternative 3**) to 68% commercial/32% recreational (**Alternative 2**). Estimates of increased dead discards associated with implementing new management measures was based on data from 2001-2005 where 48% of the harvested catch was from commercial sources and 52% was from the recreational sector. Therefore, the allocations specified in **Alternatives 3 and 4** are most similar to those used to estimate the increased dead discards from new management measures incorporated into the TAC in Amendment 15A. SEDAR 1 (2002) estimated higher release mortality rates for red porgy (35%) for the commercial sector than for recreational sector (8%) since red porgy have a broad depth range and commercial fishermen fish in deeper water than recreational fishermen. Therefore, with allocations higher than 48% to 50% commercial, the TAC may not adequately take into consideration the increased dead discards in the commercial sector associated with a higher release mortality rate.

Alternatives that allocate a greater portion of the harvest to the commercial sector could lead to greater bycatch of deepwater species such as snowy grouper and speckled hind, which co-occur with red porgy in depths greater than 300 feet (92 m). However, most fishermen probably do not target red porgy in deepwater and instead, catch red porgy incidentally when targeting more valuable grouper species. Red porgy are primarily taken with hook and line gear by the commercial and recreational sector; therefore, little difference in habitat damage from status quo is expected by allocating catch to either sector.

4.2.2 Economic Effects of Allocation Alternatives

As discussed in Section 4.1.2, current data do not support quantitative estimation of the expected impacts of the allocation alternatives. Qualitatively, it is difficult to identify the best red porgy allocation alternative. Although Alternative 1 would not specify an allocation, landings from the years 2001-2003 are used as the status quo for comparison purposes. None of the alternatives to the status quo would benefit one sector while having no adverse impact on the other sector. **Preferred Alternative 4** would establish an allocation closest to that of **Alternative 1** (49% commercial/51% recreational based on landings between 2001-2003), differing by only one percentage point, resulting in the least change from the harvest ratios of the status quo. **Alternative 2** would substantially increase the commercial allocation over status quo, by 19 percentage points, resulting in an increase in commercial revenues at the expense of recreational benefits. **Alternative 3**

would decrease the commercial allocation over the status quo by 15 percentage points, with the recreational sector expected to gain net benefits. From the perspective that unquantifiable adverse effects are compounded the greater the deviation from the status quo harvests, large changes in the allocation would be expected to result in greater adverse effects than smaller changes. As such, **Preferred Alternative 4** would be preferable to **Alternatives 2 and 3** since it would result in only a small change in the allocation, while both **Alternatives 2 and 3** would impose large changes in current harvest allowances.

It should be noted that the discussion in the previous paragraph refers only to the effects of potential allocation changes. As discussed in Section 4.2.1, the rebuilding strategy established by Amendment 15A specified an increase in the red porgy TAC to 395,281 lbs whole weight (380,100 lbs gutted weight). Currently, the commercial red porgy quota is 127,000 lbs gutted weight and the TAC increase would increase the commercial quota to approximately 186,000 lbs gutted weight under the status quo 49 percent commercial allocation, or an increase in quota of approximately 59,000 lbs gutted weight. The value of this increase is not reflected in the discussion in the previous paragraph, which focuses only on the effects of the alternative allocations, since the TAC would increase and establish a new baseline under all of the allocation alternatives. However, as detailed in Amendment 15A, the net present value (7 percent discount rate) to the commercial sector of the new rebuilding strategy through 2016, which includes additional TAC increases in 2011 to approximately 441,000 lbs whole weight and in 2014 to approximately 485,800 lbs whole weight, is approximately \$280,000.

4.2.3 Social Effects of Allocation Alternatives

Two red porgy allocation alternatives to the status quo, which would not establish an allocation, would alternately increase the commercial allocation (**Alternative 2**) or decrease the commercial allocation (**Alternative 3**), while **Preferred Alternative 4** would only make a small change in the allocation, one percentage point added to the commercial allocation. Appropriate changes in social benefits to the respective sectors, associated industries, and communities would be expected to accrue to each alternative. Assuming prosecution of the recreational fishery mirrors that of the commercial fishery, changes in absolute magnitude would occur primarily on North Carolina and South Carolina, whereas on a percentage basis, the greatest effects would accrue to the Georgia-Northeast Florida fishermen and communities. No alternative allocation to the status quo has been identified that would benefit one sector while not harming the other sector.

Any allocation would be accompanied with effects that cannot be quantified. If these unquantifiable effects are compounded as the magnitude of the allocation increases, substantially increased adverse social impacts could accrue to the recreational sector as a result of **Alternative 2** relative to the other alternatives since the allocation would be so great. Allocation away from historical distributions is a particularly divisive issue in fisheries, regardless of the amount of quantitative justification the allocation may appear to have. This is particularly true when incomes and livelihoods become affected. While

appropriate data on business failure/exit do not exist, anecdotal information points to the increasing difficulty for-hire businesses have remaining in fisheries in general due to increased fuel costs, decreasing dock space, fewer or more restrictive species options, and generally more restrictive management measures. Similar and additional pressures exist for commercial operators such that **Alternative 3** could be expected to have serious adverse economic and social consequences on the commercial sector and associated industries. **Preferred Alternative 4**, while not neutral with regards to current harvest ratios, would result in the smallest change relative to current harvests and, as such, would be expected to have the smallest adverse social impact. It cannot be determined, however, whether the net social impact would be positive or negative. While none of the allocation alternatives to the status quo would be neutral to either sector, lower overall adverse social impacts to the affected sectors and associated industries and communities may be expected to accrue to **Preferred Alternative 4** since it would result in the lowest allocation away from any individual sector.

4.2.4 Administrative Effects of Allocation Alternatives

Alternatives 2, 3, and 4 could increase the indirect administrative effects to NOAA Fisheries Service as landings would need to be monitored in relation to the commercial and recreational portion of the allocation for overage and commercial quota purposes. There would not be any measurable differences in the administrative effects between allocation **Alternatives 2, 3, and 4**.

4.2.5 Council Conclusions

The Council has proposed an interim allocation of 50% commercial and 50% recreational (Alternative 2). At their September 2007 meeting, the Snapper Grouper Advisory Panel supported this alternative. If the allocation were based upon historical landings, a longer time series (1986-2005) would give a higher portion to the commercial sector (68%) while an allocation based on more recent years (1999-2005) would designate more to the recreational sector (56%). The Council concluded their proposed allocation is fair and equitable based on the information available.

4.3 Golden Tilefish Management Reference Point Alternatives

Table 4-1. MSY alternatives under consideration for golden tilefish.

Alternatives	MSY equation	F _{MSY} equals	MSY value
Alternative 1 (no action)	The yield produced by F _{MSY} . F _{30%SPR} is used as the F _{MSY} proxy for all stocks.	0.38*	Not specified
Alternative 2 (preferred)	MSY equals the yield produced by F _{MSY} . MSY and F _{MSY} are defined by the most recent SEDAR.	0.043**	336,425 lbs whole weight
*Source: Powers 1999 **Source: SEDAR 4 2004			

Table 4-2. OY alternatives under consideration for golden tilefish.

Alternatives	OY equation	F _{OY} equals	OY value
Alternative 1 (no action)	OY equals the yield produced by F _{OY} . F _{40%SPR} is used as the F _{OY} proxy.	0.26*	not specified
Alternative 2	OY equals the yield produced by F _{OY} . Note: If a stock is overfished, F _{OY} equals the fishing mortality rate specified by the rebuilding plan designed to rebuild the stock to SSB _{MSY} within the approved schedule. After the stock is rebuilt, F _{OY} = a fraction of F _{MSY} . Golden tilefish is not overfished.	(65%)(F _{MSY})	314,894 lbs whole weight**
Alternative 3 (preferred)		(75%)(F _{MSY})	326,554 lbs whole weight**
Alternative 4		(85%)(F _{MSY})	332,835 lbs whole weight**
*Source: Powers 1999 **Calculated based on Council's preferred MSY value in which F _{MSY} equals 0.043 for Alternatives 2-4 (SEDAR 4 2004)			

Table 4-3. MSST alternatives under consideration for golden tilefish.

Alternatives	MSST equation	M equals	MSST value
Alternative 1 (no action)	MSST equals SSB _{MSY} ((1-M) or 0.5, whichever is greater)	0.08*	1,783,650 lbs whole weight**
Alternative 2	MSST equals SSB _{MSY} (0.5)	n/a	969,375 lbs whole weight**
Alternative 3 (preferred)	MSST equals SSB _{MSY} (0.75)	n/a	1,454,063 lbs whole weight**
*Source: Recommendation from SEFSC based on the results from SEDAR 4 2004. **Source: Calculated based on Council's preferred MSY value in which SSB _{MSY} equals 1,938,750 lbs. whole weight (SEDAR 4 2004).			

Table 4-4. Criteria used to determine the overfished and overfishing status of golden tilefish from SEDAR 4 (2004). Actions were taken in Amendment 13C to end overfishing of golden tilefish in 2007.

DETERMINATION	SSB _{CURR} (2003)	MSST (preferred)	F _{CURR} (2002)	MFMT	STATUS
OVERFISHED?	1,818,810 lbs	1,454,063 lbs			Not overfished (SSB _{CURR} /MSST = 1.25)
OVERFISHING?			0.066	0.043*	Overfishing (F _{CURR} /MFMT = 1.53)**
*Amendment 15 is not exploring alternatives for MFMT. F _{MSY} is used as a proxy for MFMT. All lbs are in whole weight. Note: This is not an action item. **Actions were taken in Amendment 13C to end overfishing in 2006.					

4.3.1 Biological Effects of Management Reference Point Alternatives

Defining MSY, OY, MFMT, and MSST for golden tilefish will not directly affect the biological or ecological environment, including ESA-listed species. Although these parameters are not used in determining immediate harvest objectives, MSY, OY, MFMT, and MSST are reference points used by managers to assess fishery performance over the long term. As a result, redefined management reference points could require regulatory changes in the future as managers monitor the long term performance of the stock with respect to the new reference point. Therefore, these parameter definitions would affect subject stocks and the ecosystem of which they are a part, by influencing decisions about how to maximize and optimize the long-term yield of fisheries under equilibrium conditions and triggering action when stock biomass decreases below a threshold level. The biological effects of the choice of management reference points are described below.

MSY Alternative 1 would retain the SPR based MSY definition established for the golden tilefish stock in Snapper Grouper Amendment 11 (1998) for golden tilefish. This SPR-based definition specified a fixed fishing mortality rate, which would reduce the spawning biomass per recruit to 30% of the unfished level.

MSY is a function of certain characteristics of the current fish population, such as its age and size structure. While no action **Alternative 1** provides an estimate of F_{MSY} , no value is specified for MSY. Therefore, given our current state of knowledge about the stock, **Preferred Alternative 2** offers the best estimate of the true MSY. Retaining a F_{MSY} or MSY value that is too high could cause fishery managers to unintentionally allow the stocks to be overexploited. Overexploitation can have many negative effects on the fished stock including a decline in number of individuals, reduced fish size, a decrease in the number of males, a change in the size/age at maturity, decreased reproductive potential, an alteration of the genetic integrity, ecosystem overfishing, and recruitment overfishing. See Amendment 13C for a description of these effects (SAFMC 2006).

The Council's **Preferred Alternative 2** would specify the MSY of the golden tilefish stock to equal the value recommended by the most recent SEDAR assessment (SEDAR 4 2004). **Preferred Alternative 2** would improve the scientific basis for managing golden tilefish because it is a biomass estimate based on the best available science. Furthermore, it is more conservative than the SPR-based definition and provides fishery managers a specific reference point against which to evaluate the sustainability of catches over the long term. Designation of MSY may make it more likely management actions can be taken to reduce fishing pressure on a stock experiencing unsustainable fishing mortality or is overfished. Therefore, stocks with reference points based on SEDAR assessments are expected to provide the strongest positive environmental effects.

Harris *et al.* (2001) report that the golden tilefish stock was exhibiting many of the symptoms of an overexploited population during the 1990s. Golden tilefish are a slow growing species that may live for as long as 50 years (SEDAR 4 2004) making them

vulnerable to fishing pressure. Harris *et al.* (2001) indicate there was a significant decrease in the mean length at age for most age classes between 1980-1986 and 1996-1998, which may have been a function of heavy fishing pressure. There was also a decrease in the size and age at maturity during the two time periods. Harris *et al.* (2001) state that males are significantly larger than females. With a shift to smaller fish in recent years, Harris *et al.* (2001) identify differences in the sex ratios between the 1980s and 1990s. During 1980-1986, the sex ratio was not significantly different from 1:1; however, during 1996-1998, females dominated samples.

OY Alternative 1 would retain the OY definition established in the Snapper Grouper FMP Amendment 11 (SAFMC 1998d); however, the value for OY was not specified. Not designating an OY value or designating one not based upon the best available science (**OY Alternative 1**) would have adverse, indirect effects on the golden tilefish stock. The SPR-based definition identifies a fixed fishing mortality rate, which would reduce the spawning biomass per recruit to 40% of the unfished level. Powers (1999) estimated $F_{40\%SPR}$ as 0.26.

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 65% of F_{MSY} . Therefore, a larger sustainable biomass associated with a fishing mortality rate at 65% of F_{MSY} would be good for the stock, but could have negative social and economic effects, in the short term, because longer and/or harder short-term reductions in harvest would be needed to achieve larger sustainable biomass.

Like **Alternative 1**, **Alternatives 2-4** would specify fixed exploitation rates. However, the rates defined by **Alternatives 2-4** relate directly to what is expected to produce MSY (F_{MSY}), consistent with the definition of OY provided in the Magnuson-Stevens Act and as discussed in the National Standard Guidelines at 50 CFR 600.310(b). These alternatives would indirectly benefit the biological and ecological environment by providing a more precise estimation of OY based upon the recent stock assessment.

Alternatives 2-4 are distinguished from one another by the level of risk (and associated tradeoffs) each would assume. **Alternative 2** represents the most precautionary management program of those considered for each unit. This alternative defines OY to equal the average yield associated with fishing at just 65% of F_{MSY} . This OY definition would 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 golden tilefish over the long term.

The Council's **Preferred Alternative 3** defines OY as the average yield associated with fishing at 75% of F_{MSY} . This definition reduces slightly the safety margin between MSY and OY relative to **Alternative 2**. 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 that the ratios are consistent across a broad set of life history characteristics ranging from species such as snowy grouper with low natural mortality rates to more productive species like vermilion snapper and black sea bass. Restrepo *et al.* (1998) determined the ratio between the yield of fishing at 75% of F_{MSY} relative to fishing at 75% of F_{MSY} relative to MSY would range from 0.949 and 0.983. Restrepo *et al.* (1998) also indicate fishing at this rate under equilibrium conditions is expected to reduce the risk of overfishing by 20-30%. Golden tilefish are extremely vulnerable to overfishing because they are extremely long-lived, late to mature, and exhibit sexual dimorphism. Therefore, the biological and ecological effects of this definition for golden tilefish are still expected to be positive.

Alternative 4 defines OY equal the average yield associated with fishing at 85% of F_{MSY} . This is the least conservative of the OY alternatives considered because it would further reduce the precautionary buffer between OY and MSY. Therefore, this definition would provide the least amount of indirect benefits to the biological and ecological environment of all the alternatives, and could make it more difficult to sustain golden tilefish over the long term.

MSST Alternatives 1-3 would define an overfished condition for golden tilefish if the stock size was below a specified proportion of B_{MSY} .

Alternative 1 would retain the MSST definition established in the Snapper Grouper FMP Amendment 11. It requires MSST to be at least one half of SSB_{MSY} , but allows for it to be greater than this value if M is suitably low. If $(1-M)$ is less than or equal to 0.5, then the value obtained from this alternative would be the same as that obtained from **Alternative 2**. However, M is very small (0.08) for golden tilefish. This alternative would yield MSST equal to 1,783,650 lbs whole weight based on $M=0.08$. This estimate is very close to $SSB_{MSY}=1,938,750$ lbs whole weight defined by the Council's preferred MSY alternative. Therefore, if this alternative were chosen, then MSST would be very close to SSB_{MSY} .

If all other factors remained constant, adoption of this alternative would build additional conservatism into the management program by nearly eliminating the buffer between MSST and B_{MSY} so that a stock would never be permitted to fall below B_{MSY} without triggering an "overfished" determination and the mandatory development a rebuilding plan within one year. The closer MSST is to B_{MSY} , the shorter the time needed to rebuild the stock to B_{MSY} if F is constrained below the MFMT. Therefore, **Alternative 1** is likely to ensure the golden tilefish stock could rebuild to B_{MSY} from an overfished condition more quickly than other alternatives. This would seem to be a reasonable alternative since golden tilefish are long lived, slow growing, exhibit sexual dimorphism, and are extremely vulnerable to overfishing. However, simulations on a wide variety of species indicate that stocks at biomass levels below B_{MSY} can rebuild to B_{MSY} with little difficulty as long as fishing mortality is suitably constrained below the MFMT (Myers *et al.* 1994; Restrepo *et al.* 1998). Additionally, the tradeoff associated with the assurance provided by this conservative definition is that natural variation in recruitment could cause stock biomass to frequently alternate between an overfished and rebuilt condition, even if the

fishing mortality rate applied to the stock was within the limits specified by the MFMT. If realized, this situation would result in administrative and socio-economic burdens related to developing and implementing multiple rebuilding plans that may not be biologically necessary.

Alternative 2 is the most risky of those considered, because it would allow stock biomass to decrease to as little as 50% of the MSY level before an overfished determination was made, regardless of stock productivity. Such a low threshold for determining an overfished status could be problematic for a species such as golden tilefish, which is particularly vulnerable to overfishing. This alternative could make it more difficult to rebuild the stock from an overfished condition within the allowed time period, and would likely result in more severe catch restrictions following an overfished determination. However, it would eliminate the potential administrative complications associated with setting MSST close to B_{MSY} by establishing a larger buffer between what is considered to be an overfished and rebuilt condition.

Preferred Alternative 3 is a compromise between the previous two alternatives. Choice of this alternative would provide a higher threshold than **Alternative 2** for determining when golden tilefish is overfished and associated negative effects on fished species and their ecosystems, while minimizing undue administrative and economic burdens that could be experienced with **Alternative 1** due to natural variation in recruitment, which could cause stock biomass to frequently alternate between an overfished and rebuilt condition.

4.3.2 Economic Effects of Management Reference Point Alternatives

4.3.2.1 General Concepts

Defining the MSY, OY MFMT, and MSST of a species does not alter the current harvest or use of the resource. Specification of these measures merely establishes benchmarks for fishery and resource evaluation from which additional management actions for the species would be based, should comparison of the fishery and resource with the benchmarks indicate that management adjustments are necessary. The impacts of these management adjustments will be evaluated at the time they are proposed. As benchmarks, these parameters would not limit how, when, where, or with what frequency participants in the fishery engage the resource. This includes participants who directly utilize the resource (principally, commercial vessels, for-hire operations, and recreational anglers), as well as participants associated with peripheral and support industries. All entities could continue normal and customary activities under any of the alternative specifications. Participation rates and harvest levels could continue unchanged.

Since there would be no direct effects on resource harvest or use, there would be no direct effects on fishery participants, associated industries or communities. Direct effects only accrue to actions that alter harvest or other use of the resource. Specifying MSY, OY, and MSST, however, establishes the platform for future management, specifically

from the perspective of bounding allowable harvest levels. The relationship between and implications of the harvests levels implied by the MSY and OY alternatives relative to the status quo are discussed in the following section (Section 4.3.1.2.2).

Fishery management decisions influence public perception of responsible government control and oversight. These perceptions in turn influence public behavior. This behavior may be positive, such as cooperative participation in the management process, public hearings, and data collection initiatives, or negative, such as non-cooperation with data initiatives, legal action, or pursuit of political relief from management action. Positive behavior supports the efficient use of both the natural resource and the economic and human capital resources dedicated to the management process. Negative behavior harms the integrity of the information on which management decisions are based, induces inefficient use of management resources, and may prevent or delay efficient use of the natural resource. The specific benefits and costs of these behaviors cannot be calculated. Although disagreement with the exact specifications contained in the MSY and OY alternatives may occur, any of the alternatives satisfy the technical guidelines and would establish the required platform from which future action can be taken and, thus, should generally induce satisfaction with the management of the resource. However, the alternatives vary in implications for total allowable harvest and constituents who favor more liberal harvests would likely prefer the alternatives in the decreasing order of the potential harvest implied by the alternative specifications, while those who favor more conservative harvests would likely hold the opposing preferences. The net effect of the behavioral responses from these opposing constituent groups cannot be determined.

Administrative costs of fishery management accrue from the time and labor involved in developing new regulations, permitting systems, or other management actions. To the extent that each of the MSY, OY, and MSST alternatives provide fishery scientists and managers with specific objective and measurable criteria to use in assessing the status and performance of the fishery, the impacts of the various alternatives on administrative costs are indistinguishable. However, the more conservative (lower) the equivalent allowable harvest level, the greater the potential for harvest overages, necessitating additional management action, with associated administrative costs.

In addition to the trigger to subsequent management that MSY and OY may provide, the MSST identifies the stock level below which a resource is determined overfished. Should the evaluation of the resource relative to the benchmark result in said designation, harvest and/or effort controls are mandated as part of a recovery plan. These harvest and effort controls would directly impact the individuals, social networks, and associated industries associated with the resource or fishery, inducing short-term adverse economic impacts until the resource is rebuilt and less restrictive management is allowable.

Although the MSST is a biological concept, the higher the value, the greater the likelihood the stock may fall below the MSST, resulting in a designation of being overfished, and trigger the implementation of additional management measures. Among the alternative MSST specifications for snowy grouper, **Alternative 1** represents the most conservative (highest) value and, therefore, would be expected to create the greatest

likelihood that the stock could be determined overfished. Conversely, **Alternative 2** would establish the least conservative benchmark, theoretically allowing the largest reduction in the biomass before the resource is declared overfished, and creating the least likelihood that additional regulation be required. **Preferred Alternative 3** is intermediate of the two.

4.3.2.2 Comparison of Fishery with Management Reference Point Alternatives

Combined recreational and commercial golden tilefish harvests averaged approximately 686,000 lbs from 1986-2005, approximately 375,000 lbs from 2001-2005, and totaled approximately 316,000 lbs in 2005. The total allowable golden tilefish harvest implicit in Amendment 13C (SAFMC 2006) is approximately 336,000 lbs and is assumed to be the status quo harvest. The MSY specification in **Preferred Alternative 2** is approximately 336,000 lbs. Thus, while average historical performance in the fishery exceeded the proposed MSY, the proposed MSY is equivalent to status quo harvest. **Alternative 1** would not specify an MSY value for golden tilefish. An MSY value is a required component of an FMP. Selection of **Alternative 1** as the preferred alternative would require additional management action in the future to specify an MSY. While economic performance of the fishery would not be affected by the selection of **Alternative 1**, additional action in the future would result in duplication of time, effort, and administrative costs.

Alternative 1 would not specify an OY for golden tilefish. Since an OY is a required component of an FMP, selection of **Alternative 1** would require additional management action, with associated duplication of time, effort, and administrative costs. Economic performance of the fishery, however, would not be affected. The OY specifications for **Alternatives 2-4** range from approximately 315,000 lbs (**Alternative 2**) to approximately 333,000 lbs (**Alternative 4**). **Alternatives 2-4** imply a harvest reduction of 1% to 6% relative to status quo harvests. Since **Alternative 2** would allow the lowest harvest, it represents the most conservative vision of how the resource should be managed, encompassing the least likelihood, relative to the other alternatives, that excessive harvest will occur, and avoidance of the adverse economic consequences that would accrue to increased restrictions. It would also require the greatest reduction from status quo harvest, 6%, in allowable harvest. **Alternative 4** would support virtually status quo harvest, and represents the least conservative management approach. **Preferred Alternative 3** is intermediate to **Alternatives 2 and 4** and is believed to represent a reasonable compromise to the uncertainty associated with either alternative.

MSST Preferred Alternative 3 is intermediate in the specification of the MSST relative to **Alternatives 1 and 3**. Thus, it reduces the likelihood that the fishery will be declared overfished, which would be increased with **Alternative 1**, thereby avoiding the adverse economic impacts that would precipitate from additional resultant harvest restrictions. **Preferred Alternative 3** also mitigates the potential problems of an insufficiently

conservative MSST, which might be the case for **Alternative 2**, thereby avoiding the adverse impacts that would accrue to excessive reduction of the biomass.

4.3.3 Social Effects of Management Reference Point Alternatives

4.3.3.1 General Concepts

Defining the MSY, OY, MFMT, or MSST for a species or species complex would not cause direct social impacts because it would not place specific controls on the amount or manner in which the resources are harvested. These parameters simply provide management targets and thresholds needed to assess the status and performance of the fishery. All current direct, indirect, consumptive, and non-consumptive uses of the resources will be unaffected. Evaluation of the resource relative to the benchmarks, however, may trigger harvest and/or effort controls, which would directly impact the individuals, social networks, and associated industries related to the fishery, inducing short-term adverse economic impacts until less restrictive management is allowable.

Designation of these benchmarks, therefore, establishes the foundation for subsequent regulatory change. Regulatory change may cause some of the following direct and indirect consequences: increased crew and dockside worker turnover; displacement of social or ethnic groups; increased time at sea (potentially leading to increased risk to the safety of life and boat); decreased access to recreational activities; demographic population shifts (such as the entrance of migrant populations replacing or filling a market niche); displacement and relocation as a result of loss of income and the ability to afford to live in coastal communities; increased efforts from outside the fishery to affect fishing related activities; changes in household income source; and increased gentrification of coastal communities as fishery participants are unable to generate sufficient revenue to remain in the community. Ultimately, one of the most important measurements of social change is how these social forces, in coordination with the strategies developed and employed by local fishermen to adapt to the regulatory changes, combine to affect the local fishery, fishing activities and methods, and the community as a whole.

A major indirect effect of fisheries management on the fishing community and related sectors is increased confusion and differences between the community and the management sector in levels of understanding and agreement on what is best for both the resource and the community. The fact that “the science” can cause relatively large reductions in harvests is particularly disconcerting to many fishermen and concerned stakeholders. This can induce enforcement problems and compliance with current and future regulations, which can lead to inefficient use of resources, ineffectual regulations, and failure to meet management targets, which may precipitate additional restrictions.

Data deficiencies and the complexity of the task make it difficult to determine the biological reference points with certainty. The selection of a particular benchmark has potential implications on resource users depending upon its accuracy relative to the true

value. Selection of the wrong alternative, while protecting the resource, may subject the human environment to overly restrictive regulations, increasing the risk to the economic viability of participants in the fishery and associated industries. Alternatively, the erroneous choice of a less conservative alternative when more conservatism is warranted could result in short term increased economic benefits to fishery participants, but lead to reduced stock sustainability, ultimately leading to more severe social and economic disruptions than would occur under more conservative management. In general, however, the higher the MSY and OY, the greater the allowable, long-term sustainable yield for the fishery and, hence, the greater the long-term social benefits of a sustainable and healthy resource.

4.3.3.2 Comparison of Fishery with Management Reference Point Alternatives

Since none of the alternative MSY specifications imply harvest reductions, no adverse social impacts would occur. All status quo harvest and use activities could continue unchanged and this action is expected to provide the social benefits of a stable and sustainable fishery. **Preferred Alternative 2** should engender more positive social benefits than **Alternative 1** since it represents a more appropriate specification of the resource and, thus, should both preclude the possibility of excessive harvest and be perceived as a more responsible management decision.

Among the OY alternatives, **Alternative 1** would not seem to be a rational choice since it would not specify an OY, which is a required component of an FMP. Its selection, therefore, would not be expected to be perceived as rational management since it could be perceived as non-responsive to management requirements and would require duplicative management action at a future date to specify an OY. **Alternative 4** would accommodate larger harvests than **Alternatives 2 and 3** and, as such, if sufficiently conservative, support the greatest social benefits for the harvest sector and associated industries. **Preferred Alternative 3**, however, may provide a better hedge against harvest overages, thereby supporting more stable harvests and social benefits. **Alternative 2** would most severely restrict the fishery, if unnecessarily conservative, and generate the least long-term social benefit.

MSST Alternative 1 provides the most conservative estimates of MSST, hence reducing the rate of fishing mortality that could be applied to the fishery without overfishing, and increasing the likelihood that the fishery be declared overfished once rebuilt. Consequently, **Alternative 1** would be the least beneficial to the social environment because it would be the most likely to trigger more restrictive regulation in the future. In contrast, **Alternative 2** would be the most beneficial to the social environment, if consistent with the environmental variability of the resource, because the specification of MSST is least likely to result in more restrictive regulations. The MSST specification in **Preferred Alternative 3** is intermediate to those provided by **Alternatives 1 and 2** and would be expected to support more stable harvests and social benefits.

4.3.4 Administrative Effects of Management Reference Point Alternatives

The potential administrative effects of these alternatives differ in that the scenarios defined by each alternative vary in terms of the implied restrictions required to constrain the fisheries to the respective benchmarks. Of the two MSY alternatives, only **Preferred MSY Alternative 2** identifies a specific harvest level. **OY Alternative 4** would allow the largest harvest of the OY alternatives and, therefore, less restriction. However, since OY is not equal to MSY, the OY specifications encompass considerations of safety margins to account for environmental variability and ensure long term stock sustainability. The **Preferred OY Alternative 3** would establish an intermediate safety margin relative to **Alternatives 2 and 4**. However, it would reduce the possible administrative burden of justifying the potentially excessively conservative management position embodied by **Alternative 2**, and correcting the problems induced by the potential management programs that could lead to overfishing under **OY Alternative 4**. Overfishing has the potential to burden the administrative environment. However, the magnitude of the burden depends on the action used to reduce fishing mortality. Some management measures to end overfishing might not constitute a burden. If not ended, overfishing can lead to an overfished stock biomass, which triggers a requirement to develop and implement a rebuilding plan. The greater the likelihood of being declared overfished, the greater the potential administrative burden, since more acute management attention would be required. Thus, **MSST Alternative 1** would be the most burdensome, whereas **Alternative 2** is potentially the least administratively burdensome. **Preferred Alternative 3** would be intermediate in potential administrative effects.

4.3.5 Council Conclusions

The Council has proposed the MSY, OY, MSST, and MFMT values based on the best available data from the most recent SEDAR Assessment (SEDAR 4 2004). The Council's Scientific and Statistical Committee (SSC) has approved the assessment. The SSC also approved the Council's **Preferred Alternative 3** for the overfished threshold (MSST), which would set MSST to 75% of B_{MSY} . The Council concluded their proposed MSST definition would minimize administrative and economic burdens associated with the no action Alternative 1 due to natural variation in recruitment, which could cause biomass to alternate between an overfished and rebuilt condition. The Council also concluded their proposed Optimum Yield (OY) of 75% of the fishing mortality rate that will produce MSY (F_{MSY}) is sufficiently conservative to prevent overfishing in the future.

4.4 Modification to the Sales Provisions

Alternative 1 (no action). Allow species in the snapper grouper management unit taken from the South Atlantic EEZ, up to the allowed bag limit, to be sold to a licensed dealer if the seller possesses a state-issued license to sell fish.

Alternative 2 (preferred). A South Atlantic Snapper Grouper harvested or possessed in the EEZ onboard a vessel that does not have a valid Federal Commercial Permit for South Atlantic Snapper Grouper, or a South Atlantic Snapper Grouper possessed under the bag limits, may not be sold or purchased. A person onboard a vessel with both a Federal For-Hire Vessel Permit and a Federal Commercial Snapper Grouper Permit is considered to be fishing as for-hire when fishing as described in 50 CFR §622.2. Snapper Grouper harvested or possessed on such a trip may not be sold or purchased, regardless of where it is harvested.

50 CFR §622.2 specifies that a charter vessel means a vessel less than 100 gross tons (90.8 mt) that is subject to the requirements of the United States Coast Guard (USCG) to carry six or fewer passengers for hire and that engages in charter fishing at any time during the calendar year. A charter vessel with a commercial permit, as required under Sec. 622.4(a)(2), is considered to be operating as a charter vessel when it carries a passenger who pays a fee or when there are more than three persons aboard, including operator and crew. However, a charter vessel that has a charter vessel permit for Gulf reef fish, a commercial vessel permit for Gulf reef fish, and a valid Certificate of Inspection (COI) issued by the USCG to carry passengers for hire will not be considered to be operating as a charter vessel provided--

(1) It is not carrying a passenger who pays a fee; and

(2) When underway for more than 12 hours, that vessel meets, but does not exceed the minimum manning requirements outlined in its COI for vessels underway over 12 hours; or when underway for not more than 12 hours, that vessel meets the minimum manning requirements outlined in its COI for vessels underway for not more than 12-hours (if any), and does not exceed the minimum manning requirements outlined in its COI for vessels that are underway for more than 12 hours.

50 CFR §622.2 specifies that a headboat means a vessel that holds a valid Certificate of Inspection (COI) issued by the USCG to carry more than six passengers for hire.

(1) A headboat with a commercial vessel permit, as required under Sec. 622.4(a)(2), is considered to be operating as a headboat when it carries a passenger who pays a fee or--

(i) In the case of persons aboard fishing for or possessing South Atlantic snapper grouper, when there are more persons aboard than the number of crew specified in the vessel's COI.

Alternative 3. Require a Federal charter/headboat snapper grouper permit or Federal commercial snapper grouper permit to sell snapper grouper species from the South Atlantic EEZ up to the bag limit of snapper grouper species.

4.4.1 Biological Effects of Modifications to the Sales Provisions Alternatives

Currently, commercial or recreational fishermen without a Federal commercial snapper grouper permit may sell snapper grouper species in an amount not exceeding applicable recreational bag limits. With the recent introduction of more restrictive quotas on a number of snapper grouper species, some commercial fishermen are concerned that,

when fishermen without a Federal commercial snapper grouper permit sell their catch to dealers, catch is counted toward the commercial quota and this results in early filling of quotas. In addition, sales of bag limit fish may result in double counting if catches are reported through the Marine Recreational Fisheries Statistics Survey and through commercial snapper grouper dealers. Furthermore, the Council has expressed an interest in creating a “professional snapper grouper fishery”. Therefore, the Council is considering alternatives to prohibit the sale of bag limit caught snapper grouper species. The intent of this action is to ensure regulations are fair and equitable, fish harvested by the recreational sector are not counted toward commercial quotas, total landings data are accurate, and a more “professional” snapper grouper fishery is established.

The no action **Alternative 1** would allow the continued sale of snapper grouper species from the South Atlantic EEZ up to the allowed bag limit. The Council’s **Preferred Alternative 2** would require a valid Federal Commercial Snapper Grouper Permit to sell South Atlantic snappers and groupers. South Atlantic snappers and groupers possessed under the bag limits would not be able to be sold or purchased. Some recreational fishermen may intentionally catch more fish than they can consume with the intent to sell. Therefore, **Alternative 2** could have a minor biological benefit if it results in a decrease in fishing effort. Similarly, **Alternative 3**, which would require a Federal charter/headboat snapper grouper permit or Federal commercial snapper grouper permit to sell snapper grouper species from the South Atlantic EEZ up to the bag limit of snapper grouper species, could also have minor biological benefits if it resulted in a reduction in fishing effort.

The proposed alternatives are not expected to impact ESA-listed species. They are unlikely to appreciably alter fishing effort or fishery operations to an extent that would change the existing level of risk for interactions with the South Atlantic snapper grouper fishery. However, 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.

4.4.2 Economic Effects of Modifications to the Sales Provisions Alternatives

Introduction and Description of Methodology

Preferred Alternative 2 would prohibit the sale and purchase of snapper grouper harvested in the EEZ by vessels that have not been issued a Federal commercial snapper grouper permit. This alternative would also prohibit the sale of snapper grouper caught under the bag limit and harvested in state waters by vessels that have a Federal for-hire snapper grouper permit. Under current regulations, the Federal commercial snapper grouper permit allows the possession of snapper grouper harvested in the EEZ in quantities that exceed the bag limits. Federal regulations currently allow the sale of bag limit quantities harvested in the EEZ, by either commercial or recreational fishermen, if the fishermen possess the appropriate state license to sell fish. **Alternative 3** would

allow continued bag limit sales if the fishermen possessed the Federal snapper grouper for-hire permit.

No Federal data program systematically captures bag limit sales. The primary recreational data collection program, the Marine Recreational Fisheries Statistics Survey (MRFSS), allows anglers to indicate that they have sold or plan to sell their fish, but there is no confidence that such reporting captures the full magnitude of the sales behavior by recreational anglers, particularly since the survey is angler-based and most bag limit sales are believed to be made by for-hire captains and crew and most for-hire anglers would not be expected to know what for-hire captains and crew do with fish left with the vessel. For commercial vessels, the primary vessel-level Federal data collection program, the NMFS finfish logbook program, is not capable of capturing bag limit sales by commercial vessels that only possess state licenses since this program only collects data from Federally permitted vessels.

Due to the lack of coverage of bag limit sales in the Federal data collection programs, evaluation of bag limit sales requires examination of state data captured in their respective trip ticket systems. The four South Atlantic state programs meet the requirements of the ACCSP Catch and Effort Module. Each South Atlantic state requires the collection of trip-level data at the point of sale, with state-specific qualification criteria and transfer rules for the respective licenses or endorsements that allow sales within the state. Such criteria, however, even where reporting opportunities exist to indicate whether the trip was on a charter or not, do not systematically allow clear determination of whether particular bag limit sales occur from a trip of recreational or commercial origin. Nevertheless, the trip ticket data can be used to identify vessels with the appropriate Federal permits and disaggregate snapper grouper harvests and sales by vessels with and without Federal permits.

For the following analysis of the potential economic effects of the alternative sales provisions, harvest data for 2004-2006 were used. The appropriate 2007 databases were incomplete at the time of the analysis. Federal permits data were evaluated to identify all entities, with associated vessel identification codes (id codes), that were permitted to fish in the respective Federal snapper grouper fisheries (commercial snapper grouper or for-hire snapper grouper) for any period of time (one day or more) in each of the respective years. Unique vessel participation lists were prepared for each year since changes in vessel registration from year to year result in a progressively diminished ability to match harvests with vessels in the Federally permitted fishery as the analysis progressed back in time (2006 to 2005 to 2004) using a common pool of currently permitted vessels.

Since any vessel selling snapper grouper harvested from the EEZ that did not possess a Federal commercial snapper grouper permit would be limited to the bag limit, the analysis assumed that all sales of snapper grouper harvested by vessels that could not be linked to a Federal permit represented bag limit sales. This assumption may result in over-estimation of bag limit sales since some vessel id code non-matching may be due to missing data or data entry error. The extent of such omission or error and resultant over-estimation is unknown, but is assumed to not be proportionally substantial relative to the

estimates of correctly identified bag limit sales (sales accurately associated with vessels that did not possess a Federal permit).

The analysis examined all vessels with recorded snapper grouper sales. Although compatible state regulations are always sought, since Federal regulations only apply to vessels and fishermen with a Federal permit, the analysis required identifying which vessels had either of the Federal snapper grouper permits (commercial or for-hire) and those which did not. A vessel that possessed both Federal snapper grouper permits (commercial and for-hire) was combined with the commercial-permit group since possession of the Federal commercial snapper grouper permit would allow continued sales under any of the alternatives, though the vessel would be technically limited to bag limit quantities that could not be sold if operating as a headboat or under charter.

All snapper grouper sales were partitioned according to permit type (Federal commercial snapper grouper, Federal for-hire snapper grouper, or neither Federal snapper grouper permit), area fished (EEZ or state waters; although multiple state-water codes exist for some states, such as bay or estuary, harvests were collapsed to a common state water grouping; area fished break-out was required because, absent compatible state regulations, the action would only affect, with the exception of fish harvested by vessels that possessed a Federal for-hire permit, fish harvested from the EEZ), and dealer type (those with a Federal dealer permit or not). EEZ-harvested bag limit sales can only be sold to Federally permitted snapper grouper dealers. The sales of all other species by all vessels that sold snapper grouper were also quantified to identify the relative importance of snapper grouper sales to total sales of all marine species.

Special note should be given to the analysis by dealer type. Unlike fishermen's data, which allows the linkage of permits information and fishing information (trip tickets or logbooks) through a unique vessel id code (either state or Coast Guard), state and Federal dealer records lack a common unique identifier. Such matching is necessary to identify the proportion of sales that flow through Federal dealers since the state trip tickets record sales by the state dealer's license number and not the Federal permit number. While the Federal permitting system asks the applicant to list appropriate state wholesaler's licenses, the variable response is often blank and not verified when provided, and, as a result, is not useful in linking records. Thus, comparison of databases to identify which state dealers have the Federal snapper grouper dealer permit cannot be conducted electronically using a common unique id code. Instead, a comparison of the dealer name or business name must be attempted. Unfortunately, differences in formats and registration requirements in the different databases (e.g., one database may list a name as "Smith, John" whereas the other database would record "John Smith"; alternatively, one database may list the owner or applicant's name, "John Smith," and the other database list the permit under the business or facility name, such as "Smith Seafood") precludes other than a visual comparison. Permit matching was particularly difficult for Florida, where in excess of 195 different dealers had recorded snapper grouper purchases each year from 2004-2006 and approximately 100 dealers per year that could be associated with Florida in some way (through either the mailing address or physical address, which may be different) possessed the Federal snapper grouper dealer permit. For this matching

effort, the state dealer identities were derived from state license numbers recorded in the NMFS Accumulated Landings System database (ALS; the ALS records the “dockside” purchase of all species) merged with a dealer identity and address database, while the identities of entities with the Federal permit were derived from the Federal permits database. Matching difficulties, however, resulted in fewer than half of the entities with a Florida address and a Federal permit linked with entities purchasing snapper grouper in the state from 2004-2006. While it is logical that some individuals might by circumstance in any given year possess the Federal permit and not make any purchases, such should be the exception rather than the rule. A comparison of harvest totals from the different data systems (Federal logbook versus trip ticket versus Federal ALS) indicated consistency in landings and sales totals. This suggests that the appropriate landings are being recorded and the linkage problem is one of identity matching rather than missing records. Thus, the resulting analysis of snapper grouper marketed through Federal dealers versus state dealers in Florida is expected to overstate the amount and value of fish marketed through state dealers. The implications of this will be discussed below in the discussion of the analytical results.

Given the complexity of the analysis, each layer of data disaggregation (e.g., by permit category, by water body, by species type, by dealer type) often results in differences in total landings or value due to programming nuances, data loss or leakage due to missing data or data entry error, or other indeterminate reasons. For example, not all records with snapper grouper species will have waterbody codes, and not all records with the appropriate species and waterbody codes will have dealer codes. As a result, totals from one level of analysis may not exactly match totals from another level. The time required to eliminate these differences can often be excessive given the minor difference in results. Such was the case in this analysis and totals across all results do not match exactly. Despite this outcome, the results are determined to be adequate to indicate direction and relative importance of the potential magnitude of effects.

Data and analysis were received from the respective state data collection programs and personnel via phone calls and e-mails with attached data (Alan Bianchi, North Carolina Division of Marine Fisheries, personal communication; Robert Wiggers, South Carolina Department of Natural Resources, personal communication; Julie Califf, Georgia Department of Natural Resources, personal communication; and Chad Hanson, Florida Fish and Wildlife Conservation Commission, personal communication). Analysis of the Federal permit data and additional analysis of the Florida trip ticket data was performed by SERO personnel (John Vondruska, NMFS SERO, personal communication), while NMFS ALS data were summarized by Southeast Fisheries Science Center staff (Josh Bennett, SEFSC, personal communication). Due to confidentiality rules, whereby no data are reported if sales can be associated with fewer than three entities, in the following analysis, the results for South Carolina are combined with North Carolina and the results for Georgia are combined with Florida.

In addition to the information that can be derived from state trip ticket data, anecdotal information indicates that bag limit sales occur outside all standard Federal and state reporting systems (i.e., undocumented sale to restaurants, friends, etc.). The magnitude

of these sales cannot be determined. Further, it cannot be determined with certainty whether such sales would be expected to increase or decrease in response to management change. Heightened interest in and sensitivity to bag limit sales, particularly in the form of peer/industry self-scrutiny and reporting or as a result of increased enforcement activity, could result in a decline in these undocumented sales. On the other hand, the elimination of currently legal sales opportunities could result in an increase in sales through undocumented channels.

Description of Analytical Results

The results of the analyses are provided in Tables 4-5 through 4-9. Table 4-5 contains estimates of snapper grouper harvest and sales (pounds whole weight and nominal ex-vessel value) by state and permit category. Table 4-6 similarly focuses on snapper grouper harvest and sales and further disaggregates harvest and sales by waterbody (where the fish were caught). Table 4-7 contains information on total snapper grouper sales, by state and permit type, and total sales of all other species by all fishing entities that recorded snapper grouper sales. Table 4-8 contains total snapper grouper sales information, by state, permit type, and dealer type. Finally, Table 4-9 tallies snapper grouper bag limit sales (snapper grouper sales that cannot be associated with a Federal commercial snapper grouper permit) by permit type and dealer type.

Table 4-5. Snapper grouper harvest and value by permit type (2004-2006 average, state trip ticket data).

State	Permit Type	Pounds	% Total Pounds	Value	% Total Value
North Carolina + South Carolina	Federal SG	3,186,775	41.75%	\$6,826,231	44.45%
	Federal For-hire SG	37,575	0.49%	\$82,911	0.54%
	Not Permitted/Unknown	313,733	4.11%	\$627,685	4.09%
Florida + Georgia	Federal SG	3,043,586	39.87%	\$6,133,011	39.94%
	Federal For-hire SG	141,700	1.86%	\$232,700	1.52%
	Not Permitted/Unknown	910,322	11.93%	\$1,454,891	9.47%
All	Federal SG	6,230,361	81.62%	\$12,959,242	84.38%
	Federal For-hire SG	179,275	2.35%	\$315,611	2.06%
	Not Permitted/Unknown	1,224,055	16.03%	\$2,082,576	13.56%
Total		7,633,691		\$15,357,429	

Federal SG - Federal commercial snapper grouper permit.

Federal For-hire SG - Federal charter or headboat snapper grouper permit.

Not Permitted/Unknown - does not have or cannot be linked with a Federal snapper grouper permit.

Table 4-6. Snapper grouper harvest and value by permit type and waterbody (2004-2006 average, state trip ticket data).

State	Permit Type	Waterbody	Pounds	Value	% Total \$
North Carolina + South Carolina	Federal SG	EEZ	3,182,375	\$6,822,985	
		State	4,400	\$3,246	
	Federal For-hire SG	EEZ	37,560	\$82,886	
		State	15	\$25	
	Not Permitted/Unknown	EEZ	281,072	\$616,859	
		State	32,660	\$10,826	
Florida + Georgia	Federal SG	EEZ	2,451,586	\$4,827,711	
		State	592,000	\$1,305,700	
	Federal For-hire SG	EEZ	112,700	\$184,000	
		State	29,000	\$48,700	
	Not Permitted/Unknown	EEZ	839,748	\$1,304,384	
		State	72,874	\$155,507	
All	Federal SG	EEZ	5,633,961	\$11,650,696	
		State	596,400	\$1,308,946	
	Federal For-hire SG	EEZ	150,260	\$266,886	
		State	29,015	\$48,725	
	Not Permitted/Unknown	EEZ	1,120,820	\$1,921,243	
		State	105,534	\$166,333	
Total Bag limit Sales (For-hire + Not Permitted/Unknown)		EEZ	1,271,080	\$2,188,129	91.05%
		State	134,549	\$215,058	8.95%
		Total	1,405,629	\$2,403,187	

Federal SG - Federal commercial snapper grouper permit.

Federal For-hire SG - Federal charter or headboat snapper grouper permit.

Not Permitted/Unknown - does not have or cannot be linked with a Federal snapper grouper permit.

Table 4-7. All species harvest and value by permit type (2004-2006 average, state trip ticket data).

State	Permit Type	Species	Participants	Pounds	Value	Avg. Value Participant	Avg. Value % of Total	
North Carolina + South Carolina	Federal SG	Other Species		2,564,714	\$2,001,089	\$12,128	22.67%	
		Snapper grouper		3,186,775	\$6,826,231	\$41,371	77.33%	
		Total	165	5,751,489	\$8,827,320	\$53,499		
	Federal For-hire SG	Other Species			198,177	\$242,964	\$6,942	74.56%
		Snapper grouper			37,575	\$82,911	\$2,369	25.44%
		Total	35		235,752	\$325,875	\$9,311	
	Not Permitted/Unknown	Other Species			20,017,231	\$14,666,297	\$36,303	95.90%
		Snapper grouper			313,734	\$627,684	\$1,554	4.10%
		Total	404		20,330,965	\$15,293,981	\$37,856	
Florida + Georgia	Federal SG	Other Species		5,008,140	\$12,329,918	\$22,337	66.78%	
		Snapper grouper		2,771,272	\$6,133,011	\$11,111	33.22%	
		Total	552	7,779,412	\$18,462,929	\$33,447		
	Federal For-hire SG	Other Species			621,000	\$1,280,700	\$10,328	84.62%
		Snapper grouper			141,700	\$232,700	\$1,877	15.38%
		Total	124		762,700	\$1,513,400	\$12,205	
	Not Permitted/Unknown	Other Species			9,270,528	\$13,923,140	\$13,452	90.52%
		Snapper grouper			911,530	\$1,457,580	\$1,408	9.48%
		Total	1,035	10,182,058	\$15,380,720	\$14,861		
All	Federal SG	Other Species		7,572,854	\$14,331,007	\$19,987	52.51%	
		Snapper grouper		5,958,047	\$12,959,242	\$18,074	47.49%	
		Total	717	13,530,901	\$27,290,249	\$38,062		
	Federal For-hire SG	Other Species			819,177	\$1,523,664	\$9,583	82.84%
		Snapper grouper			179,275	\$315,611	\$1,985	17.16%
		Total	159		998,452	\$1,839,275	\$11,568	
	Not Permitted/Unknown	Other Species			29,287,759	\$28,589,437	\$19,868	93.20%
		Snapper grouper			1,225,264	\$2,085,264	\$1,449	6.80%
		Total	1,439	30,513,023	\$30,674,701	\$21,317		

Federal SG - Federal commercial snapper grouper permit.

Federal For-hire SG - Federal charter or headboat snapper grouper permit.

Not Permitted/Unknown - does not have or cannot be linked with a Federal snapper grouper permit.

Other Species - all other species harvested by these entities; all weights reported in "pounds" even though this may not be the proper unit for some species.

Table 4-8. Snapper grouper harvest and value by permit type and dealer type (2004-2006 average, state trip ticket data).

State	Permit Type	Dealer Type	Pounds	Value	% Total
North Carolina + South Carolina	Federal SG	Federal	2,833,870	\$6,080,160	89.06%
		State	353,189	\$746,737	10.94%
		Total	3,187,059	\$6,826,897	
	Federal For-hire SG	Federal	34,061	\$74,014	89.27%
		State	3,512	\$8,896	10.73%
		Total	37,573	\$82,910	
	Not Permitted/Unknown	Federal	225,638	\$284,498	66.52%
		State	88,096	\$143,186	33.48%
		Total	313,734	\$427,684	
Florida + Georgia	Federal SG	Federal	2,109,256	\$4,184,041	68.22%
		State	934,330	\$1,949,000	31.78%
		Total	3,043,586	\$6,133,041	
	Federal For-hire SG	Federal	83,330	133,000	57.16%
		State	58,330	99,670	42.84%
		Total	141,660	\$232,670	
	Not Permitted/Unknown	Federal	556,644	\$869,394	59.54%
		State	355,221	\$590,720	40.46%
		Total	911,865	\$1,460,114	
All	Federal SG	Federal	4,943,126	\$10,264,201	79.20%
		State	1,287,519	\$2,695,737	20.80%
		Total	6,230,645	\$12,959,938	
	Federal For-hire SG	Federal	117,391	\$207,014	65.60%
		State	61,842	\$108,566	34.40%
		Total	179,233	\$315,580	
	Not Permitted/Unknown	Federal	782,282	\$1,153,892	61.12%
		State	443,317	\$733,906	38.88%
		Total	1,225,599	\$1,887,798	

Federal SG – Federal commercial snapper grouper permit.

Federal For-hire SG - Federal charter or headboat snapper grouper permit.

Not Permitted/Unknown - does not have or cannot be linked with a Federal snapper grouper permit.

Table 4-9. Snapper grouper bag limit sales by permit type and dealer type (2004-2006 average, state trip ticket data).

State	Permit Type	Dealer Type	Pounds	Value	% Total Value
All	Federal For-hire SG	Federal	117,391	\$207,014	
		State	61,842	\$108,566	
	Not Permitted/Unknown	Federal	782,282	\$1,153,892	
		State	443,317	\$733,906	
Total Bag limit Sales (For-hire + Not Permitted/Unknown)		Federal	899,673	\$1,360,906	61.76%
		State	505,159	\$842,472	38.24%
		Total	1,404,832	\$2,203,378	

Federal For-hire SG - Federal charter or headboat snapper grouper permit.

Not Permitted/Unknown - does not have or cannot be linked with a Federal snapper grouper permit.

All fishing harvest and sales, as depicted in Tables 4-5 through 4-9, are assumed to constitute the status quo for the purpose of this analysis, despite reflecting conditions in 2004-2006. Although, in most cases, more stringent fishing regulations exist today, due notably to the measures implemented through Snapper Grouper Amendment 13C (see below), the means by which to systematically modify the 2004-2006 data to reflect these regulations and resultant fishing behavioral adaptation have not been identified. Thus, the 2004-2006 data were used without modification. Since it is unknown the extent to which current fishing behavior and resulting harvest patterns differ from 2004-2006, the net effect of using unmodified data cannot be determined.

On average, over the 2004-2006 fishing years, approximately 7.634 million pounds of snapper grouper species valued at approximately \$15.357 million (nominal ex-vessel value) were sold per year (Table 4-5). In terms of ex-vessel value, approximately 84 percent of these sales, valued at approximately \$12.959 million (nominal ex-vessel value), were made by fishermen possessing the Federal commercial snapper grouper permit; approximately 2 percent, valued at approximately \$316,000 (nominal ex-vessel value), were made by entities with the Federal for-hire snapper grouper permit, and the remaining amount, approximately 14 percent, valued at approximately \$2.083 million (nominal ex-vessel value), were sold by entities with no identifiable Federal snapper grouper permit. For the purposes of this analysis, assuming that all snapper grouper sales that cannot be linked to a Federal commercial snapper grouper permit constitute bag limit sales, approximately 16 percent of total snapper grouper sales, or approximately 1.403 million pounds (179,275 pounds for-hire + 1,224,055 pounds not permitted/unknown), valued at \$2.398 million (\$316,000 for-hire + \$2,083,000 not permitted/unknown nominal ex-vessel value), were sold per year over this period as bag limit fish.

As seen in Table 4-6 (percentages not shown), snapper grouper sales by fishermen in all fleets (Federal commercial snapper grouper, Federal for-hire snapper grouper, and non-Federal) primarily originate from the EEZ, with approximately 91 percent of snapper grouper harvests caught in the EEZ, though a larger proportion of fish come from state waters in Florida, approximately 17 percent, than in other states (as depicted by the "Florida + Georgia" totals, of which Florida harvests dominate), as would be expected due to differences in geography, proximity to appropriate habitat, etc. Of the approximately \$2.403 million (nominal ex-vessel value) in snapper grouper sales assumed to constitute bag limit sales (note the small difference between the estimated \$2.398 million in value from Table 4-5), approximately 9 percent, or approximately 135,000 pounds valued at approximately \$215,000 (nominal ex-vessel value), of the snapper grouper landings were harvested in state waters and the rest (approximately 1.271 million pounds valued at approximately \$2.188 million, nominal ex-vessel value) harvested in the EEZ. Sales by vessels with the Federal for-hire snapper grouper permit were apportioned approximately 84 percent in terms of pounds and value (approximately 150,000 pounds valued at approximately \$267,000, nominal ex-vessel value) from the EEZ and 16 percent from state waters (approximately 29,000 pounds valued at approximately \$49,000, nominal ex-vessel value).

Table 4-8 details disaggregation of snapper grouper sales by dealer type (Federal permit or state license). In terms of nominal ex-vessel value, across all states, approximately 79 percent of snapper grouper sales from the Federal commercial snapper grouper sector were sold to dealers with that possess the Federal snapper grouper dealer permit, while approximately 66 percent and 61 percent of snapper grouper sales by vessels in the Federal snapper grouper for-hire and non-Federal fleets, respectively, were sold to Federal dealers. In total, in terms of nominal ex-vessel value, approximately 35 percent of bag limit snapper grouper (approximately \$842,000 out of \$2.4 million) were sold to non-Federal dealers. However, as discussed above, it should be recalled that significant dealer matching issues arose during the analysis of the Florida data, such that fewer than half of the dealers with the Federal permit that could be associated with a Florida address (through either the applicants address or the facility address) could be linked with dealers in the trip ticket data. As a result, the estimate of snapper grouper sales associated with Federal dealers (non-Federal dealers) is likely lower (higher) than actual, such that the total estimate of 35 percent of bag limit sales is likely higher than the true value. The amount of overestimation is unknown. As an alternative approach, if the percentage of snapper grouper sales by dealer type for North Carolina and South Carolina are assumed to be appropriate for Florida and Georgia, then the proportion of snapper grouper sales by the Federal commercial snapper grouper sector that are sold to Federal dealers increases to approximately 89 percent (from 79 percent; tabular results not shown) in terms of nominal ex-vessel value, while that of the Federal for-hire and non-Federal sectors increases to approximately 89 percent (from 66 percent) and 77 percent (from 65 percent), respectively. In total, if the North Carolina and South Carolina proportions are applied to Florida and Georgia sales, in terms of nominal ex-vessel value, approximately 21 percent of bag limit snapper grouper sales (approximately \$510,000 out of \$2.4 million) were sold to non-Federal dealers.

Table 4-9 summarizes the bag limit sales results from Table 4-8. For all snapper grouper sales assumed to constitute bag limit sales, in terms of nominal ex-vessel value, approximately 65 percent were sold to Federal dealers (35 percent non-Federal) without any adjustment for dealer linkage problems, and approximately 79 percent were sold to Federal dealers (21 percent non-Federal) if dealer proportions for Florida and Georgia harvests are assumed similar to those in North Carolina and South Carolina.

Table 4-7 depicts the relative importance of snapper grouper sales to the total fishing sales. The average fishing entity within the Federal commercial snapper grouper fleet generates approximately \$38,000 (nominal ex-vessel value) per year from seafood sales, with approximately \$18,000 (approximately 47 percent) of this total derived from snapper grouper sales and approximately \$20,000 (approximately 53 percent) derived from the sales of other marine species (note that discussion of pounds harvested is not emphasized since, although the unit of weight reported in the summary is pounds, this may not be the appropriate unit for all species, notably shellfish or crustaceans). For entities in the Federal for-hire snapper grouper fleet, the appropriate totals are approximately \$12,000 (nominal ex-vessel value) combined average annual revenues, of which approximately \$2,000 (approximately 17 percent) and approximately \$10,000 (approximately 83 percent) are derived from snapper grouper and other species,

respectively. It should be clearly understood, however, that seafood sales are not the primary revenue source for for-hire vessels, which is instead the charter fee; as described in Section 6.4, South Atlantic charterboats are estimated to have average gross annual revenues of approximately \$32,000-\$89,000, across all states, while headboat revenues are estimated to range from \$149,000-\$362,000. For commercial entities without a Federal permit, the appropriate totals are approximately \$21,000 (nominal ex-vessel value) combined average annual revenues, of which approximately \$1,400 (approximately 7 percent) and approximately \$20,000 (approximately 93 percent) are derived from snapper grouper and other species, respectively. These results demonstrate that while vessels in the Federal commercial snapper grouper fishery earn, on average, greater total gross revenues from seafood sales than vessels in the other fleets, the vessels in the Federal commercial fishery are significantly more dependent on snapper grouper revenues than operations in the other fisheries.

Economic Effects on Vessels Selling Bag Limit Quantities

Alternative 1, the status quo, would allow all customary bag limit sales activity to continue unaffected. As depicted in Tables 4-5 and 4-6, current estimates of annual bag limit sales are approximately 16 percent of total snapper grouper sales, or approximately 1.5 million pounds valued at approximately \$2.4 million (nominal ex-vessel value).

To the extent that recreational trip demand is influenced by the ability to subsidize the cost of a fishing trip through the sales of bag limit-fish, under the status quo, angler trip demand under **Alternative 1** should remain unchanged. However, the increased harvest restrictions contained in Amendment 13C (SAFMC 2006) may induce operational change of for-hire vessels that either operate in the Federal snapper grouper fishery or possess an appropriate state license resulting in increased sales of bag limit fish as for-hire vessels compete for reduced commercial quota. Fish harvested and marketed in this manner, whether harvested by for-hire vessels or private anglers, may be counted as both recreational and commercial harvests, complicating fishery assessments and resulting in accelerated quota closures. These sales reduce the amount and value of harvests allocated to the Federal commercial snapper grouper fishery, resulting in reduced revenues for the sector these quotas were intended for. Accelerated closures impose additional economic losses through market disruption (decreased period of time when fresh domestic product is available) and forced alteration of fishing practices, including effort transfer to other resources that may be less valuable and/or more expensive to catch, and fishing in new areas or with other gears to avoid the bycatch of non-marketable species. This effort transfer may result in increased harvest stress to these alternative species, harming the status of these resources, inducing restrictive management, and reducing the economic value of these fisheries.

Preferred Alternative 2 would prohibit the sale and purchase of snapper grouper harvested in the EEZ by vessels that have not been issued a Federal commercial snapper grouper permit as well as snapper grouper harvested under the bag limit in state waters by vessels with the Federal for-hire permit. Assuming the implementation of compatible regulations in all states, thus encompassing snapper grouper harvested in both state and

Federal waters as well as marketed through all state licensed dealers, **Preferred Alternative 2** would eliminate all bag limit sales by these entities, estimated at approximately \$2.4 million in nominal ex-vessel value (Table 4-7). This would constitute a total reduction of approximately \$316,000 per year for fish sales by vessels in the for-hire fishery, or a 17-percent reduction in average annual gross revenues per vessel, and approximately \$2.085 million per year in sales for commercial vessels that do not possess a Federal commercial snapper grouper permit, or a 7 percent reduction in average annual gross revenues per vessel (Table 4-7).

Assuming compatible regulations are not adopted in any state, the estimated reduction in bag limit sales revenues under **Preferred Alternative 2** would be limited to those harvests that originate from the EEZ by all vessels, bag limit harvests from state waters by vessels with the Federal for-hire permit, and harvests that are marketed through dealers with a Federal permit. This would lower the reduction in bag limit sales to approximately \$1.562-\$1.799 million, accounting for the estimated portion of bag limit sales by the non-Federal sector that originate in state waters (approximately \$1.921 million; Table 4-6), the estimated portion of bag limit sales by entities without a Federal permit that are marketed through dealers without Federal licenses (approximately 23-35 percent), and total bag limit sales by vessels in the Federal for-hire fleet. For the Federal for-hire sector, since compliance would be a condition of permit renewal, the analysis assumes no bag limit sales will occur under **Preferred Alternative 2**, resulting in a full reduction in all bag limit sales by vessels in this sector, or approximately \$316,000 (Table 4-5). For the non-Federal sector, using the average EEZ bag limit sales (approximately 8 percent; Table 4-6) and dealer proportions (approximately 23 percent state dealer sales if the North Carolina and South Carolina proportion is applied throughout and 35 percent otherwise; Table 4-8), the reduction in bag limit revenues would be approximately \$1.246 million to \$1.483 million. These values equate to approximately a 17 percent reduction in average annual for-hire fish-sales revenues (\$316,000/159 vessels/\$11,568 total average revenues) and approximately a 4-5 percent reduction in average annual non-Federally permitted revenues (\$1.246-\$1.483 million/1,439 vessels/\$21,317 total average revenues).

Since **Preferred Alternative 2** would eliminate all snapper grouper bag limit sales, sales could only occur from Federally permitted snapper grouper vessels operating as commercial vessels. For-hire vessels with both permits could only sell snapper grouper harvested while operating as a commercial vessel and no private recreational angler could sell their catch. For the recreational angler (non-for-hire customer), **Preferred Alternative 2** would eliminate the ability to subsidize the cost of a fishing trip through the sales of snapper grouper. As a result, some decrease in recreational angler demand may occur. The magnitude of this decrease cannot be determined. However, no evidence has been identified to suggest that the incidence of this behavior – selling fish to subsidize the cost of the trip – is a significant component to total recreational demand. Therefore, reduced angler demand is expected to be minimal.

A potentially more significant issue is that the loss of bag limit sales revenues by for-hire vessels may require fee increases or service reductions. The use of bag limit sales as a

form of crew payment is understood to be a common industry practice, though the extent of such has not been quantified. The elimination of bag limit sales for vessels that engage in this practice would require that either charter fees increase to replace these revenues, crew receive lower wages, or fewer crew be utilized. Competition in the for-hire industry places limitations on the flexibility to increase charter fees, particularly under current conditions of cost increases for operational expenses, notably fuel, insurance, and docking. An increase in the charter fee would be expected to result in some reduction in angler demand, resulting in additional economic losses to the for-hire sector. Alternatively, crew reductions in lieu of fee increases would alter the nature of the service that the angler purchases, also potentially resulting in decreased angler demand. These phenomena and their expected economics effect are unknown.

Under current permit requirements, entry into the Federal commercial snapper grouper fishery would require acquisition of two commercial snapper grouper permits from current participants. Elimination of the two-for-one requirement is an option considered under the permit transferability action discussed in Section 4.8. The cost of a single permit is estimated to range from \$9,000-\$21,000 (2006 dollars; from anecdotal information, web search, and public comment). As depicted in Table 4-7, the average annual ex-vessel revenue derived from snapper grouper bag limit sales is estimated to be approximately \$2,000 for Federally permitted for-hire vessels and approximately \$1,400 for non-Federally permitted vessels. While some entities would be expected to receive more than this, a decision to acquire the necessary Federal permit in order to continue selling snapper grouper species would represent a significant change in their business orientation and may not be financially prudent. Since the opportunity to purchase these permits and enter the Federal commercial snapper grouper fishery currently exists, which would allow the sale of commercial quantities of snapper grouper, it is assumed that insufficient economic rationale exists for those businesses that have not already done so to enter the fishery.

Alternative 3 would allow continued snapper grouper bag limit sales by vessels that possess a Federal for-hire snapper grouper permit. As a result, only the harvests and revenues discussed above associated with vessels without either of the Federal snapper grouper permits would be affected. These values are approximately \$2.085 million (nominal ex-vessel value) per year, or a 7 percent reduction in gross revenues per year, in seafood harvests assuming compatible regulations are adopted by all states. If compatible regulations are not adopted in any state, revenues of approximately \$1.246 million to \$1.483 million (nominal ex-vessel value) per year, or a 4-5 percent reduction in average annual revenues (\$1.246-\$1.483 million/1,439 vessels/\$21,317 total average revenues) for vessels without either of the Federal snapper grouper permits.

Economic Effects of the Sales Modification Provisions on Federally Permitted Vessels

Under **Alternative 1**, all customary bag limit sales activity could continue unaffected. All entities that currently engage in bag limit sales could continue this practice at historic or increased levels, and others who have not previously engaged in the practice would be

able to do so to the extent that their state regulations allow such. The Federal commercial snapper grouper sector would continue to be denied access to snapper grouper species that are currently or will be under quota management since these fish will be harvested by non-Federally permitted fishermen but counted against the Federal commercial quota when they are sold. The Federal commercial snapper grouper sector would continue to have to bear the losses associated with recent management action, notably Snapper Grouper Amendment 13C (Amendment 13C; SAFMC 2006), which imposed a variety of quotas, trip limits, bag limits, and minimum size limits on the respective commercial and recreational sectors for snowy grouper, golden tilefish, vermilion snapper, black sea bass, and red porgy without the potential offset relief of protected access to fish intended for the Federally permitted commercial sector. The measures in Amendment 13C for snowy grouper, golden tilefish, vermilion snapper, and black sea bass were more restrictive than measures previously in place, while the red porgy measures loosened harvest restrictions. The estimated effects of Amendment 13C on the commercial Federally permitted snapper grouper fishery was a short-term annual loss of \$0.735 million in net revenues the first year, or approximately 12 percent to total net revenues for trips that harvested any of the affected species, increasing to \$1.085 million by the third year after implementation (2009) due to progressive restrictions. Although not implemented yet, additional harvest restrictions are anticipated for gag and red snapper through Snapper Grouper Amendments 16 and 17, respectively. The expected economic effects of these actions have not been determined. Conditions for the Federally permitted commercial snapper grouper sector could also worsen if general economic conditions increase the incentives for increased bag limit sales by either or both the Federal for-hire snapper grouper or non-permitted sectors.

Preferred Alternative 2 and, to a lesser extent, **Alternative 3**, would be expected to offset the adverse economic effects described above. As discussed, approximately \$2.4 million in nominal ex-vessel value snapper grouper sales are estimated to occur on an annual basis. If transferred to the Federal commercial snapper grouper sector, these revenues would more than offset the projected annual losses associated with Amendment 13C and improve the ability of the commercial sector to weather additional short-term adverse economic effects of future regulation. Any transference of these revenues to fishermen in the Federal commercial snapper grouper fishery would improve the financial position of this sector. The bag limit sales restrictions are also expected to help avoid the adverse economic effects of potential incentives to increase bag limit sales activity as a result of recent or future management measures for individual species and/or generally worsening economic conditions. The Federal management measures for the snapper grouper fishery, notably the quotas and seasons, are designed to meet resource goals, while achieving the best economic and social outcome. Respective Federal commercial quotas are intended for use by Federally permitted commercial vessels. Increased harvest pressure from non-Federally permitted commercial entities or for-hire operations can result in earlier than expected quota closures, market disruptions, revenue loss, and increased likelihood of business failure within the Federal fleet.

The elimination of bag limit sales under **Preferred Alternative 2** or their reduction under **Alternative 3**, is expected to be, overall, biologically neutral since the general

expectation is that the harvest of these fish is for the purpose of sale and either alternative would simply result in the transference of harvest and sales from one group of fishermen (those without the appropriate Federal permit) to Federally permitted fishermen. However, it is possible that the restriction of bag limit sales could result in a biological gain (with associated future economic benefits, such as higher quotas, higher trip limits, longer seasons, etc.) if not all the fish previously harvested and sold under the bag limit in fact get harvested by fishermen with the commercial Federal snapper grouper permit, resulting in an overall reduction in harvest for that species. This scenario is expected to particularly be the case for species primarily harvested in state waters, such as sheepshead and yellowtail snapper, or any species primarily found in waters where the Federal commercial vessels do not significantly fish. Using Florida harvests as an example, vessels with Federal commercial snapper grouper permits dominate yellowtail snapper harvests, accounting for approximately 1.1 million pounds per year compared to approximately 185,000 pounds per year by vessels without the Federal commercial permit, while virtually all sheepshead is harvested by non-Federally permitted vessels. Harvest of these and other species may be due to circumstance such that they are harvested by Federally permitted vessels incidental to the directed harvest of other species, and their harvest, to date, has not been limited due to quota closure, trip limits, or stock abundance. Where such is the case, in the event of a prohibition on bag limit sales, relocation of fishing effort to increase the harvest of these species may not be economically justified, resulting in overall decreased harvests of these species, with subsequent biological gains. It is unknown whether the economic benefits associated with these biological gains would be sufficient to offset the economic losses associated with the short-term reduced harvests.

Conversely, it is possible that restriction of bag limit sales could result in biological harm (with future economic losses, associated with lower quotas, lower trip limits, shorter seasons, etc.) if those previously selling bag limit quantities continue to harvest some or all of these fish, particularly fish harvested on recreational trips (private or for-hire), and all that is reduced is their sale by these entities. This would result in increased quota availability (and harvest) for fishermen who possess the commercial Federal snapper grouper permit, since fish sold under the bag limit would not be counted towards the commercial quota, but increased total mortality for the individual species.

Either scenario, a biological gain due to reduced total harvest, or a biological loss due to increased total harvest, is possible, though likely more so at the individual species level than at the management unit level. The likelihood of increased total harvest of some species may in fact be greater than the likelihood of reduced total harvest, particularly for bag limit sales of recreational origin. For recreational harvests, the presumption is that these fish are harvested primarily for recreational pleasure, with any sale incentive secondary. Thus, harvest may continue to satisfy angler recreational pleasure motives and the fish simply not sold.

While a prohibition on bag limit sales may increase the possibility of increased total harvests for some species, the likelihood of adverse effects accruing to increased total harvests will be reduced by the accountability measures that will be developed in Snapper

Grouper Amendment 17. These accountability measures will ensure harvests are maintained below specified levels, overages are not persistent, and adverse effects are minimized. Overall, neither effect, a biological gain or loss, is expected to be significant and, overall, the restriction of bag limit sales, under either alternative, is expected to be biologically neutral.

4.4.3 Social Effects of Modifications to the Sales Provisions Alternatives

Under the **Alternative 1** (status quo), social conflict between the competing harvest sectors is expected to worsen. Fisheries are largely separated into commercial and recreational sectors. The commercial sector is essentially a harvest sector, while the recreational sector has harvest and non-harvest (catch and release) components. Other societal interests are represented in general by environmental advocacy groups. Each group is interested in environmental stewardship, since even the harvest sectors recognize and depend on the benefits of sustainable harvest and bequest value for future generations. Other than the potential for compromised accounting due to double counting and the issue of equity (concern that all components of the fishery are treated fairly), the issue of bag limit sales largely is one of managing the allocation of harvest – how to distribute fishery mortality as opposed to how much mortality is appropriate – and, thus, essentially reduces to an issue of conflict between the commercial and recreational sectors. In fact, double counting, to the extent that it may result in reduced total harvest, may be beneficial to the resource and benefit environmental goals, since total mortality should be decreased and more of the resource made available to rebuild and/or serve other environmental functions. However, allowable harvest levels encompass accepted biological stewardship goals and a management environment that does not support full utilization of allowable harvest results in forgone economic and social benefits to associated fishermen, communities, and businesses/industries. Otherwise, from a biological/ecological perspective, mortality is mortality regardless of the source.

Alternative 1 would allow bag limit-sales and activities in associated businesses and/or social or community structures to continue unchanged. All current practices and relationships could continue. However, not all these relationships are positive. The status quo would be expected to continue the contentious relationship between the competing commercial and recreational sectors, as well as between the Federal and non-Federal commercial sectors.

Points raised by the Federal commercial fleet in the argument over bag limit sales include commercial allocations are intended for the benefit of commercial harvesters that depend on the harvest and sales of fish for their livelihood; it is inappropriate for for-hire vessels to profit from the allocations for both sectors, which occurs when a vessel gets paid for the charter and receives income from the sale of fish harvested on the charter; vessels that do not have to adhere to the same safety requirements and associated expenses as commercial vessels, as is the case for recreational vessels, should not be allowed to sell

fish; and recreational angling is for the purpose of pleasure and it is inappropriate to subsidize this activity through bag limit-sales.

Points raised by the state commercial fleet include they are professional fishermen just like the Federal vessels and require these sales to make a living, and they have been excluded from the Federal fishery (either through the original permit qualification criteria or through the expense of the two-for-one permit buy-in requirements) and it is unfair to also take the bag limit sales away.

Points raised by recreational interests include a dead fish is a dead fish, so as long as the fish is properly documented, it should not matter whether they are sold or not; certain for-hire vessel classes also must satisfy strict safety requirements and associated expenses, justifying equal access to the opportunity to sell fish; and both the cost of fishing and competition demands are such that fish sales are required to keep charter fees sufficiently low while maintaining adequate crew.

Regardless of the merits of any individual argument, the contention is real and, naturally, worsens when total available harvest declines. This is particularly the case for fisheries subject to quota closure, since quota allocations are not currently designed to account for bag limit-sales, which result in accelerated closures and reduced incomes to harvesters with the Federal commercial snapper grouper permit. As discussed above, the increased harvest restrictions contained in Amendment 13C and expected future action are anticipated to worsen this situation as fishermen compete for reduced commercial quota. The resultant accelerated closures are expected to impose additional economic losses and social disruption. Thus, **Alternative 1** would result in the continuation of this conflict between the competing sectors.

Preferred Alternative 2 would eliminate all snapper grouper bag limit sales. Since this would result in winners and losers in the bag limit sales debate, all conflict between the sectors would not totally dissipate, but a certain degree of finality to the issue would be reached, at least for the snapper grouper fishery (sales of other species may still be allowed), potentially allowing the respective parties to adjust and move forward. To the extent that having a decision, albeit one which does not equally benefit all competing interests, is less contentious than continuing debate, the social impacts of this alternative should be more positive than **Alternative 1**.

If bag limit-sales underpin a substantial portion of operational profits, for-hire pricing structure, or recreational trip demand, revenues, expenditures, and profits could be adversely affected, with concurrent affects on fishing businesses and associated industries, communities, and social structures. As discussed above, while bag limit sales are not trivial, with snapper grouper bag limit sales accounting for individual vessel average annual nominal ex-vessel revenues of approximately 7 percent vessels without a Federal permit and approximately 17 percent for vessels with the Federal for-hire snapper grouper permit (though these revenues are expected to be relatively minor compared to charter fees), snapper grouper sales comprise a significantly greater portion, approximately 47 percent overall and approximately 77 percent for Federal participants

in North Carolina and South Carolina, of total gross revenues for vessels in the Federal commercial snapper grouper fleet, suggesting any gain or loss may have a more significant effect on this fleet and associated businesses. The loss, however, of \$1,400 per year on an average \$21,000 income, as would be the case, on average, for fishermen that do not have a Federal commercial snapper grouper permit is not equivalent to a gain of a similar amount on top of an average annual income of \$38,000 in the case of fishermen possessing the Federal commercial snapper grouper permit (Table 4-7). In the for-hire sector, while crew could still have their pay subsidized with fish, the fish would have to be taken as table-fare rather than a commodity to be converted to cash. Such payment would likely not be totally acceptable to crew since it is likely that many vessels generate more “fish for pay” than could reasonably be consumed. The magnitude of any of these linkages or dependencies cannot be determined. Nevertheless, the elimination of the additional pressure on accelerated closures will support avoidance of the adverse economic and social disruptions associated with fishery closures.

An assumption of this action is that the reduction or elimination of bag limit sales will largely result in transference of revenues and associated benefits from one user-group to another, subject to some potential “leakage” (complete transference, pound for pound, may not occur), as discussed above. Although individual confidential data exists to track who has sold what species and amount of fish through which dealer and associated county/community, it is not possible with available data for the purposes of this analysis to anticipate how the transference of fish from current bag limit sales channels will pass through the sales channels of fishermen in the Federal commercial snapper grouper fleet. Thus, it is not possible to anticipate how product flows and associated economic and social effects would change under the proposed action. It is presumed that the current primary snapper grouper dealer centers and associated communities will remain unchanged, with only the quantities sold by individual fishermen changing and some individual dealers experiencing changes in sales volume. It is acknowledged, however, that this may not be the case and some distributional effects may occur if current bag limit sales enter through different market channels than sales by vessels that hold the Federal commercial snapper grouper permit. It is unknown to what extent current fishermen-dealer sales relationships are motivated by necessity/geography (a limited number of dealers in the area) or other factor (price, convenience, family relationship, other historical relationship, regulation, etc.). Should states not adopt compatible regulation, the possibility exists that sales through dealers who only possess a state license could increase. Alternatively, in order to maintain product flow, an increasing proportion of dealers may acquire the Federal permit. To reiterate, however, it is not possible at this time to identify which communities would be expected to benefit and which would be expected to suffer losses as a result of the proposed action.

It should also be noted that over twice as many entities engage in bag limit sales, 159 entities with the Federal for-hire snapper grouper permit and 1,439 entities with no identifiable Federal permit, than operate in the Federal commercial fishery, 717 vessels, on average, per year (Table 4-7). If social benefits are more strongly influenced by the number of sales pathways or social interactions (more fishermen equates to more social channels/networks) than simply the volume of sales (the general assumption of the action

is that the total sales volume will remain unchanged, only the number of participants and paths of participation change), then a redistribution of harvests to the Federal commercial fleet could have net adverse social consequences.

The social impacts of **Alternative 3** are expected to be intermediate to those of **Alternative 1** and **Preferred Alternative 2** since **Alternative 3** would reduce, yet not totally eliminate, bag limit snapper grouper sales. Economic losses to vessels that currently sell bag limit quantities of snapper grouper would still be expected, but would not be as great as under **Preferred Alternative 2**, while accelerated closure pressure would be reduced, yet not eliminated. Thus, disruption of activities and relationships associated with bag limit-sales would be reduced relative to **Preferred Alternative 2**, while full avoidance of the adverse social consequences of accelerated commercial closure and other adverse economic pressures on the Federal commercial snapper grouper fleet would not be achieved. The adverse social consequences associated with the bag limit sales debate would be reduced, but would continue.

4.4.4 Administrative Effects of Modifications to the Sales Provisions Alternatives

The administrative effects of **Alternatives 1, 2, and 3** would be very similar. Since **Alternative 1** would allow the continued sale of snapper grouper species from the South Atlantic EEZ up to the allowed bag limit, an increased administrative burden might not be expected. However, due to the potential for bag limit-caught fish being counted towards the commercial quota, there may be a need for the development of a system that accounts for the sector that caught a quota managed fish. Such a system could constitute a substantial administrative burden.

The Council's **Preferred Alternative 2** and **Alternative 3** would require a valid Federal permit to sell South Atlantic snapper and groupers. Any increased administrative burden associated with processing requests for permits from fishermen who formerly sold fish caught under the bag limit is likely to be minor.

4.4.5 Council Conclusions

The Council's preferred alternative is to require the Federal Commercial Snapper Grouper permit to sell South Atlantic snapper grouper species. The Council is concerned that with the introduction of more restrictive quotas from recent amendments and the recent Reauthorized Magnuson-Stevens Act requirement for annual catch limits, bag limit caught fish could represent a significant portion of the commercial quota because bag limits for snapper grouper species are attributed to a person per day and the universe of fishermen with state issued licenses to sell is relatively large. The Council believes that requiring a Federal Commercial Snapper Grouper Permit to sell snapper grouper species could remove the economic incentive to target fish by those without the Federal Commercial Snapper Grouper Permit. An economic analysis has revealed that fishermen with Federal snapper grouper permits are more dependent on snapper grouper species

than those without the permit. The bag limit sales prohibition could help to avoid an early closure of the commercial fishery with associated market disruptions, and possibly aid in the recovery of stocks currently undergoing overfishing and/or in an overfished state if it results in a reduction in overall harvest. In addition, sale of some bag limit caught fish could result in double counting if catches are reported through recreational data collection programs and through commercial snapper grouper dealers. These data issues could affect the quality of stock assessments. All landings that are sold are considered commercial harvest and count towards a species' commercial quota, independent of whether or not the fisherman has a Federal Commercial Snapper Grouper permit. The Council concluded that implementation of this measure would improve the accuracy of data. In addition, the Council's Law Enforcement Advisory Panel recommended commercial fishermen in the EEZ should have an appropriate Federal permit to sell any species under the Council's jurisdiction. In the Gulf of Mexico and west coast of Florida, fishermen cannot sell reef fish species unless they possess the appropriate Federal Permit. Therefore, this action would provide compatible regulations between the Gulf of Mexico and South Atlantic and improve law enforcement in the region. At their June 2008 meeting, the Council decided to apply prohibition of sales without the Federal commercial snapper grouper permit to federally-permitted charter vessels that harvest fish in state waters in addition to those harvested in Federal waters. Law enforcement personnel reported that this clarification would increase the enforceability of this action as it would eliminate the burden of proving whether the fish was caught in Federal or state waters. The Council concluded that a prohibition on sale without the Federal Commercial Snapper Grouper Permit is fair and equitable based on the information available.

4.5 Monitor and Assess Bycatch

Alternative 1 (no action). Utilize existing information to estimate and characterize bycatch.

Alternative 2 (preferred). Adopt the Atlantic Coastal Cooperative Statistics Program (ACCSP) Release, Discard and Protected Species Module as the preferred methodology. Until this module is fully funded, require the use of a variety of sources to assess and monitor bycatch including: observer coverage on vessels; logbooks; electronic logbook; video monitoring; MRFSS; state cooperation; and grant funded projects. After the ACCSP Bycatch Module is implemented, continue the use of technologies to augment and verify observer data. Require that commercial vessels with a snapper grouper permit, for-hire vessels with a for-hire permit, and private recreational vessels if fishing for snapper grouper species in the EEZ, if selected, shall use observer coverage, logbooks, electronic logbooks, video monitoring, or any other method deemed necessary to measure bycatch by NOAA Fisheries.

Alternative 3. Adopt the Atlantic Coastal Cooperative Statistics Program Release, Discard and Protected Species Module as the preferred methodology. Require that commercial vessels with a snapper grouper permit, for-hire vessels with a for-hire permit, and private recreational vessel if fishing for snapper grouper species in the EEZ, if selected, shall use observer coverage, logbooks, electronic logbooks, video monitoring, or any other method deemed necessary to measure bycatch by NOAA Fisheries.

Alternative 4. Require the use of a variety of sources to assess and monitor bycatch including: observer coverage on vessels; logbooks; electronic logbook; video monitoring; MRFSS; state cooperation; and grant funded projects. Require that commercial vessels with a snapper grouper permit, for-hire vessels with a for-hire permit, and private recreational vessels if fishing for snapper grouper species in the EEZ, if selected, shall use observer coverage, logbooks, electronic logbooks, video monitoring, or any other method deemed necessary to measure bycatch by NOAA Fisheries.

Alternative 1 (no action) would utilize data collected through existing programs to measure and assess bycatch. However, **Alternative 1** would not require that commercial vessels with a snapper grouper permit, for-hire vessels with a for-hire permit, and private recreational vessels fishing for snapper grouper species in the EEZ to use observer coverage, logbooks, electronic logbooks, video monitoring, or any other method deemed necessary to measure bycatch by NOAA Fisheries. For the South Atlantic snapper grouper fishery there are several sources of information that can be used to estimate and monitor bycatch. 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. The SEFSC's Beaufort For-Hire Headboat Survey and MRFSS telephone survey do not collect data regarding protected species interactions. However, in 2006, a limited number of protected species interaction questions were added to the MRFSS intercept survey.

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. Some bycatch data were collected, however, the form was modified to use the space on the form to collect data other than discards. 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% of snapper grouper permit holders will have been required to report in one of the five years.

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% 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% 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 has discussed 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. The Reauthorized Magnuson-Stevens Act requires NMFS to develop a license frame from the known universe of vessels.

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, and stomachs) are obtained as time permits. Lengths of discarded fish are occasionally obtained but these data are not part of the headboat database.

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. has 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 are randomly placing 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 shall be 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.

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.

The first phase of **Alternative 2** and **Alternative 4** 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% 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.

In the future, it may be possible to implement electronic logbooks in the fishery. 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). 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.

Other electronic devices may be useful in monitoring bycatch. For example, Harris and Stephens (2005) provided a fisherman with an electronic fish measuring board to record the collection number, date, location, species, specimen number, length, and disposition of all fish caught. Disposition included kept; captured dead (=bait); released alive and floated; released alive, floated initially, and then descended slowly; descended slowly; and descended rapidly. This system collects similar data to the electronic logbook but allows a fisherman to more easily record length data.

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 in other parts of the country. 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 would 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. Previous experience indicates video monitoring is very effective for monitoring catches from longline gear due to the size and types of species collected. It is also substantially less expensive than observer coverage (~\$1,200 per day) for comparable data collection.

Many states have collected data on reef fish bycatch in the past and some may be currently collecting bycatch data through studies conducted in state waters. It is possible that data from these studies have not been analyzed, or have been summarized through in-house reports or have not been made available to the public. The Council and NOAA Fisheries will request that states provide any available bycatch data from the reef fish fishery.

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.

Alternative 3 would require NOAA Fisheries Service to adopt the Atlantic Coastal Cooperative Statistics Program (ACCSP) Release, Discard and Protected Species (Bycatch) Module as the preferred methodology for assessing and monitoring bycatch in the snapper grouper fishery in the South Atlantic. The ACCSP is a cooperative state-federal program to design, implement and conduct marine fisheries statistics data collection programs and to integrate those data into a single data management system throughout the Atlantic. NOAA Fisheries Service, U.S. Fish and Wildlife Service, the Councils and the Atlantic coastal states are partners in this initiative and each has approved the bycatch module. The bycatch module contains both quantitative and qualitative components. The main elements that would apply to the snapper grouper fishery are summarized below:

1. The highest priority of the ACCSP bycatch module would be reporting of protected species interactions as well as releases and discards.
2. Reporting of protected species interactions (including threatened species and protected finfish species) would be mandatory.
3. The module would utilize at-sea observer coverage to collect bycatch and effort information from commercial fisheries. Vessels would carry at-sea-observers as a condition of permitting in commercial fisheries.
4. The minimum level of sampling would vary between 2% to 5% of total trips depending on the priority assigned to the respective fishery. For fisheries with a high bycatch potential, it is recommended that the target sampling level be set at 5% of total trips or at a level that achieves a 20-30% proportional standard error. Also, data would be collected at the haul level on each observer trip.
5. Pilot surveys can be used to determine the appropriate level of observer coverage to meet relevant management objectives.
6. Minimum data elements, an extensive set of sampling protocols and quality control/assurance procedures developed by the ACCSP would be used for at-sea observer programs.
7. Training programs, as well as certification of qualifications, would be provided for all new at-sea observers by the ACCSP and program partners.
8. Observer data would be utilized in combination with information obtained from fishermen.
9. ACCSP approved standardized data elements, sampling strategies, priorities and data management would be included in the commercial fishermen reporting system. For a

description of the commercial fishermen reporting system please refer to Appendix H in Shrimp Amendment 6.

10. Required reporting of protected species interactions information is mandatory for the ACCSP commercial reporting system and is mandatory for the for-hire vessels that fall under the Marine Mammal Protection Act (MMPA) requirements. Reporting of discards or releases through the catch and effort reporting system is strongly encouraged, although voluntary for non-protected discards or releases of other marine organisms.
11. The ACCSP qualitative release, discard and protected species interactions monitoring program for commercial fisheries would include interviews by state and federal port agents to verify finfish reporting in the fishermen trip report as well as stranding and entanglements data.
12. A Discard and Release Prioritization Committee will recommend priorities for the commercial, recreational and the for-hire fisheries on an annual basis.
13. All partners would develop outreach and training programs to improve reporting accuracy by fishermen.

To date, only a portion of the ACCSP requirements outlined above have been fulfilled in the South Atlantic due to a lack of adequate resources (Table 4-10). **Alternative 3** would require NOAA Fisheries to immediately implement the requirements to at least the minimum standards.

Table 4-10. The degree that the ACCSP requirements have been fulfilled in the South Atlantic in terms of bycatch reporting.

ACCSP Requirements	Fulfilled? ¹	Method
Required Reporting (Discards)		
-Commercial ²	P	-Supplemental discard logbook (20% permit holders/year); various projects
-For-Hire ²	F	-MRFSS & headboat survey
-Private/recreational	F	-MRFSS
Required Reporting (Protected Species interactions)		
-Commercial ²	P	-Supplemental discard logbook (20% permit holders/year); various projects
-For-Hire (All vessels) ²	P	-Reporting of protected resources interactions is not mandatory
-Private/rec	P	-Reporting of protected resources interactions only one year (2006)
Target Sampling	F	-Supplemental discard logbook (20% permit holders/year)
-Bandit (h/l) 5% of trips		
-BSB Pots 3.5% of trips		
-For-hire (h/l) 5% of trips		
Commercial fishermen reporting system must have standardized data elements	F	
Mandatory reporting of threatened species and protected finfish species	P	Supplemental discard logbook (20% permit holders/year)
Observer coverage		
Pilot program to determine appropriate coverage	O	Cooperative Research Program (commercial) ³
Utilize observer coverage (degree of coverage not specified)		
-Commercial	P	Cooperative Research Program (commercial) ³ (Only 2006-2007)
-For-Hire (non currently)	N	
-Private/rec (none)	N	
Outreach/Training	N	N/A
Programs on reporting		
¹ Full(F), Ongoing(O), Partial(P), None(N) ² Both the commercial and for-sector are required to utilize observers, fishermen reporting, and port interviewing to qualitatively and quantitatively describe release/discards and protected resources interactions. ³ Gulf & South Atlantic Fisheries Foundation, Inc. has a project to implement a pilot observer program within the snapper grouper vertical hook-and-line fishery.		

Alternative 2 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 **Alternative 2** 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 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 4 would require the implementation of the programs stated above but would not implement the ACCSP standards as minimum required elements.

Alternative 2 differs from **Alternative 3** in that **Alternative 2** would implement **Alternative 4** as an interim program (the first phase) until funds are available to fully implement the ACCSP Bycatch Module. After the implementation of the ACCSP bycatch module, **Alternative 2** would require that snapper grouper vessels carry observers, use logbooks, electronic logbooks, and video monitoring if selected. Alternatively, **Alternative 3** would require the immediate implementation of the ACCSP bycatch module.

4.5.1 Biological Effects of Monitor and Assess Bycatch Alternatives

Alternative 1 (status quo) would have adverse effects on the biological environment compared to the other alternatives since it would not implement a plan to monitor and assess bycatch in the South Atlantic snapper grouper fishery. **Alternatives 2, 3, and 4** provide the basic options available to the Council and NOAA Fisheries Service to monitor bycatch in the South Atlantic snapper grouper fishery. There are no direct biological impacts from establishing a standardized reporting methodology to estimate bycatch. However, indirect impacts resulting from **Alternatives 2, 3, and 4** would provide a better understanding of the composition and magnitude of 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 bycatch monitoring would provide better data that could be used in multi-species assessments.

Alternatives 2 and 3, by requiring the implementation of the minimum standards of the ACCSP bycatch module, would result in greater beneficial effects to the resource than the other alternatives. These alternatives would require increased reporting of protected resources interactions (including mandatory reporting of threatened species and protected finfish species, observer coverage beyond the program funded through GSFAA, and outreach and training for fishermen to help with reporting; See Table 4-10 for deficiencies in meeting the current minimum requirements. **Alternative 3** would have the greatest short-term beneficial effects as this alternative would require immediate implementation of the standards.

Alternatives 2, 3, and 4 would likely benefit ESA-listed species. The collection of additional protected species bycatch data would augment the existing data available for evaluating the extent and magnitude of interactions between these species and the fishery. If these data represented new information regarding the impacts of the fishery on protected species, consultation under the ESA could be re-initiated to evaluate these data and potential impacts.

4.5.2 Economic Effects of Monitor and Assess Bycatch Alternatives

Alternative 1 (status quo) would not alter the current protocols for collecting bycatch information, would impose no new requirements or burdens on fishery participants, and would not, therefore, result in any direct adverse economic impacts on these entities. However, if current practices do not adequately capture the true magnitude of bycatch, the quality of stock assessments may suffer, producing inadequate management, stock collapse or delayed recovery, and result in reduced or foregone economic benefits. Absent specific information on which species and fisheries may be most jeopardized by inadequate bycatch information, it is not practical to project what the potential economic impacts of said jeopardy might be.

Preferred Alternative 2 and **Alternative 3** share at their core the adoption of the ACCSP bycatch module, differing only in that, since the ACCSP bycatch module has not been fully implemented due to lack of adequate resources, **Preferred Alternative 2** would require a suite of interim methods. These methods constitute the methods contained in **Alternative 4**.

Quantitatively distinguishing the differences in the costs and impacts of **Alternatives 2-4** is not possible at this time since the full costs of neither the ACCSP module or interim methods are not currently available. Current estimates of unit costs of aspects of the programs are available, such as the cost of an observer day is estimated at over \$1,000 (GMFMC 2005), an electronic logbook is approximately \$500 per unit (GMFMC 2005), and video monitoring is estimated to cost 20-60% of an observer system (McElderry 2003). However, determinations of coverage extent and other sampling or survey

components have not been made. It can be reasonably stated, however, since each of **Alternatives 2-4** would impose increased bycatch reporting requirements, the costs associated with the requirements of **Alternatives 2-4** exceed that of **Alternative 1**. The absence of full funding of the ACCSP module suggests that it costs more than the proposed alternatives. Thus, from a program cost perspective, in the short term it is assumed that the lowest costs are associated with **Alternative 4** and **Preferred Alternative 2**, and the highest costs associated with **Alternative 3**. In the long term, **Alternative 4** would remain the lowest cost program, with **Preferred Alternative 2** and **Alternative 3** equal in cost. Overall (short and long term), the cost of **Preferred Alternative 2** would be more than **Alternative 4** but less than **Alternative 3**. It should be noted that, although fishery participants rarely avoid any burden in any monitoring program, the bulk of the financial costs need not necessarily be imposed on the fishery but can be, and often are, borne by the regulating entity. For example, although it is possible for an observer program to be entirely funded by fishery participants through a tax on revenues, in practice the cost may be paid by the government from general tax revenues and, therefore, borne by society as a whole. So, not only is it not possible to quantify the total cost of these programs, it is unknown who would be expected to bear the costs.

Despite the higher costs relative to **Alternative 1**, the expectation and assumption is that the improved bycatch information expected to be generated by these methods would result in improved stock assessments, more appropriate management measures, quicker rebuilding, where appropriate, and, overall, increased net biological and economic benefits. Since **Preferred Alternative 2** and **Alternative 3** end with the same system in the long term, the long term benefits of these two alternatives are presumed equal, though the net benefits of **Preferred Alternative 2** are assumed to be less than those of **Alternative 3** due to the delay in implementing the preferred data program. Underlying this conclusion is the assumption that the delay in full funding of the ACCSP module is due to budgetarial or institutional constraints and not the outcome of benefit-cost analysis (i.e., the benefits do not justify immediate implementation). Since the preferred monitoring and assessment program would never be achieved under **Alternative 4**, the conclusion is that the long term net benefits of this alternative are less than those of both **Preferred Alternative 2** and **Alternative 3**.

4.5.3 Social Effects of Monitor and Assess Bycatch Alternatives

Since **Alternative 1** (status quo) would not impose any new requirements or burdens on fishery participants, no direct adverse social impacts on these entities would accrue. However, if current practices do not adequately capture the true magnitude of bycatch, the quality of stock assessments may suffer, producing inadequate management, stock collapse or delayed recovery, and result in reduced or foregone economic benefits, with attendant potential adverse social impacts on fishermen, associated industries, and fishing communities. Absent specific information on which species and fisheries may be most jeopardized by inadequate bycatch information, it is not practical to project what the potential impacts of said jeopardy might be. Additionally, adequate quantification and

mitigation of bycatch is both a legal obligation and a significant focal point of interest and concern by individuals both active in and peripheral to fisheries, with the need to do more a common perception. Failure to do more than the status quo has the potential to result in considerable social action to publicize “dirty” fisheries and seek legal or political relief, resulting in increased social conflict and polarization of the different perspectives.

Alternatives 2-4 are expected to improve the collection of bycatch data, thereby improving the quality of stock assessments and subsequent fishery decisions. Thus, the public that expects more than status quo methods should have greater satisfaction with the management process. While **Alternative 3** may be the best long term program, **Preferred Alternative 2** may be viewed as a reasonable compromise to achieve progress while accommodating budgetary and practical realities. Although specifics on costs and individual responsibilities are not known, each alternative has the potential of imposing costs on individual fishery participants that could be excessive and result in fishery exit. Any such unplanned exit would be expected to result in additional personal, family, and community and associated industries stress and change. Since **Alternative 3** presumably has the greatest potential costs, the likelihood for these adverse social impacts are greatest. **Alternative 4** would have the least likelihood, with **Preferred Alternative 2** intermediate.

4.5.4 Administrative Effects of Monitor and Assess Bycatch Alternatives

Alternative 1 (no action) would utilize existing information to estimate and characterize bycatch and would have smallest administrative effect. **Alternative 4** would constitute the greatest administrative burden since a variety of sources to assess and monitor bycatch would be needed including: observer coverage on vessels; logbooks; electronic logbook; video monitoring; MRFSS; state cooperation; and grant funded projects. Adopting the ACCSP Module (**Alternative 3**) as the preferred methodology to monitor bycatch would not be as great an administrative burden; however, since the funds are not available to implement the module, **Alternative 3** is not reasonable. **Preferred Alternative 2** would constitute an administrative burden similar to **Alternative 4**; however, once the ACCSP module is implemented, the established program would be less of a burden than collecting information from multiple sources.

4.5.5 Council Conclusions

The Council believes it is necessary to implement a plan to monitor and assess bycatch in the snapper grouper fishery both to improve stock assessments and to meet Magnuson-Stevens Act requirements. Bycatch represents a significant portion of mortality for many species in the snapper grouper fishery management unit. Bycatch has biological, social, and economic negative repercussions on the snapper grouper fishery. Biologically, bycatch may constitute a significant portion of the mortality rate for many species and cause ecological changes to the environment. If current practices do not adequately capture the true magnitude of bycatch, the quality of stock assessments may suffer,

producing inadequate management, stock collapse or delayed recovery, and result in reduced or foregone economic and social benefits. Development of a standardized reporting methodology will ensure the collection and distribution of timely, reliable, and standardized bycatch data to the public and policy decision-makers. Currently there is no such methodology fully implemented for the southeast snapper grouper fishery.

4.6 Sea Turtle and Smalltooth Sawfish Incidental Take Impact Minimization Measures

Alternative 1 (no action). Do not implement additional management measures to minimize the impacts of incidental take on sea turtles or smalltooth sawfish caught in the South Atlantic snapper grouper fishery.

Alternative 2 (preferred). Require all vessels with commercial and for-hire snapper grouper vessel permits, carrying hook-and-line gear onboard, to: (1) immediately release incidentally caught smalltooth sawfish by following the latest NOAA Fisheries Service approved guidance on smalltooth sawfish release techniques (see Appendix G); (2) have a copy of the document, provided by NOAA Fisheries Service, titled “Careful Release Protocols for Sea Turtle Release with Minimal Injury” (Appendix E) posted inside the wheelhouse, or within a waterproof case in a readily accessible area; (3) post the NOAA Fisheries Service provided sea turtle handling and release guideline placard (see Appendix F) inside the wheelhouse, or in an easily viewable area if there is no wheelhouse; (4) tend to incidentally caught sea turtle in a manner consistent with the protocols specified in 50 CFR 635.21(c)(5)(ii) (see Appendix D). These vessels must also carry the following sea turtle release equipment:

- a long-handled line clipper or cutter,
- a long-handled dehooker for ingested hooks,
- a long-handled dehooker for external hooks,
- a long-handled device to pull an “inverted V”,
- a dipnet,
- a tire (or other comparable cushioned, elevated surface that immobilizes boated sea turtles),
- a short-handled dehooker for ingested hooks,
- a short-handled dehooker for external hooks,
- long-nose or needle-nose pliers,
- bolt cutters,
- monofilament line cutters, and
- at least two types of mouth openers/mouth gags.

This equipment must meet the specifications described in 50 CFR 635.21(c)(5)(i)(A-L) (see Appendix D) with the following modification: any other comparable, cushioned, elevated surface that allows boated sea turtles to be immobilized, may be used as an alternative to the requirement in 50 CFR 635.21(c)(5)(i)(F) to have a tire on board.

Alternative 3. Require all vessels with commercial and for-hire snapper grouper vessel permits, carrying hook-and-line gear onboard, to: (1) immediately release incidentally caught smalltooth sawfish by following the latest NOAA Fisheries Service approved guidance on smalltooth sawfish release techniques (see Appendix G); (2) have a copy of the NOAA Fisheries Service provided document titled “Careful Release Protocols for Sea Turtle Release with Minimal Injury” (Appendix E) posted inside the wheelhouse, or within a waterproof case in an readily accessible area; (3) post the NOAA Fisheries Service provided sea turtle handling and release guideline placard (see Appendix F) inside the wheelhouse, or in an easily viewable area if there is no wheelhouse; (4) tend to incidentally caught sea turtle in a manner consistent with the protocols specified in 50 CFR 635.21(c)(5)(ii) (see Appendix D). Depending on the vessel’s freeboard height, the following sea turtle release equipment would be required:

For vessels with a freeboard height of **four feet or less**:

- a dipnet,
- a tire (or other comparable cushioned, elevated surface that immobilizes boated sea turtles),
- a short-handled dehooker,
- long-nose or needle-nose pliers,
- bolt cutters,
- monofilament line cutters, and
- at least two types of mouth openers/mouth gags.

This equipment must meet the specifications described in 50 CFR 635.21(c)(5)(i)(E-L) with the following modifications: the dipnet handle can be of variable length, only one NOAA Fisheries Service approved short-handled dehooker is required (i.e., 50 CFR 635.21(c)(5)(i)(G or H)); any other comparable, cushioned, elevated surface that allows boated sea turtles to be immobilized, may be used as an alternative to the requirement in 50 CFR 635.21(c)(5)(i)(F) to have a tire on board.

For vessels with a freeboard height of **greater than four feet**:

- a dipnet,
- a tire (or other comparable cushioned, elevated surface that immobilizes boated sea turtles),
- a long-handled line clipper,
- a long-handled device for pulling an inverted “V”,
- a short-handled dehooker
- a long-handled dehooker,
- long-nose or needle-nose pliers,
- bolt cutters,
- monofilament line cutters, and
- at least two types of mouth openers/mouth gags.

This equipment must meet the specifications described in 50 CFR 635.21(c)(5)(i) (A-L) with the following modifications: only one NOAA Fisheries Service approved long-handled dehooker (50 CFR 635.21(c)(5)(i)(B or C)) and one NOAA Fisheries Service approved short-handled dehooker (50 CFR 635.21(c)(5)(i)(G or H)) are required; any

other comparable, cushioned, elevated surface that allows boated sea turtles to be immobilized, may be used as an alternative to the requirement in 50 CFR 635.21(c)(5)(i)(F) to have a tire on board.

Table 4-11. Comparison of sea turtle release gear requirements under Alternatives 2 and 3. Gear descriptions based on 50 CFR 635.21(c)(5)(A-L) (Appendix D).

Sea Turtle Release Gear	Alternative 2 (preferred)	Alternative 3	
		< 4 feet freeboard	>4 feet freeboard
Long-handled line clippers ¹	X		X
Dipnet	X ¹	X ²	X ¹
Long-handled dehooker for ingested hooks ^{1,3}	X		X ⁵
Long-handled dehooker for external hooks ^{1,3}	X ⁴		X ⁵
Long-handled device to pull an inverted “V” ¹	X		X
Tire (standard passenger sized) ⁶	X	X	X
Short-handled dehooker for ingested hooks ⁸	X	X ⁷	X ⁷
Short-handled dehooker for external hooks ⁸	X ⁴	X ⁷	X ⁷
Long-nose or needle-nose pliers	X	X	X
Bolt cutters	X	X	X
Monofilament line cutters	X	X	X
Mouth openers/mouth gags	X	X	X

¹ handle length 6 feet or 150% of freeboard – whichever is greater.

² handle length optional.

³ may substitute short-handle dehooker if used with appropriate length handle extender.

⁴ may substitute ingested dehooker if the dehooker also meets the criteria for an external dehooker.

⁵ only one NOAA Fisheries Service approved long-handled dehooker is required, may choose either internal, external or one that can act as both.

⁶ may use other comparable, cushioned, elevated surface.

⁷ only one NOAA Fisheries Service approved short-handled dehooker is required, may choose either internal, external or one that can act as both.

⁸ handle length should be 16-24 inches

4.6.1 Biological Effects of Sea Turtle and Smalltooth Sawfish Alternatives

Alternative 1 (status quo) would have adverse effects on the biological environment compared to the other alternatives since it would not implement management measures to minimize the impacts of incidental take on sea turtles or smalltooth sawfish caught in the South Atlantic snapper grouper fishery. The biological benefits provided by **Preferred Alternative 2 and Alternative 3** would be nearly identical (Table 4-11). **Preferred Alternative 2** would require vessels to carry the entire suite of sea turtle release gears. In contrast, **Alternative 3** would require specific sea turtle release gears dependent upon the vessel's freeboard height. As **Preferred Alternative 2** would require that all gear be present rather than discriminating by freeboard, it could be considered to have a slightly greater biological benefit. An increased biological benefit could be expected from **Preferred Alternative 2** because it ensures fishermen have gear onboard to remove the maximum amount of fishing gear. This alternative also ensures fishermen are able to remove the maximum amount of gear from sea turtles that cannot be boated. **Preferred Alternative 2 and Alternative 3** may also provide benefits to other snapper grouper species. Sea turtle release gear can also be used to release incidentally caught or unwanted snapper grouper species, potentially increasing the survival of individuals taken as bycatch.

4.6.2 Economic Effects of Sea Turtle and Smalltooth Sawfish Alternatives

Alternative 1 (status quo) would not impose any additional management measures on participants in the snapper grouper fishery and would not, therefore, result in any direct adverse economic impacts on these entities. However, under **Alternative 1**, sea turtle and smalltooth sawfish incidental take would be expected to continue unabated, resulting in unquantifiable reductions in economic benefits associated with minimizing the impacts of incidental take on these species. Further, an increase in incidental take of these species, beyond those estimated in the biological opinion (NMFS 2006), could precipitate more restrictive controls than those proposed, resulting in greater adverse economic impacts on fishery participants than **Preferred Alternative 2 and Alternative 3**.

The sea turtle and smalltooth sawfish release gear requirements specified by **Preferred Alternative 2** and estimates of their costs are provided in Table 4.12. Out-of-pocket expenses per vessel are estimated to range from \$617-\$1,115 (2006 dollars). In 2005, 1,007 commercial vessels participated in the snapper grouper fishery (Table 3-4), while 1,328 vessels had for-hire snapper grouper permits (Table 3-21). Of these for-hire vessels, 201 had both the commercial and for-hire permits, resulting in 1,127 vessels possessing just the for-hire permit, or 2,134 unique vessels across both permit categories. Using this total as the estimated number of affected vessels, the estimated aggregate cost of the gear requirements of **Preferred Alternative 2** on the participants in the fishery is approximately \$1.32-\$2.38 million (2006 dollars). In addition to the out-of-pocket expenses for the release gear, fishery participants would be further burdened by the on-

board storage requirements of the gear. These figures should be considered upper bounds since many vessels are expected to already possess some of the required gear or allowable substitutes. Also, any for-hire vessels that exclusively fishes through snorkeling or diving and does not possess hook-and-line gear on board would not be subject to the requirements.

The smalltooth sawfish provisions merely specify handling measures prior to release of the fish, do not require any additional gear purchases or other expenditures, and are not expected to result in any adverse economic impact to fishery participants.

The minimization of impacts from incidental take on sea turtles and smalltooth sawfish may result in increased economic benefits relative to the status quo in the form of enhanced existence value and increased economic activity of industries that benefit from enhanced or recovered resources, such as diving or nest site tours. These benefits cannot be quantified at this time. Additionally, while this action will not lead to species recovery, minimization of the impacts of incidental take may contribute to species recovery and recovery may support increased economic benefits from directed harvest, should such harvest be determined to be appropriate.

Table 4-12. Release gear requirements and costs (2006 dollars).

	Price Unit Cost Low	High	Required Gear		
			Preferred Alt 2	Alt 3	
				< 4 ft	> 4 ft
Long-handled line clipper or cutter ¹	\$187	\$283	X		X
Long-handled dehooker for ingested hooks ^{1,3}	\$128	\$224	X		X ⁵
Long-handled dehooker for external hooks ^{1,3}	\$32	\$107	X ⁴		X ⁵
Long-handled device to pull an inverted "V" ¹	\$53	\$214	X		X
Dipnet	\$182	\$294	X ¹	X ²	X ¹
Tire ⁶	\$21	\$21	X	X	X
Short-handled dehooker for ingested hooks ⁸	\$53	\$53	X	X ⁷	X ⁷
Short-handled dehooker for external hooks ⁸	\$15	\$30	X ⁴	X ⁷	X ⁷
Long-nose or needle-nose pliers	\$21	\$21	X	X	X
Bolt cutters	\$43	\$43	X	X	X
Monofilament line cutters	\$22	\$22	X	X	X
Mouth openers/mouth gags	\$2	\$57	X	X	X
Cost Per Vessel (HIGH) ⁵			\$1,115	\$490	\$987
Cost Per Vessel (LOW) ⁵			\$617	\$324	\$564
Source: Base data collected from: Reduction of Sea Turtle Bycatch-Supplemental EIS (NOAA 2004)					

¹ handle length 6 feet or 150% of freeboard – whichever is greater.

² handle length optional.

³ may substitute short-handle dehooker if used with appropriate length handle extender.

⁴ may substitute ingested dehooker if the dehooker also meets the criteria for an external dehooker.

⁵ only one NOAA Fisheries Service approved long-handled dehooker is required, may choose either internal, external or one that can act as both.

⁶ may use other comparable, cushioned, elevated surface.

⁷ only one NOAA Fisheries Service approved short-handled dehooker is required, may choose either internal, external or one that can act as both.

⁸ handle length should be 16-24 inches

Out-of-pocket release gear expenses per vessel for **Alternative 3** are estimated to range from \$324-\$490 for vessels with less than 4 feet freeboard and from \$564-\$987 for vessels with more than 4 feet freeboard (Table 4-12; 2006 dollars). Using the estimated number of affected vessels provided above (2,134 vessels) and the maximum range of the costs (\$324-\$987), the estimated aggregate cost of the gear requirements of this alternative on the participants in the fishery is approximately \$691,000-\$2.11 million (2006 dollars), or \$270,000-\$629,000 less than **Preferred Alternative 2**. As with **Preferred Alternative 2**, the maximum costs should be considered upper bounds since many vessels are expected to already possess some of the required gear or allowable

substitutes. Also, any for-hire vessels that exclusively fishes through snorkeling or diving and does not possess hook-and-line gear on board would not be subject to the requirements. The gear storage requirements of **Alternative 3** would also be less burdensome than those of **Preferred Alternative 2**.

The smalltooth sawfish provisions of **Alternative 3** are identical to those of **Preferred Alternative 2** and, equally, are not expected to result in any adverse economic impact to fishery participants.

Relative to the status quo, **Alternative 3** is expected to reduce the impacts of incidental take on sea turtles and smalltooth sawfish, resulting in increased economic benefits associated with species protection, though not necessarily to the same extent as **Preferred Alternative 2**. The release gear requirements of **Alternative 3** are less than those of **Preferred Alternative 2** and incorporate practicability considerations of the differences of the fleet characteristics between the snapper grouper fleet and the Highly Migratory Pelagics pelagic longline fleet. As a result, while the direct economic burden to fishery participants is expected to be reduced, the resultant reduction in impacts from incidental take may not be as great. The extent to which these two alternatives minimize the impacts of incidental takes, and resultant difference in economic impacts, has not been quantified and cannot be determined at this time.

4.6.3 Social Effects of Sea Turtle and Smalltooth Sawfish Alternatives

Under **Alternative 1**, there would be no direct short-term impacts on the fishermen, families, or communities in the southern Atlantic coastal region since this alternative will not impose any bycatch release gear requirements and will allow status quo operation of fishing activities and practices. However, if the level of incidental take of these species exceeds the estimates in NMFS (2006), it may be necessary to require more severe management measures at a later date than those currently considered. More severe future action may be accompanied with added costs, loss of employment, or other changes in fishing practices, which may lead to changes in the fishing community structure, resulting in more significant economic and social impacts than those associated with the alternatives currently under consideration. The full extent of these additional impacts, however, cannot be assessed at this time since the more restrictive measures have not been specified.

Foregone or delayed sea turtle and smalltooth sawfish protection risks the loss of benefits to society through adverse impacts from incidental take on species that are potentially highly valued by the public. Continued adverse impacts from incidental take may represent significant economic loss to the public, as well as businesses dependent upon non-consumptive interactions with the species.

Since the bycatch release gear requirements of **Preferred Alternative 2** do not vary by vessel operation size (i.e., the amount of harvest or gross revenues), the cost per vessel could represent a prohibitive additional operational cost, resulting in cessation of fishing

and exit from the fishery. Such non-voluntary exit would be expected to increase stress on family and community structures and further erode the character and importance of areas as fishing communities. The expected minimization of impacts from the incidental take on sea turtles and smalltooth sawfish, however, may enhance species recovery and aid development of activities associated with the species, such as diving activities and eco-tours. While the development of these types of activities and the infrastructure to support them would not preserve the character of communities that have evolved around fishery extractive activities, such development may provide continued opportunities in ocean related activities, thereby mitigating some of the losses that might occur as a result of the increased gear costs.

Alternative 3 would impose less financially burdensome gear requirements, hence reducing the likelihood of fishery exit by individual participants. Thus, the potential individual, family, and community adverse social impacts of the bycatch release gear requirements of this alternative should be less than those of **Preferred Alternative 2**. Although the impacts from incidental take may be greater under **Alternative 3** relative to **Preferred Alternative 2**, the magnitude or likelihood of such cannot be determined. Hence, differences in the accrued social benefits associated with the two alternatives cannot be distinguished.

4.6.4 Administrative Effects of Sea Turtle and Smalltooth Sawfish Alternatives

The no-action **Alternative 1** would have the least administrative effect since it would not require notification of fishermen to add gear or require law enforcement personnel to determine if fishermen were carrying the required gear to minimize incidental catch of sea turtles and smalltooth sawfish and will allow status quo operation of fishing activities and practices. However, if actions are not taken to reduce the bycatch mortality of these species, it may be necessary to require more severe management measures at a later date than those currently considered. Since the bycatch release gear requirements of **Preferred Alternative 2** do not vary by vessel operation size (i.e., the amount of harvest or gross revenues), the administrative burden would be less than **Alternative 3** where gear requirements would depend on the amount of freeboard. Requiring the same gear for all vessels would be easier to law enforcement personnel to ensure vessels are in compliance.

4.6.5 Council Conclusions

The Council believes it is necessary to require equipment onboard certain vessels to help minimize the impacts on sea turtles and smalltooth sawfish as required by a 2006 biological opinion completed by NOAA Fisheries concerning the South Atlantic snapper grouper fishery. The Council concluded that requiring this gear is fair and equitable based on the information available.

4.7 Permit Renewal

Alternative 1 (no action). Retain the requirement that the Regional Administrator must receive an application for renewal within 60 days of the commercial permit's expiration date.

Alternative 2. Extend the renewal period on commercial snapper grouper permits to 6 months after the permit expires.

Alternative 3 (preferred). Extend the renewal period on commercial snapper grouper permits to one year after the permit expires.

4.7.1 Biological Effects of Permit Renewal Period Alternatives

This action is being considered to reduce the number of snapper grouper commercial limited access permits inadvertently lost due to an unusually short permit renewal period. As such, any alternative that results in less permit losses than in the current situation could result in retention of fishing effort. Therefore, the no action **Alternative 1** would have the most positive biological effect as it would result in the greatest number of permits being lost compared to the other alternatives. As the permit period increases, the biological benefits of the alternatives decrease compared to no action because the potential for more fishing effort is retained. However, this fishing effort has been accounted for in the management measures currently in place and not all fishermen with permits are harvesting fishes. Therefore, unintentional loss of permits due to non-renewal, although a benefit to the biological environment, is an extra benefit without which the resource should still do well with planned management measures.

Alternatives 2 and 3 would have adverse effects from fewer lost permits; the effects from **Alternative 3** would be greater than **Alternative 2**.

The potential impacts of these alternatives on ESA-listed species are affected by any resulting changes in fishing effort. Such changes in fishing effort are 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.

4.7.2 Economic Effects of Permit Renewal Period Alternatives

Alternative 1 (status quo) would be expected to result in the continued loss of economic benefits from expiration of unlimited snapper grouper commercial permits due to the inability to renew permits within the current 60-day timeframe. As of March 2006, 107 unlimited permits that had been assigned through December 14, 1998 had expired. Since the commercial snapper grouper fishery is a limited access fishery, established by Amendment 8 in 1998, unlimited permits have a market value, currently estimated to range from \$9,000-\$21,000 (2006 dollars; from anecdotal information, web search, and public comment). Since these permits have a substantial market value, it is assumed that most permit expiration was the result of an inability to renew the permit within the allowable timeframe, rather than intentional retirement from the fishery and expiration of the permit, though such cannot be totally discounted. Expiration of a permit will result in the loss of all future snapper grouper revenues, estimated to average approximately \$15,000 per year per vessel over 1999-2003. The fish these revenues represent and resultant revenues would be available to remaining participants in the fishery. Current permit transfer provisions are designed to accomplish contraction of the snapper grouper fleet, requiring two permits for one new vessel entry, demonstrating that a smaller fleet is expected to result in net resource and economic benefits. However, such contraction should be market driven, as occurs with the sale and purchase of permits where the price reflects the two-for-one requirement, rather than circumstantial and unquantifiable economic losses accrue to unplanned or unintentional exclusion from the fishery. While re-entry into the fishery can occur, it would require the purchase of new permits, increasing the cost of participation substantially more than permit renewal. Total losses as a result of these expirations and the net impact of future expirations cannot be determined.

Alternative 2 would be expected to reduce the incidence of unintentional permit expiration since the renewal period would be three times longer than under the status quo and, thus, result in unquantifiable net economic gains relative to the status quo. Note that the gain accrues to the avoidance of economic losses rather than from increased harvests, productivity, or fishing efficiency. Fishing operations would have longer to adjust to unexpected disruptions, such as illness or severe weather events, reducing the jeopardy of their permit.

Preferred Alternative 3 would allow the longest period for permit renewal and would, therefore, be expected to minimize the incidence of unintentional permit expiration relative to all alternatives considered and result in the largest gain in net benefits relative to the status quo. Additional unquantifiable economic benefits may accrue to both fishery participants and the administrative environment through standardization of renewal periods since most other permits have similar 1-year renewal periods.

4.7.3 Social Effects of Permit Renewal Period Alternatives

Alternative 1 would continue the adverse social impacts that accrue to unplanned and unintentional expiration of an unlimited snapper grouper commercial permit and resultant exclusion from the fishery. The majority of unlimited snapper grouper permit expirations are assumed due to uncontrollable events and not intentional behavior. Inability to renew a permit within the current 60-day timeframe likely occurs as a consequence of unexpected hardship or personal tragedy, such as death or illness, or adverse weather event, such as a hurricane, resulting in loss of vessel, residence, records, viable mailing address, etc. As such, permit expiration likely compounds an already stressed personal and social situation. Unplanned exclusion from the fishery results in the loss of income from the fishery and possible jeopardy to one's overall operation as a fisherman. This could severely affect a fisherman's ability to manage personal finances, support a family, and positively function within their community. While the individual nature of this event would not be expected to have widespread adverse community impacts, like might occur under a fishery collapse or closure, impacts beyond the individual fisherman and immediate family can occur.

Alternative 2 would reduce the incidence of permit expiration relative to the status quo, thereby reducing the adverse social impacts of fishery exclusion or the necessity to purchase permits for re-entry. Thus, **Alternative 2** would be expected to result in a net gain in positive social impacts relative to the status quo. Permit expiration is still possible, since some adverse personal events take months or longer for recovery, but the likelihood is substantially diminished by the longer renewal period.

Preferred Alternative 3 would further reduce the incidence of permit expiration and would be expected to result in the greatest net positive social benefits of the considered alternatives. Few if any unintentional permit expirations are likely to occur short of extremely severe personal hardship or total mismanagement of business affairs. Permit renewal will also be simplified since the one-year renewable period of the preferred alternative equals that of most other South Atlantic Federal permits, allowing all permit renewal to occur with a single application. Since virtually all unintentional permit expiration would be avoided, **Preferred Alternative 3** is expected to generate the greatest net social benefits of the alternatives considered.

4.7.4 Administrative Effects of Permit Renewal Period Alternatives

Alternative 1 would continue the large administrative effects that result from fishermen trying to correct the unplanned and unintentional expiration of an unlimited snapper grouper commercial permit and resultant exclusion from the fishery. The majority of unlimited snapper grouper permit expirations are assumed due to uncontrollable events and not intentional behavior. Administrative personnel must work with fishermen and explain to them that a permit cannot be renewed within the current 60-day timeframe

despite a loss that could be a consequence of unexpected hardship or personal tragedy, or adverse weather event, such as a hurricane, resulting in loss of vessel, residence, records, viable mailing address, etc. The Administrative cost of the **Preferred Alternative 3** would represent the smallest administrative burden because it would require the longest renewal period. Furthermore, renewal period for **Preferred Alternative 3** would be similar to other permits many snapper grouper fishermen possess.

4.7.5 Council Conclusions

The Council believes it is necessary to extend the commercial snapper grouper permit renewal deadline. Currently, South Atlantic commercial snapper grouper permits must be renewed within 60 days of the date they expire. The Council feels the 60-day requirement is overly restrictive (many other fisheries provide fishermen one year to renew their permits) and presents an unnecessary hardship to snapper grouper participants, some of which have reportedly lost their permits because personal hardships prevented them from complying with this short renewal timeframe. The Council concludes that the extension of the permit renewal period to one year is fair and equitable based upon the information available.

4.8 Permit Transferability

Permit Transferability Alternative 1 (no action). A holder of an individual limited access transferable vessel permit must buy an additional individual limited access transferable vessel permit and exchange the two individual permits for one new permit in order to incorporate their business operation and change the ownership of the permitted vessel.

The applicable sections of the current snapper grouper limited access transfer regulations at 50 C.F.R. 622.18(e) are stated below:

“(e) Transfers of permits. A snapper grouper limited access permit is valid only for the vessel and owner named on the permit. To change either the vessel or the owner, an application for transfer must be submitted to the RA. (1) Transferable permits. (i) An owner of a vessel with a transferable permit may request that the RA transfer the permit to another vessel owned by the same entity. (ii) A transferable permit may be transferred upon a change of ownership of a permitted vessel with such permit from one to another of the following: Husband, wife, son, daughter, brother, sister, mother, or father. . . (iv) Except as provided in paragraphs (e)(1)(i), (ii), and (iii) of this section, a person desiring to acquire a limited access, transferable permit for South Atlantic snapper grouper must obtain and exchange two such permits for one new permit.”

Permit Transferability Alternative 2 (preferred). Allow an individual to transfer his or her individual limited access transferable vessel permit to a corporation whose shares are all held by the individual or the individual and one or more of his or her immediate

family members. Immediate family members include only the following: husband, wife, son, daughter, brother, sister, mother, or father. Such transfer may be done on a one to one permit transfer basis. At the time of permit renewal, the corporation must also submit to NOAA Fisheries Service a current annual report, which specifies all shareholders of the corporation.

Sub-Alternatives for Permit Transferability Alternative 2 specify various renewal/transfer consequences if the annual report to NOAA Fisheries Service includes shareholders not listed on original application.

Permit Sub-Alternative 2-A. Permit is renewed or transferred according to current regulations, regardless of whether new shareholders have been added to the family corporation as reflected in the annual report. Note: this would then treat family corporations no different than other corporations.

Permit Sub-Alternative 2-B. If the annual report shows a shareholder other than the shareholders listed in the original corporate documentation, the permit shall not be renewed or transferred.

Permit Sub-Alternative 2-C. If the annual report shows a shareholder other than the shareholders listed in the original corporate documentation, the permit shall not be renewed or transferred on a one to one permit basis; the corporation must obtain another limited access, transferable snapper grouper permit, and exchange those two such permits for one new permit.

Permit Sub-Alternative 2-D. If the annual report shows a shareholder other than the shareholders listed in the original corporate documentation, the permit shall not be renewed or transferred on a one to one permit basis; the corporation must obtain another limited access, transferable snapper grouper permit, and exchange those two such permits for one new permit or allow transfer back to an individual who is an immediate family member of the permit holder who originally transferred the vessel permit to the family corporation.

Permit Sub-Alternative 2-E (preferred). If the annual report shows a shareholder other than the shareholders listed in the original corporate documentation, the permit shall not be renewed unless such new shareholder is an immediate family member of the individual who originally transferred the vessel permit to the family corporation.

Permit transferability alternatives are summarized in Table 4-13.

Table 4-13. Permit sub-alternatives.

Sub-Alternative	If the annual report includes shareholder not listed on original application...
2-A	permit may be renewed or not renewed according to the regulations, regardless of whether new shareholders have been added as reflected in the annual report.
2-B	permit shall not be renewed.
2-C	permit shall not be renewed, must do 2 for 1.
2-D	permit shall not be renewed, must do 2 for 1; BUT can transfer back to individual immediate family member of the original individual permit holder on 1 for 1 basis.
2-E (preferred)	permit shall not be renewed, unless new shareholder is an immediate family member of the original individual permit holder on 1 for 1 basis.

Permit Transferability Alternative 3. Repeal the 2 for 1 permit transfer provision as described at 50 C.F.R. 622.18(e)(1)(iv):

“(iv) Except as provided in paragraphs (e)(1)(i), (ii), and (iii) of this section, a person desiring to acquire a limited access, transferable permit for South Atlantic snapper grouper must obtain and exchange two such permits for one new permit.”

4.8.1 Permit Transferability Example

The following example is intended to help the reader understand the permit transferability action using a fictitious family:

Frank – Husband	Stan – Frank’s brother
Stacy – Wife	Karen – Stan’s Daughter
Matt – Son	Rose – Frank’s Mother
Stella – Daughter	Jesse – Frank’s Best Friend

Suppose Frank owns the F/V *Stacy Ann*, his commercial fishing vessel that has a transferable snapper grouper vessel permit. Frank wants to incorporate his business (with family members as shareholders) to obtain tax and liability benefits, and then change ownership of the F/V *Stacy Ann* from himself to his family corporation. Currently, this would constitute a permit transfer, and Frank would need to buy an additional transferable vessel permit and exchange the two permits for one new permit in order to incorporate his business operation and change the ownership of the F/V *Stacy Ann*. This is described in the no action alternative.

The Council believes it is unfair to require a current snapper grouper fishermen to buy an additional permit in order to incorporate his business. If either Permit Transferability

Alternatives 2 or 3 are implemented, Frank could incorporate his business and then change vessel ownership without having to buy another permit. **Alternative 3** is pretty straight forward, in that it would repeal the 2 for 1 system altogether. In **Alternative 3**, it would not matter whether family members were shareholders. However, **Alternative 2** would require Frank to form a corporation with only his immediate family members. In **Alternative 2**, Frank's corporation could include everyone listed above except Karen and Jesse as they are not part of his "immediate family" as specified in the current fishery management regulations (i.e., husband, wife, son, daughter, brother, sister, mother, or father). Frank's family corporation would need to submit an annual report to NOAA Fisheries Service that specifies all the shareholders of the corporation. Frank's corporation would list his immediate family members.

The Council is considering whether to implement **Sub-Alternatives 2-A through 2-E** in conjunction with **Alternative 2**. The difference between the sub-alternatives is the amount of restriction placed upon permit renewals or transfers made *after* Frank's first transfer of the vessel permit from himself into the family corporation.

Suppose Frank forms the Frank Family Corporation and the shareholders are Frank, Stacy, Matt, Stella, Stan, and Rose. Assume also that in the second year of Frank's corporation, he adds Jesse (his best friend, but no relation to Frank) as a shareholder. Under **Sub-Alternative 2-A**, the permit would be renewed, since it doesn't matter who the shareholders are. Under **Sub-Alternative 2-B**, the permit may not be renewed. Under **Sub-Alternative 2-C**, the permit may be renewed, but the Frank Family Corporation must obtain another transferable permit and exchange the two permits for one new permit (2 for 1). Under **Sub-Alternative 2-D**, the Frank Family Corporation would have two options. It can either obtain another transferable permit and exchange the two permits for one new permit (2 for 1), *or* it can have the permit transferred back to an individual immediate family member of Frank (i.e., Frank, Stacy, Matt, Stella, Stan, and Rose). Under **Preferred Sub-Alternative 2-E**, the permit cannot be renewed because the new shareholder Jesse is not an immediate family member of Frank.

Suppose Frank and Stacy have a child and want to add the child as a shareholder to the corporation. At permit renewal time, **Alternative 1** would allow renewal because the vessel ownership did not change. **Alternative 3** would allow renewal. Renewal under **Alternative 2** would depend on the sub-alternative chosen, as it would be a change in the composition of the shareholders.

If the Frank family corporation dissolves, the permit would stay with the vessel, but the vessel ownership may change. Assuming the vessel ownership did change, then **Alternative 1** would require a 2 for 1 permit exchange, **Alternative 2** would depend on which sub-alternative was chosen, and **Alternative 3** would be a 1 for 1 permit exchange.

Suppose Frank and Stacy got a divorce and Frank left the family corporation. **(Remember that Frank is the one who first transferred the individual permit to the corporation.)** The ownership of the F/V *Stacy Ann* has not changed because the corporation continues to own the fishing vessel. When permit renewal time comes,

Alternative 1 and 3 allow the permit to be renewed. **Alternative 2** depends on which sub-alternative is chosen. Under **Sub-Alternative 2-A**, the permit would be renewed, since it doesn't matter who the shareholders are. Under **Sub-Alternative 2-B**, the permit may not be renewed. Under **Sub-Alternative 2-C**, the permit may be renewed, but Frank's family corporation must obtain another transferable permit and exchange the two permits for one new permit (2 for 1). Under **Sub-Alternative 2-D**, Frank's corporation has two options: it can either obtain another transferable permit and exchange the two permits for one new permit (2 for 1), *or* it can have the permit transferred back to an individual immediate family member of Frank (i.e., Frank, Stacy, Matt, Stella, Stan, and Rose). Under **Preferred Sub-Alternative 2-E**, the permit can be renewed.

4.8.2 Biological Effects of Permit Transferability Alternatives

Some degree of beneficial indirect effects to the stock and ecological environment would be expected from the continued implementation of the 2 for 1 permit system (**Alternative 1**) and associated reduction in fishing effort from the removal of permits. Between December 14, 1998 to March 24, 2006, 202 vessel permits, in conjunction with another permit, were exchanged for a new permit or about 22 per year (Table 4-14; J. Miller, NOAA Fisheries Service Southeast Regional Permits Office, personal communication).

The snapper grouper landings from 1999 through 2006 for the permits retired during this time period were 2,759,506 whole weight or an average of 394,215 lbs whole weight per year. This represents 5.14% of the entire landings during this period (Table 4-15). The current number of active snapper grouper permits as of January 2007 was 646 (as of January .

Table 4-14. Landings associated with retired permits for the full year prior to retirement.

Pounds	Year Permit Retired									Total	Percent
	1998	1999	2000	2001	2002	2003	2004	2005	2006		
0	1	22	16	9	10	11	9	12	8	98	48.5
0-100	0	2	2	2	1	2	1	1	0	11	5.4
101-1,000	0	6	7	3	4	3	6	4	4	37	18.3
1,001-5,000	1	3	4	1	2	6	5	2	3	27	13.4
5,001-10,000	0	0	3	2	1	1	2	2	1	12	5.9
10,001-50,000	0	5	1	3	1	1	2	2	2	17	8.4
>50,000	0	0	0	0	0	0	0	0	0	0	0.0
Total	2	38	33	20	19	24	25	23	18	202	100.0

Table 4-15. Landings (whole weight, pounds from logbook) associated with any permit that was retired during 1999-2004. Data includes Monroe County and all species (including unclassified) in snapper grouper FMU. Gear types restricted to hook and line, longline, and pots.

	1999	2000	2001	2002	2003	2004	2005	Total
Total snapper grouper landings	8,582,865	8,097,540	7,921,586	7,799,133	6,892,521	7,406,128	7,028,703	53,728,475
Landings associated with retired permits	587,316	630,392	504,874	362,192	399,116	199,778	75,838	2,759,506
% landings retired permits	6.84	7.78	6.37	4.64	5.79	2.70	1.08	5.14

The biological effects to the stock and associated ecological environment from **Alternative 2** are expected to be the same as **Alternative 1**. **Alternative 3** would repeal the 2 for 1 permit transfer provision. The beneficial biological effects as described under **Alternative 1** would no longer exist.

Negligible benefits could result if Permit Transferability **Sub-Alternatives 2-B and 2-E** were chosen and any permit holders lost their permits as a result, because this would reduce fishing effort. Similarly, small benefits could accrue from **Sub-Alternatives 2-C and 2-D** if any two-for-one transfers resulted, as that would result in a net reduction in the number of permits. However, there is no reason to believe this reduction would be any different than would occur if permit transferability rules never changed.

The potential impacts of these alternatives on ESA-listed species are affected by any resulting changes in fishing effort. Such changes in fishing effort are 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.

4.8.3 Economic Effects of Permit Transferability Alternatives

Alternative 1 (status quo) would preclude individual holders of unlimited transferable commercial snapper grouper permits from forming self or family owned corporations without obtaining a second permit to affect the current two-for-one transfer requirement. The cost of a second permit is estimated to range from \$9,000-\$21,000 (2006 dollars; from anecdotal information, web search, and public comment). Absent obtaining the second permit, these holders would not be able to receive the tax and liability benefits associated with incorporation. It is not known how many individual holders may wish to incorporate their business and the net value of these benefits cannot be determined. Formal tabulation of the number of individual unlimited transferable snapper grouper permits has not been conducted. However, a snapshot view of active permits (where “active” is defined as a permit that is not in a renewal period) on May 10, 2006, showed 486 permits registered to individuals, 125 permits registered to corporations, and 69

permits under lease (J. Miller, NOAA Fisheries Service Southeast Regional Permits Office, personal communication). These totals change as permits come up for renewal and some portion of the leased permits can logically be assumed to belong to individuals as well, so individual ownership is the dominant form of ownership in this fishery and desire for family incorporation could be substantial. Transfer requirements would thus remain unchanged and total fishery benefits would depend on the pace of fleet contraction due to the two-for-one transfer requirement. An optimal fleet-size target does not currently exist, nor do estimates of maximum economic yield.

Alternative 2 would allow incorporation and the realization of associated benefits without the requirement to obtain a second permit, subject to the incorporation being limited to ownership by the original permit holder and immediate family members. **Alternative 2** would, therefore, result in greater unquantifiable economic benefits than **Alternative 1**. Total net value of these benefits depends on renewal conditions, with the benefits assumed to be directly related to renewal flexibility. **Sub-Alternative 2-A** would have the most liberal renewal provisions since, after initial personal or family incorporation, renewal requirements would be the same for all corporations. This alternative would maintain the current situation that allows one-for-one effective transfer if an entity purchases a corporation and its permit assets. Since the permit is owned by the corporation and not the shareholder, transfer/sale of the corporation does not constitute transfer of the permit. Thus, participants would benefit from both the incorporation benefits and renewal flexibility. **Preferred Sub-Alternative 2-E** would be the second-most flexible and beneficial since new immediate family members could be added as shareholders without renewal penalty. This would particularly benefit individuals who marry or have new children whom they wish to add as shareholders. **Sub-Alternative 2-D** would be the third-most beneficial since it would allow transfer back to an immediate family member of the original permit in lieu of invoking a two-for-one requirement. **Sub-Alternative 2-C** would be less flexible than **Sub-Alternative 2-D** since it would not allow any shareholder addition without invoking a two-for-one permit transfer requirement and, thus, be expected to result in less economic benefits. **Sub-Alternative 2-B** would be the most restrictive and result in the lowest benefits since no shareholder additions would be allowed.

Alternative 3 would eliminate the two-for-one permit transfer requirement, thus, eliminating all impediments to incorporation and accommodating the realization of all incorporation benefits. Permit transfer could still occur and would be required for new entry, but permit prices would be expected to increase since a single permit would reflect the full value of fishery participation instead of two permits. Thus, while the total cost of the permit to the entering entity may remain largely unchanged, exiting participants should be able to receive higher individual payments. To the extent that sufficient contraction of the fleet to realize optimal economic benefits of the fishery has not yet occurred, **Alternative 3** may result in less net economic benefits relative to **Alternative 2** since some continued fleet contraction would be expected under **Alternative 2** regardless of the sub-alternative implemented. However, an estimate of the appropriate fleet size to maximize these benefits has not been determined. Among the sub-alternatives, **Sub-**

Alternatives 2-B and 2-C would be expected to result in equal rates of contraction and would, therefore, be expected to equally contribute to fleet contraction needs.

4.8.4 Social Effects of Permit Transferability Alternatives

Alternative 1 would continue the requirement of a two-for-one permit transfer in order to affect individual or family incorporation, causing these entities to continue to experience the reduced economic and social benefits of incorporation. Absent management that jeopardizes the resource and/or sustainability of the fishery, social effects are assumed to accrue positively, in general, to the overall financial status of the business, such that the stronger the financial status of the entity, the greater the family, community, and total social benefits. Since **Alternative 1** would continue to adversely harm the economic status of non-incorporated entities through the two-for-one requirement, unquantifiable net adverse social effects are expected to accrue.

Alternative 2 would allow individual or family incorporation without the requirement to obtain a second permit, increasing the flexibility of business operation, thereby improving the economic viability of the business, with concurrent increased social benefits relative to the status quo, regardless of the sub-alternative implemented. Among the sub-alternatives, it is assumed that social benefits increase concomitantly with increased transfer flexibility. Therefore, **Sub-Alternative 2-A** is expected to result in the greatest social benefits, since it would result in the greatest transfer flexibility, while **Sub-Alternative 2-B** would impose the least flexibility and result in the fewest social benefits. It should be noted that this assessment assumes any increased flexibility does not adversely affect any necessary rate of fleet contraction. While it is recognized that the current transfer requirements were implemented to induce fleet contraction and that some optimal fleet size theoretically exists, neither the resultant size or pace at which said reduction should be achieved is known. Therefore, the assumption that increased transfer flexibility while maintaining some contractive capacity is the preferred option is made within the context that the resultant rate of contraction still satisfies fishery needs.

Alternative 3 would eliminate the two-for-one transfer provision, producing the greatest transfer flexibility, result in an increase in social benefits relative to the status quo, and result in the largest net social benefits from the perspective of transfer flexibility among the considered alternatives. If additional fleet contraction is needed to maximize net economic and social benefits, fleet contraction may cease entirely under **Alternative 3**, thereby reducing the net increase in social benefits by some indeterminate amount. Absent this information, it is not possible to rank **Alternatives 2 and 3**. However, assuming the fishery would benefit from continued fleet contraction, this alternative would be expected to result in lower net social benefits than **Alternative 2**.

4.8.5 Administrative Effects of Permit Transferability Alternatives

Alternative 1 would continue the requirement of a two-for-one permit transfer to affect individual or family incorporation, resulting in no additional administrative burden.

Alternative 2 would allow incorporation and the realization of associated benefits without the requirement to obtain a second permit, subject to the incorporation being limited to ownership by the original permit holder and immediate family members.

Alternative 2 would likely be similar to **Alternative 1** but could represent a greater administrative burden than the status quo since a greater amount of paperwork would need to be processed to allow incorporation. **Alternative 3** would eliminate the two-for-one transfer provision, thereby reducing the administrative burden on processing permits. However, if additional fleet contraction administrative effects to further reduce the number of participants in the fishery could increase in the future.

4.8.6 Council Conclusions

The Council believes it is necessary to implement an action that would promote family-owned fishing businesses and extend tax and liability benefits to fishermen by allowing them to transfer individual snapper grouper permits to family-owned corporations on a one-for-one basis. The snapper grouper limited access program requires new entrants to purchase two commercial snapper grouper permits in exchange for one permit. This requirement also applies to individual permit holders who want to incorporate their business. Some permit holders would like to incorporate their business and transfer their snapper grouper permits to the new corporations without the need to buy a second snapper grouper permit. There are significant tax and liability benefits from doing so, including: Limited liability to the shareholder for the corporation's debt; the corporation pays taxes separate from its owners; and a business owner who works in his/her fishing operation as an employee may be eligible for reimbursement or deduction of many types of expenses, including life and health insurance. The Council concluded that the modification to the permit transferability requirements is fair and equitable based upon the information available.

4.9 Research Needs

Snowy grouper, golden tilefish, and red porgy have been assessed through the SEDAR process. After completion of these assessments, research needs have been identified through the SEDAR process 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 2005), 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:

4.9.1 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.

4.9.2 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.

4.9.3 Red Porgy

- Develop standardized techniques for aging red porgy. Resolve discrepancies in age estimates by different institutions.
- Quantify discard rates in commercial and recreational fishery.
- Estimate discard mortality rates with respect to depth and fishery.
- Obtain sex information on fish taken by commercial fishermen.
- At-sea observers for monitoring discards and developing CPUE indices.
- Status of red porgy in water deeper than 50 fathoms. Are there differences in aspects of the life history of red porgy in shallow and deeper waters.

4.9.4 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).

The following are economic research needs identified by the Council's Scientific and Statistical Committee:

Issues identified as being impediments to conducting economic research include:

- 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, for example partnerships to develop projects (High priority, Medium cost).
4. Ensure availability, improve upon and collect basic data: catch, employment, effort, price, and 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, and 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, and 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).

4.10 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 relation to regulatory thresholds.
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.

4.10.1 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**). The species primarily affected by the actions in this amendment include snowy grouper, golden tilefish, and red porgy. Other species in the snapper grouper fishery management unit may be affected (Table 1-1); 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 red porgy has not been documented (McGovern and Meister 1999). Tagging studies have not been conducted on snowy grouper or golden tilefish; however, it is believed that movement of these species is limited. However, snowy grouper, golden tilefish, and red porgy 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 put geographical boundaries in terms of coordinates, but recognize 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. 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. Ending overfishing will result in rebuilding snowy grouper which are overfished. Amendment 15A established rebuilding timeframes that could be as long as 34 years for snowy grouper. Red porgy currently has an 18 year rebuilding schedule in place. 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 snowy grouper, golden tilefish, and red porgy.

A. Past

The reader is referred to **Section 1.3 History of Management** for past regulatory activity for the fish species. These include bag and size limits, spawning season closures (red porgy), trip limits, commercial quotas, gear prohibitions and limitations, area closures, and a commercial limited access system. Snapper Grouper Amendment 13C was implemented on October 23, 2006. Amendment 13C established quotas, trip limits, and bag limits to end overfishing of snowy grouper, golden tilefish, and black sea bass. Red porgy harvest will be allowed to increase consistent with the rebuilding program.

B. Present

The proposed actions update select management reference points for the golden tilefish stock; define interim allocations for snowy grouper and red porgy; modify sales restrictions; establish a method to monitor and assess bycatch in the snapper grouper fishery; implement measures to minimize the impact of incidental take on sea turtles and smalltooth sawfish; and modify permit renewal and transferability requirements.

C. Reasonably Foreseeable Future

The Council has submitted Snapper Grouper Amendment 14 to the Secretary of Commerce in July 2007. Amendment 14 would restrict some fishing activities at MPA sites with the potential to protect a portion of the population and habitat of long-lived, slow growing, deepwater snapper grouper species (speckled hind, snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, and blueline tilefish) from directed fishing pressure to achieve a more natural sex ratio, age, and size structure within the proposed MPAs, while minimizing adverse social and economic effects.

The Council recently completed Amendment 15A. Actions included: Updates of management reference points for the snowy grouper (*Epinephelus niveatus*), red porgy (*Pagrus pagrus*), and black sea bass stocks (*Centropristis striata*); modifications to rebuilding schedules for the snowy grouper and black sea bass stocks; and rebuilding strategies for the snowy grouper, red porgy, and black sea bass stocks.

The Council is developing Snapper Grouper Amendment 16. This amendment would end overfishing for vermilion snapper and gag. It is expected that this amendment will be submitted to the Secretary of Commerce by September 2008.

The Council is developing Amendment 17. This amendment would establish annual catch limits and accountability measures for snapper grouper species currently experiencing overfishing as well as end overfishing and rebuild red snapper. Other actions Amendment 17 would include: Management reference points for red snapper; extend the range of some snapper grouper species through the Mid-Atlantic Council's area of authority; regional quotas for snowy grouper; and reduce fishing mortality in the deep water, recreational fishery. It is expected that this amendment will be submitted to the Secretary of Commerce by June 2009.

II. Non-Council and other non-fishery related actions, including natural events affecting snowy grouper, golden tilefish, and red porgy.

- 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 snowy grouper, golden tilefish, and red porgy. 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. Juvenile snowy grouper occasionally 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 stresses.

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

The trends in the condition of snowy grouper, golden tilefish, and red porgy are described by recent stock assessments (SEDAR 1 2002, SEDAR 4 2004, and SEDAR Update #2 2006). The SEDAR stock assessment indicates biomass of snowy grouper declined from 2.5 times the biomass at MSY (B_{MSY}) in 1970 to 50% of B_{MSY} in 1985 (SEDAR 4 2004). In 2002, biomass was only about 18% of B_{MSY} . Fishing mortality (F) was close to the fishing mortality that would produce MSY (F_{MSY}) in 1975. In the early 1980s, F was more than 4 times greater than F_{MSY} . Since the early 1980s, F has fluctuated around 3 times F_{MSY} .

The biomass of golden tilefish declined from about 2.5 times B_{MSY} in 1980 to slightly above B_{MSY} in the early 1980s. Since the early biomass has fluctuated around B_{MSY} . Fishing mortality (F) has shown a great deal of fluctuation over the years. In 1981, F rose very rapidly to almost 5 times F_{MSY} and then decreased well below F_{MSY} in the late 1980s. Fishing mortality rose to almost 4 times F_{MSY} in 1993 and then declined to F_{MSY} in 1996. In 2002, F was 1.5 times greater than F_{MSY} .

Biomass of red porgy decreased steadily from about 2.8 times B_{MSY} in 1972 to around 40% of B_{MSY} during the middle 1990s. Biomass increased to 44% of B_{MSY} in 2001. Fishing mortality (F) increased from about 30% of F_{MSY} in 1972 to greater than 4 times F_{MSY} in 1990. Fishing mortality decreased, with some fluctuation, to 45% of F_{MSY} in 2001.

In May 2006, an update of the red porgy assessment was conducted (Red Porgy Assessment Update#1 2006). Results suggest that spawning stock biomass has increased since the benchmark assessment in 2001. The 2001 estimate of SSB is about 42% of SSB_{MSY} , and the 2005 estimate is about 66% of SSB_{MSY} . This 2005 estimate corresponds

to about 85% of MSST, by the Council's usual definition of MSST as $(1 - M)SSB_{MSY}$. The 2004 estimate of fishing mortality rate is about 39% of F_{MSY} , where F_{MSY} is the MFMT. These results indicate that the stock is below its biomass limit, but is not undergoing overfishing.

Snowy grouper and golden tilefish are extremely long-lived (>50 years), slow growing, and late maturing, making them very susceptible to stresses such as fishing pressure (Wyanski *et al.* 2000, Harris *et al.* 2001). The capacity to recover from heavy fishing depends on factors such as age at maturity, generation time, environmental conditions, available habitat, harvesting pressure, age at removal, ability to reach a mature age, and predation. Due to the life history characteristics of snowy grouper and golden tilefish, the amount of time needed to recover from periods of heavy fishing pressure would be greater than for red porgy. For example, in the absence of fishing pressure, it is estimated that snowy grouper would rebuild to B_{MSY} in 13 years (SEDAR4 2004). In contrast, other affected species such as red porgy are not as long-lived, are faster growing, and mature at smaller sizes than snowy grouper or golden tilefish. Thus, recovery of red porgy would require a shorter period of time than snowy grouper and golden tilefish. Effects on the human environment are described in Section 4.10.2.

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

This step is important in outlining the current and probable stress factors to snowy grouper, golden tilefish, red porgy, and deepwater 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

Quantitative definitions of overfishing and overfished for snowy grouper, golden tilefish, and red porgy are identified in Amendments 11 and 12 to the Snapper Grouper FMP (SAFMC 1998d and SFAMC 2000a). Numeric values of overfishing thresholds and overfished thresholds were updated in Amendment 15A for snowy grouper, black sea bass, and red porgy and Amendment 15B for golden tilefish. Amendment 16 will update management reference points for gag and vermilion snapper and Amendment 17 will update management reference points for red snapper. These values includes maximum sustainable yield (MSY), the fishing mortality rate that produces MSY (F_{MSY}), the biomass or biomass proxy that supports MSY (B_{MSY}), the minimum stock size threshold below which a stock is considered to be overfished (MSST), the maximum fishing

mortality threshold above which a stock is considered to be undergoing overfishing (MFMT), and optimum yield (OY).

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

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 snowy grouper and golden tilefish, these assessments reflect initial periods when the stocks were above B_{MSY} and fishing mortality was low. However, some species such as 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 4-16.

Table 4-16. The cause and effect relationship of fishing and regulatory actions within the time period of the Cumulative Effects Analysis (CEA).

Time period/dates	Cause	Observed and/or Expected Effects
1960s-1983	Growth overfishing of many reef fish species.	Declines in mean size and weight of many species including black sea bass.
August 1983	8" total length black sea bass; 4" trawl mesh (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 1988b).	Increase yield per recruit of vermilion snapper; eliminate trawl damage to live bottom habitat.
Pre-January 1, 1992	Overfishing of many reef species including red porgy, vermilion snapper, and snowy grouper.	Spawning stock ratio of these species is estimated to be less than 30% indicating that they are overfished.

Time period/dates	Cause	Observed and/or Expected Effects
January 1992	Prohibited gear: fish traps south of Cape Canaveral, FL; entanglement nets; longline gear inside of 50 fathoms; powerheads and bangsticks in designated SMZs off SC; 10" total length vermilion snapper (recreational only); 12" total length vermilion snapper and red grouper (commercial only); 10 vermilion snapper/person/day, aggregate grouper bag limit of 5/person/day (SAFMC 1991a).	Protected smaller spawning age classes of vermilion snapper.
Pre-June 27, 1994	Overfishing of snowy grouper and golden tilefish; high fishing intensity and damage to <i>Oculina</i> habitat.	SSR for snowy grouper and golden tilefish below 30% indicates that they are overfished. Noticeable decrease in numbers and species diversity in are of <i>Oculina</i> off FL
June 1994	Commercial quotas and trip limits for snowy grouper and golden tilefish. Prohibition of fishing for and retention of snapper grouper species (HAPC renamed OECA in 1994)	Put limit on fishing mortality of snowy grouper and golden tilefish. Initiated the recovery of snapper grouper species in OECA.
1992-1999	Declining trends in biomass and overfishing continue for a number of snapper grouper species including vermilion snapper, black sea bass and red porgy.	Spawning potential ratio for vermilion snapper, black sea bass, and red porgy is less than 30% indicating that they are overfished.
June 24, 1999	Red porgy: 14" total length (recreational and commercial); 5 fish bag limit; March-April closure. Black sea bass: 10" total length (recreational and commercial); 20 fish bag limit. Vermilion snapper: 11" total length (recreational). Aggregate bag limit of no more than 10 fish/person/day	Ends overfishing of red porgy, rebuilding of biomass begins. F decreases in 2000 for black sea bass but increases again in 2001. No further declines in black sea bass biomass. F for vermilion snapper remains at lower levels than during 1983-1996 but is still above Fmsy. Egg production increases.

Time period/dates	Cause	Observed and/or Expected Effects
	(SAFMC 1998a).	
1999-2000	Red porgy is not overfishing but remains overfished.	Needs to be rebuilt to B_{MSY} .
September 22, 2000	Establish 18 year rebuilding timeframe, January-April closure, 1 fish bag limit, 50-lb incidental catch (SAFMC 2000a).	Biomass continues to rebuild.
Regulations effective October 23, 2006	Snapper Grouper FMP Amendment 13C.	Reduce fishing mortality on snowy grouper, golden tilefish, black sea bass, and vermilion snapper. Allow increase harvest of red porgy.
In development	Snapper Grouper FMP Amendment 14 (SAFMC 2006).	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, and blueline tilefish).
Notice of Agency Action, March 20, 2008	Snapper Grouper FMP Amendment 15A (SAFMC 2007b).	Allow increased harvest as biomass of overfished fisheries rebuild; update select management reference points for the snowy grouper (<i>Epinephelus niveatus</i>), red porgy (<i>Pagrus pagrus</i>), and black sea bass stocks (<i>Centropristis striata</i>); Modify rebuilding schedules for the snowy grouper and black sea bass stocks; Define rebuilding strategies for the snowy grouper, red porgy, and black sea bass stocks.
In development	Snapper Grouper FMP Amendment 15B.	Update management reference points for the golden tilefish; Define allocations for snowy grouper and red porgy; Modify sales restrictions; Establish a method to monitor and assess bycatch in the snapper grouper fishery; Implement measures to minimize the impact of incidental take on sea turtles and smalltooth sawfish; Modify permit renewal and transferability requirements.
In development	Snapper Grouper FMP Amendment 16.	End overfishing for vermilion snapper and gag.
In development	Snapper Grouper FMP Amendment 17.	Establish a strategy to ensure stock rebuilding stays on schedule should the total allowable catch levels be exceeded; Implement measures to reduce bycatch of deepwater snapper grouper species; End overfishing of red

Time period/dates	Cause	Observed and/or Expected Effects
		snapper and implement a plan to rebuild stock; and establish annual catch limits and accountability measures for species experiencing overfishing
In development	Snapper Grouper FMP Amendment 18.	Consideration of a LAP Program for the commercial fishery in the South Atlantic.

9. Determine the magnitude and significance of cumulative effects.

Management actions in Amendment 13C, implemented October 23, 2006, should reduce fishing mortality in snowy grouper, golden tilefish, and black sea bass 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. Evidence from MARMAP CPUE and reports from fishermen indicate the red porgy stock is rebuilding as a result of management measures implemented in Snapper Grouper FMP Amendment 12. Because snowy grouper, golden tilefish, and to a certain extent red porgy are upper level predators preying primarily on fish, benthic invertebrates, and in some cases, squid (Nelson 1988; Bullock and Smith 1991), the degree of competition for food resources between these species and other co-occurring species may increase as stock abundance increases. In addition, red porgy and other co-occurring species may begin to compete for habitat as they increase in abundance.

Restrictions in the catch of snowy grouper and golden tilefish 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, black sea bass co-occur with tomate, scup, red porgy, white grunt, red grouper, scamp, gag, 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 Fishery Ecosystem Plan that will address the cumulative effects of management regulations, fishing effort, and biomass of all species in the marine ecosystem. 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 modify management as necessary.

The effects of the proposed action are, and will continue to be, monitored through collection of data by NOAA Fisheries Service, States, stock assessments and stock assessment updates, life history studies, and other scientific observations. The establishment of a standard reporting methodology for bycatch, proposed in this amendment, would improve the monitoring of the cumulative effects of discards.

4.10.2 Socioeconomic

A description of the human environment, including a description of commercial and recreational snapper grouper fisheries and associated key fishing communities is contained in Section 3.4 and incorporated herein by reference. A description of the history of management of the snapper grouper fishery is contained in Section 1.3 and is incorporated herein by reference. Participation in and the economic performance of the fishery have been effected by a combination of regulatory, biological, social, and external economic factors. Regulatory measures have obviously affected the quantity and composition of harvests, through the various size limits, seasonal restrictions, trip or bag limits, and quotas. Gear restrictions, notably fish trap and longline restrictions, have also affected harvests and economic performance. The limited access program implemented in 1998/1999 substantially affected the number of participants in the fishery. Biological forces that either motivate certain regulations or simply influence the natural variability in fish stocks have played a role in determining the changing composition of the fishery. Additional factors, such as changing career or lifestyle preferences, stagnant to declining prices due to imports, increased operating costs (e.g., gas, ice, insurance, dockage fees, etc.), and increased waterfront/coastal value leading to development pressure for other than fishery uses have impacted both the commercial and recreational fishing sectors.

Given the variety of factors that affect fisheries, persistent data issues, and the complexity of trying to identify cause-and-effect relationships, it is not possible to differentiate actual or cumulative regulatory effects from external cause-induced effects. For each regulatory action, expected effects are projected. However, these projections typically only minimally, if at all, are capable of incorporating the variety of external factors, and evaluation in hindsight is similarly incapable of isolating regulatory effects from other factors, as in, what portion of a change was due to the regulation versus due to input cost changes, random species availability variability, the sale of a fish house for condominium development, or even simply fishermen behavioral changes unrelated to the regulation.

In general, it can be stated, however, that the regulatory environment for all fisheries has become progressively more complex and burdensome, increasing, in tandem with other adverse influences, the pressure on economic losses, business failure, occupational changes, and associated adverse pressures on associated families, communities, and industries. Some reverse of this trend is possible and expected. The adoption of limited

access privilege programs would allow a simplified regulatory environment since trip or seasonal restrictions may no longer be needed and effort issues should be addressed by internal access-rights transfer, while rebuilding plans and the recovery of stocks would allow harvest increases. However, certain pressures would remain, such as total effort and total harvest considerations, increasing input costs, import induced price pressure, and competition for coastal access.

A detailed description of the expected social and economic impacts of the actions in this amendment are contained elsewhere in Section 4, and in Sections 5 and 6, and is incorporated herein by reference. The greatest potential substantive adverse impact of any of the proposed measures is likely associated with the proposed prohibition on sales of bag limit fish (see Section 5.5.4).

Current and future amendments are expected to add to this cumulative effect. Snapper Grouper Amendment 14 would restrict fishing at a series of MPA sites. The expected economic impacts of these MPAs are unknown since available data cannot identify the incidence or magnitude of harvests from these areas, nor is it possible to forecast how fishing behavior or harvests may change to compensate for these restrictions. In the short term, some additional economic losses may occur as a result of this amendment, but in the long term, the stocks are expected to benefit from this increased protection, with spill-over benefits to the fishery.

Snapper Grouper Amendment 15A specified management reference points and status determination criteria for snowy grouper, red porgy, and black sea bass; rebuilding schedules for snowy grouper and black sea bass; and rebuilding strategies for snowy grouper, red porgy, and black sea bass. The management reference points, status determination criteria, and rebuilding schedules are not expected to have direct economic or social impacts. The reference point and status determination criteria actions, however, may precipitate future impacts if the resources are evaluated and it is determined that further restrictions on the fisheries are required. The rebuilding schedules also induce indirect impacts by determining the pace of recovery and the overall restrictiveness of measures required to recover the resource, since the faster the recovery period the greater harvest must be restricted. The rebuilding strategies define the annual yield during the recovery period. Although in general yield increases over the course of the recovery period and net cumulative benefits increase across the fisheries, initial yield reductions at the beginning of the recovery periods are likely to have short term adverse impacts on some participants or sectors of the fisheries, thereby increasing the general cumulative burden.

Snapper Grouper Amendment 16 will address overfishing in the gag and vermilion snapper fisheries. The corrective action in response to overfishing always requires harvest reductions and more restrictive regulation. Thus, additional short-term social and economic impacts would be expected. These restrictions will hopefully prevent, however, the stocks from becoming overfished, which would require recovery plans, further harvest restrictions, and additional social and economic losses.

Snapper Grouper Amendment 17 is expected to contain a number of actions addressing general snapper grouper sector overages, management measures for red snapper that will end overfishing and rebuild the stock, annual catch limits and accountability measures for species experiencing overfishing, and the deepwater snapper grouper fishery. The full suite of actions and alternatives for this amendment has not been determined at this time. While these actions would be expected to aid long-term protection and recovery efforts for snapper grouper, these actions are likely to increase the regulatory burden for some segments of the fishery, with associated increased short term economic and social hardships for fishery participants and associated industries and communities.

4.11 Bycatch Practicability Analysis

The Council is required by Magnuson-Stevens Act §303(a)(11) to establish a standardized bycatch reporting methodology for federal fisheries and to identify and implement conservation and management measures that, to the extent practicable and in the following order, (A) minimize bycatch and (B) minimize the mortality of bycatch that cannot be avoided. The Magnuson-Stevens Act defines bycatch as “fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards. Such term does not include fish released alive under a recreational catch-and-release fishery management program” (Magnuson-Stevens Act §3(2)). Economic discards are species that are discarded because they are undesirable to the harvester. This category of discards generally includes certain species, sizes, and/or sexes with low or no market value. Regulatory discards are species required by regulation to be discarded, but also include fish that may be retained but not sold.

NOAA Fisheries Service outlines at 50 CFR §600.350(d)(3)(i) ten factors that should be considered in determining whether a management measure minimizes bycatch or bycatch mortality to the extent practicable. These are:

1. Population effects for the bycatch species;
2. Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem);
3. Changes in the bycatch of other species of fish and the resulting population and ecosystem effects;
4. Effects on marine mammals and birds;
5. Changes in fishing, processing, disposal, and marketing costs;
6. Changes in fishing practices and behavior of fishermen;
7. Changes in research, administration, enforcement costs, and management effectiveness;
8. Changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources;
9. Changes in the distribution of benefits and costs; and
10. Social effects.

Agency guidance provided at 50 CFR §600.350(d)(3)(ii) suggests the Councils adhere to the precautionary approach found in the Food and Agriculture Organization of the United

Nations (FAO) Code of Conduct for Responsible Fisheries (Article 6.5) when faced with uncertainty concerning these ten practicability factors. According to Article 6.5 of the FAO Code of Conduct for Responsible Fisheries, using the absence of adequate scientific information as a reason for postponing or failing to take measures to conserve target species, associated or dependent species, and non-target species and their environment, would not be consistent with a precautionary approach.

4.11.1 Population Effects for the Bycatch Species

4.11.1.1 Background

Actions in Amendment 15B are intended to: Specify allocations for snowy grouper and red porgy; Update management reference points for golden tilefish; Modify sale restrictions; and Modify permit renewal and transferability requirements. Actions in the document that have the potential to reduce and monitor bycatch include: Implement a plan to monitor and assess bycatch; Implement measures to minimize the impacts of incidentally catch of sea turtles and smalltooth sawfish; and require a valid Federal Commercial Snapper Grouper Permit to sell South Atlantic snapper grouper species. Species affected by proposed management measures in Amendment 15B include snowy grouper, golden tilefish, red porgy, smalltooth sawfish, and sea turtles.

Logbook data from 2001-2004 indicates the directed commercial fishery for snowy grouper is prosecuted primarily with hook and line gear (71%) followed by bottom longline gear (29%) (Table 4-17). Other gear types capture 1% of the landings. Snowy grouper is largely a commercial fishery as only 4% of the landings were from recreational sources during 1999-2003 and 8% of the landings were recreational during 2001-2005 (Table 4-17). Golden tilefish are also primarily taken by commercial fishermen and most are caught with bottom longline gear (Tables 4-17). Red porgy landings were fairly evenly split between the commercial (49%) and recreational (51%) sectors based on data from 2001-2003; however, landings are dominated by the recreational sector with the inclusion of 2004 and 2005 data. Landings from the commercial sector dominate the deepwater species (i.e. snowy grouper and golden tilefish).

Table 4-17. Percentage of recreational and commercial landings of species in Amendment 15B for 2001-2005.

Recreational landings include headboat and MRFSS data; commercial data are from NOAA Fisheries Service Logbook. *Data from 2001-2005 used for golden tilefish since the 2005 MRFSS value appears to be an error.

Species	% Recreational	% Commercial	% Hook and line	% Longline	% Pots	% Other
Snowy Grouper	8.00	92.00	70.86	28.59	0.00	0.55
Golden tilefish*	5.40	94.60	7.61	91.79	0.01	0.59
Red Porgy	62.80	37.20	97.80	0.97	0.84	0.39

Restrictions currently used to manage these species include quotas (snowy grouper, golden tilefish, and red porgy), trip limits (snowy grouper and golden tilefish), minimum

size limits (red porgy), bag limits (snowy grouper, golden tilefish, and red porgy), and closed seasons (red porgy).

As noted in Section 3.2.4, NOAA Fisheries recently conducted a biological opinion on the effects of the South Atlantic Snapper Grouper fishery on ESA-listed species. That opinion stated the operation of the South Atlantic Snapper Grouper fishery may adversely affect smalltooth sawfish, green, Kemp’s ridley, leatherback and loggerhead sea turtles, but was not likely to jeopardize their continued existence. The management measures proposed in Amendment 15B are not expected to create any adverse effects on these species that were not previously considered in NMFS (2006).

4.11.1.2 Commercial Fishery

During 2001 to 2005, approximately 20% of snapper grouper permitted vessels from the Gulf of Mexico and South Atlantic were randomly selected to fill out supplementary logbooks. Data from 2001 are not presented because some values are questionable. During 2002-2005, an average of 61% of the trips in the South Atlantic reported discards (Table 4-18). The average number of trips per year during 2002 to 2005 was 16,808 (Table 4-19).

Table 4-18. Discard logbook gross effort for South Atlantic.
Source: NOAA Fisheries Service SEFSC Logbook Program.

YEAR	Trips reporting Discard	Trips reporting no Discard	Sample Trips	% Trips with Discard
2002	2,947	1,449	4,396	67.0%
2003	3,028	2,040	5,068	59.7%
2004	2,091	1,837	3,928	53.2%
2005	1,904	1,162	3,066	62.1%
Grand Total	9,970	6,488	16,458	60.6%
Mean	2,493	1,622	4,115	

Table 4-19. Snapper grouper fishery effort for South Atlantic.
Source: NOAA Fisheries Service SEFSC Logbook Program.

YEAR	Trips
2002	17,856
2003	18,125
2004	16,711
2005	14,538
Mean	16,808

For species in Amendment 15B, the number of trips reporting discards was greatest for red porgy (Table 4-20). Discards of snowy grouper and golden tilefish were rare. The

percentage of trips that reported discards ranged from 3.89% for red porgy to 0.00% for golden tilefish (Table 4-21).

Table 4-20. Annual number of trips reporting discards of selected species in the South Atlantic.

Source: NOAA Fisheries Service SEFSC Logbook Program.

YEAR	Warsaw Grouper	Speckled Hind	Snowy Grouper	Golden Tilefish	Yellowedge Grouper	Misty Grouper	Blueline Tilefish	Silk Snapper	Queen Snapper	Black Sea Bass	Vermilion Snapper	Red porgy
2002	10	63	2	0	0	1	0	5	1	116	217	250
2003	18	55	2	0	0	0	1	0	0	115	118	151
2004	1	13	0	0	0	0	2	0	0	65	65	81
2005	1	27	3	0	2	0	2	1	0	63	86	148
Mean	7.5	39.5	1.8	0.0	0.5	0.3	1.3	1.5	0.3	89.8	121.5	157.5

Table 4-21. Percentage of trips that discarded selected species in the South Atlantic.

Source: NOAA Fisheries Service SEFSC Logbook Program.

YEAR	Warsaw Grouper	Speckled Hind	Snowy Grouper	Golden Tilefish	Yellowedge Grouper	Misty Grouper	Blueline Tilefish	Silk Snapper	Queen Snapper	Black Sea Bass	Vermilion Snapper	Red porgy
2002	0.227	1.433	0.045	0.000	0.000	0.023	0.000	0.114	0.023	2.639	4.936	5.687
2003	0.355	1.085	0.039	0.000	0.000	0.000	0.020	0.000	0.000	2.269	2.328	2.979
2004	0.025	0.331	0.000	0.000	0.000	0.000	0.051	0.000	0.000	1.655	1.655	2.062
2005	0.033	0.881	0.098	0.000	0.065	0.000	0.065	0.033	0.000	2.055	2.805	4.827
Mean	0.16	0.93	0.05	0.00	0.02	0.01	0.03	0.04	0.01	2.15	2.93	3.89

During 2002-2005, for species in Amendment 15B, the average number of individuals discarded per trip was greatest for red porgy (Table 4-22). Snowy grouper and golden tilefish were rarely discarded.

Table 4-22. Average number of species discarded per trip in the South Atlantic.

Source: NOAA Fisheries Service SEFSC Logbook Program.

YEAR	Warsaw Grouper	Speckled Hind	Snowy Grouper	Golden Tilefish	Yellowedge Grouper	Misty Grouper	Blueline Tilefish	Silk Snapper	Queen Snapper	Black Sea Bass	Vermilion Snapper	Red porgy
2002	2.2	16.3	2.5	0.0	0.0	1.0	0.0	16.4	2.0	224.6	78.1	75.3
2003	2.3	15.4	1.5	0.0	0.0	0.0	1.0	0.0	0.0	188.3	66.1	62.7
2004	1	3.9	0.0	0.0	0.0	0.0	1.0	0.0	0.0	30.0	61.5	51.1
2005	1	4.9	1.3	0.0	2.5	0.0	1.0	5.0	0.0	32.0	96.8	56.2
Mean	1.6	10.1	1.3	0.0	0.6	0.3	0.8	5.4	0.5	118.7	75.6	61.3

Since the discard logbook database represents a sample, data were expanded to estimate the number of discarded fish in the whole fishery. The method for expansion was to (1) estimate the probability of discarding a species; (2) estimate the number of fish discarded per trip; and (3) estimate the number discarded in the whole fishery (total discarded = total trips * discard probability * discard number). During 2002-2005, an average of 41,838 red porgy were discarded per year (Table 4-23). Snowy grouper and golden tilefish were rarely discarded.

Table 4-23. Expanded number of discarded species for the South Atlantic.

YEAR	Warsaw Grouper	Speckled Hind	Snowy Grouper	Golden Tilefish	Yellowedge Grouper	Misty Grouper	Blueline Tilefish	Silk Snapper	Queen Snapper	Black Sea Bass	Vermilion Snapper	Red porgy
2002	89	4,179	20	0	0	4	0	333	8	105,820	68,873	76,444
2003	148	3,019	11	0	0	0	4	0	0	77,453	27,910	33,886
2004	4	217	0	0	0	0	9	0	0	8,283	16,998	17,613
2005	5	625	19	0	24	0	9	24	0	9,574	39,494	39,407
Mean	62	2,010	12	0	6	1	5	89	2	50,283	38,319	41,838

Dominant among the top species discarded by fishermen were yellowtail snapper, red porgy, vermilion snapper, and black sea bass (Tables 4-24 and 4-25).

Table 4-24. The 50 most commonly discarded species during 2001-2005 in order of occurrence from highest number of trips to lowest for the South Atlantic. Count is number of trips that reported discarding the species. Sum is the reported number discarded. These values are not expanded.

Source: NOAA Fisheries Service SEFSC Logbook Program.

Species (Table 4-19)	Count	Sum
SNAPPER,YELLOWTAIL	1131	10,528
PORGY,RED,UNC	717	44,706
SNAPPER,VERMILION	593	45,388
SCAMP	588	7,433
KING MACKEREL and CERO	583	4,200
GROUPEL,GAG	553	3,902
GROUPEL,RED	468	2,313
SEA BASS,ATLANTIC,BLACK,UNC	429	94,564
GROUPEL,BLACK	355	2,629
SHARK,UNC	331	2,307
AMBERJACK,GREATER	293	1,942
SNAPPER,RED	288	9,091
BONITO,ATLANTIC	233	1,066
TUNA,LITTLE (TUNNY)	221	1,311
SNAPPER,MANGROVE (Duplicate of 3760)	190	1,588
HIND,SPECKLED	173	2,252
BARRACUDA	170	837
MENHADEN	164	24,452
AMBERJACK	152	568
SNAPPER,MUTTON	142	430
SHARK,ATLANTIC SHARPNOSE	136	3,588
DOLPHINFISH	135	795
BLUE RUNNER	117	868
GRUNTS	116	2,993
SEA BASS,ROCK	111	9,385
SHARK,BLACKTIP	110	753
TRIGGERFISH,GRAY	107	1,570
TRIGGERFISHES	105	1,066
FINFISHES,UNC FOR FOOD	105	997
REMORA	99	233
KING MACKEREL	93	811
COBIA	91	155
SCUPS OR PORGIES,UNC	90	1,003
SHARK,DOGFISH,SPINY	86	8,867
SHARK,SANDBAR	78	1,424
GRUNT,WHITE	65	4,478
GROUPERS	62	3,839
SHARK,NURSE	61	176
SPANISH MACKEREL	60	657
CERO	55	160
PARROTFISH	55	99

Species (Table 4-19)	Count	Sum
SHARK, DOGFISH, UNC	47	2,623
SNAPPER, MANGROVE	47	248
RUDDERFISH (SEA CHUBS)	46	351
BLUEFISH	44	1,632
CREVALLE	43	133
FINFISHES, UNC, BAIT, ANIMAL FOOD	42	4,251
SKATES	38	1,011
GROUPEL, WARSAW	38	228
GROUPEL, NASSAU	38	55

Table 4-25. The 50 most commonly discarded species during 2001-2005 based on number of fish discarded ordered from highest to lowest for the South Atlantic. Count is number of trips that reported discarding the species. Sum is the reported number discarded from 20% of the fishermen. These values are not expanded.

Source: NOAA Fisheries Service SEFSC Logbook Program.

Species (Table 4-20)	Count	Sum
SEA BASS, ATLANTIC, BLACK, UNC	429	94,564
SNAPPER, VERMILION	593	45,388
PORGY, RED, UNC	717	44,706
MENHADEN	164	24,452
SNAPPER, YELLOWTAIL	1131	10,528
SEA BASS, ROCK	111	9,385
SNAPPER, RED	288	9,091
SHARK, DOGFISH, SPINY	86	8,867
SCAMP	588	7,433
GRUNT, WHITE	65	4,478
FINFISHES, UNC, BAIT, ANIMAL FOOD	42	4,251
KING MACKEREL and CERO	583	4,200
GROUPEL, GAG	553	3,902
GROUPELS	62	3,839
SHARK, ATLANTIC SHARPNOSE	136	3,588
GRUNTS	116	2,993
GROUPEL, BLACK	355	2,629
GRUNT, TOMTATE	22	2,628
SHARK, DOGFISH, UNC	47	2,623
GROUPEL, RED	468	2,313
SHARK, UNC	331	2,307
HIND, SPECKLED	173	2,252
AMBERJACK, GREATER	293	1,942
BLUEFISH	44	1,632
SNAPPER, MANGROVE (Duplicate of 3760)	190	1,588
TRIGGERFISH, GRAY	107	1,570
BALLYHOO	31	1,500
SHARK, SANDBAR	78	1,424
TUNA, LITTLE (TUNNY)	221	1,311

Species (Table 4-20)	Count	Sum
SHARK,DOGFIH,SMOOTH	32	1,245
BONITO,ATLANTIC	233	1,066
TRIGGERFISHES	105	1,066
SKATES	38	1,011
SCUPS OR PORGIES,UNC	90	1,003
FINFISHES,UNC FOR FOOD	105	997
BLUE RUNNER	117	868
BARRACUDA	170	837
SHARK,TIGER	28	824
KING MACKEREL	93	811
DOLPHINFISH	135	795
SHARK,BLACKTIP	110	753
SNAPPERS,UNC	27	697
SPANISH MACKEREL	60	657
AMBERJACK	152	568
PINFISH,SPOTTAIL	36	557
CHUBS	27	493
AMBERJACK,LESSER	8	484
SNAPPER,MUTTON	142	430
BIGEYE SCAD	7	395
RUDDERFISH (SEA CHUBS)	46	351

4.11.1.3 Recreational Fishery

For the recreational fishery, estimates of the number of recreational discards are available from MRFSS. The MRFSS system classifies recreational catch into three categories:

- Type A - Fishes that were caught, landed whole, and available for identification and enumeration by the interviewers.
- Type B - Fishes that were caught but were either not kept or not available for identification.
 - Type B1 - Fishes that were caught and filleted, released dead, given away, or disposed of in some way other than Types A or B2.
 - Type B2 - Fishes that were caught and released alive.

Of species in Amendment 15B, the percentage of fish released was highest for red porgy (59.7%) and lowest for golden tilefish (3.2%) (Table 4-26). SEDAR 4 (2004) suggested release mortality rates is probably near 100% for snowy grouper and golden tilefish. Estimates of dead discards are based on accepted release mortality rates (Section 4.11.1.4).

Table 4-26. Total number (A+B1+B2) of fish caught from MRFSS interviews, estimated total number of fish released (B2), percent released, and estimate total number of dead discards during 2001-2005.

Source: MRFSS Web Site.

Species	Est Total	Est Released	% Released	Est Dead Discards
Snowy Grouper	44,043	5,693	12.93%	5,693
Golden Tilefish	97,690	3,124	3.20%	3,124
Speckled Hind	11,618	10,940	94.16%	10,940
Warsaw Grouper	7,444	1,668	22.41%	1,668
Yellowedge Grouper	3,756	0	0.00%	0
Misty Grouper	54	0	0.00%	0
Blueline Tilefish	23,526	4,301	18.28%	4,301
Silk Snapper	8,486	1,010	11.90%	1,010
Queen Snapper	907	319	35.17%	319
Black Sea Bass	13,039,834	10,323,548	79.17%	1,548,532
Red Porgy	308,238	183,909	59.66%	14,713
Vermilion Snapper	1,718,019	692,683	40.32%	173,171

Of species in Amendment 15B, the number of fish released was highest for red porgy and lowest for golden tilefish (Table 4-26a). Total dead discards was determined by applying the SEDAR 4 (2004) suggested release mortality rates the number of fish released alive and adding the value to the number of fish released dead. Estimates of dead discards are based on accepted recreational release mortality rates: 100%, snowy grouper; 100%, golden tilefish, 15%, black sea bass; 8%, red porgy; and 25%, vermilion snapper.

Table 4-26a. Total number of fish released alive or dead on sampled headboat trips during 2004-2006.

Source: NMFS Headboat Survey.

Species	released alive	mean#/trip	released dead	mean#/trip	# sampled trips	Total dead discards
Snowy Grouper	18	0.37	1	0.02	49	19
Golden Tilefish	0	0.00	0	0.00	0	0
Speckled Hind	884	5.05	8	0.05	175	unknown
Warsaw Grouper	32	0.49	0	0.00	65	unknown
Yellowedge Grouper	1	0.04	0	0.00	25	unknown
Misty Grouper	0	0.00	0	0.00	0	0
Blueline Tilefish	0	0.00	0	0.00	40	0
Silk Snapper	202	2.59	3	0.04	78	unknown
Queen Snapper	0	0.00	0	0.00	0	0
Black Sea Bass	83,402	22.28	1,747	0.47	3,744	14,257
Red Porgy	60,347	59.87	2,365	2.35	1,008	7,193
Vermilion Snapper	78,487	30.71	4,658	1.82	2,556	24,280

4.11.1.4 Finfish Bycatch Mortality

Snowy grouper are primarily caught in water deeper than 300 feet and golden tilefish are taken at depths greater than 540 feet; therefore, release mortality of the species is probably near 100% (SEDAR 4 2004). SEDAR 1 (2002) recommended release mortality rates of 35% be used for red porgy caught by commercial fishermen and 8% for red porgy taken by the recreational sector.

4.11.1.5 Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality

The preferred Alternative 2 in Section 4.5 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 first phase 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.
2. Require selected vessels employ electronic logbooks or video monitoring.
3. Utilize bycatch information collected in conjunction with grant-funded programs such as MARFIN and CRP. Require raw data are provided to NOAA Fisheries Service and the Council.
4. Request 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.

Snowy Grouper and Golden Tilefish

Bycatch of snowy grouper and golden tilefish was very low during 2001-2005 (Table 4-26). Since there is no size limit and the quota was rarely met, there was little incentive to release these species. Snowy grouper and golden tilefish are in the five grouper per person per day aggregate; however, the aggregate limit was rarely met during 2002-2005. Therefore, there were very few recreational discards (Table 4-26). Bycatch of snowy grouper and golden tilefish could increase in 2007 after Amendment 13C was implemented since the quotas and bag limits will be reduced. The magnitude of increase in bycatch will depend on efforts of fishermen to avoid locations where snowy grouper and golden tilefish occur and if a quota or trip limit is met. Furthermore, it is possible commercial fishermen may choose to not use longline gear to catch reef fishes after the golden tilefish quota is met because golden tilefish dominate landings with this gear type and there would be no incentive to target snowy grouper with a small trip limit (100 lbs gutted weight). Therefore, if fishermen stopped using longline gear after the golden tilefish quota is met, it is likely there would be very little bycatch of golden tilefish, and snowy grouper bycatch would be reduced (Table 4-27).

Table 4-27. Composition of reef fish catch with longline gear in the South Atlantic during 2001-2005.

COMMON	Percent	Cum Percent
TILEFISH	41.60	41.60
GROUPE,RED	11.97	53.57
GROUPE,SNOWY	10.68	64.25
TILEFISH,BLUELINE	7.89	72.14
BLACK BELLIED ROSEFISH	7.14	79.28
GROUPE,BLACK	3.39	82.67
SNAPPER,MUTTON	3.32	86.00
GROUPE,YELLOWEDGE	3.15	89.14
GROUPE,GAG	2.22	91.36
DOLPHINFISH	1.35	92.72
AMBERJACK,GREATER	1.30	94.01
HIND,SPECKLED	0.87	94.88

The preferred rebuilding strategy for snowy grouper in Amendment 15A took into consideration the increase in the level of discards that may have resulted from actions taken in FMP Amendment 13C. All purchase and sale of species in the unit would be prohibited after any of the individual quotas are met.

Red Porgy

Red porgy are a commonly discarded species in the commercial fishery (Table 4-26). The increase in the commercial quota and recreational bag limit in Amendment 13C would lower the number of regulatory discards if effort remains at current levels. However, if the increase in the allowable catch results in increased effort the Total Allowable Catch could be exceeded. The preferred rebuilding strategy for red porgy in Amendment 15A took into consideration the increase in the level of discards that could result if effort were to increase in response to the increase in the allowable catch. The preferred Alternative 2 in Section 4.5 would allow for the implementation of interim programs to monitor and assess bycatch in the South Atlantic snapper grouper fishery until the ACCSP bycatch module can be fully funded.

Sea Turtles and Smalltooth Sawfish

Alternatives specified in Section 4.6 would require fishermen to carry gear to minimize the impacts of incidental take on sea turtles or smalltooth sawfish caught in the South Atlantic snapper grouper fishery. The action alternatives would be expected to reduce stress and/or enhance survival of sea turtles or smalltooth sawfish.

4.11.2 Ecological Effects Due to Changes in Bycatch

The ecological effects of bycatch mortality are the same as fishing mortality from directed fishing efforts. If not properly managed and accounted for, either form of mortality could potentially reduce stock biomass to an unsustainable level. Amendment 15B could reduce the impacts from incidental bycatch of sea turtles and smalltooth sawfish by requiring all vessels with commercial and for-hire snapper grouper vessel permits, carrying hook-and-line gear onboard, to: (1) immediately release incidentally caught smalltooth sawfish by following the latest NOAA Fisheries Service approved guidance on smalltooth sawfish release techniques; (2) have a copy of the document, provided by NOAA Fisheries Service, titled “Careful Release Protocols for Sea Turtle Release with Minimal Injury” posted inside the wheelhouse, or within a waterproof case in an readily accessible area; (3) post the NOAA Fisheries Service provided sea turtle handling and release guideline placard inside the wheelhouse, or in an easily viewable area if there is no wheelhouse; and (4) carry the sea turtle release equipment. Reducing the impacts of incidental take on sea turtles and smalltooth sawfish could help increase population biomass, which could have ecological effects on community structure and predator prey relationships.

Amendment 16 includes alternatives which would close all shallow water grouper species during a season closure for gag or when a gag quota would be met. Therefore, actions planned in future amendments will likely result in positive ecological changes in the community structure of reef ecosystems.

4.11.3 Changes in Bycatch of Other Fish Species and Resulting Population and Ecosystem Effects

Amendment 15B includes alternatives which could reduce dead discards of sea turtles and smalltooth sawfish, help increase population biomass, and have ecological effects on community structure and predator prey relationships. As fishermen would be required to carry gear to facilitate release of sea turtles and smalltooth sawfish, the same gear could be used to release incidentally caught or unwanted species; potentially increasing the survival of other organisms taken as bycatch. Furthermore, the preferred Alternative 2 in Section 4.5 would allow for the implementation of interim programs to monitor and assess bycatch in the South Atlantic snapper grouper fishery until the ACCSP can be fully funded. Programs, which monitor bycatch, would also allow managers to track ecosystem changes.

4.11.4 Effects on Marine Mammals and Birds

Under Section 118 of the MMPA, NOAA Fisheries Service must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. Of the gear utilized within the snapper grouper fishery, only the black sea bass pot is considered to pose an entanglement risk to large whales. The southeast U.S. Atlantic black sea bass pot fishery is included in the grouping of the Atlantic mixed species trap/pot fisheries, which the 2006 LOF classifies as a Category II. Gear types used in these fisheries are determined to have occasional incidental mortality and serious injury of marine mammals (71 FR 48802, August 22, 2006). For the snapper grouper fishery, the best available data on protected species interactions are from the SEFSC Supplementary Discard Data Program (SDDP) initiated in July of 2001 and sub-samples 20% of the vessels with an active permit. To date, no interactions with marine mammals have been reported from this program (8/1/2001-7/31/2004) (Poffenberger 2004; McCarthy SEFSC database).

Although the gear type used within the black sea bass pot fishery can pose an entanglement risk to large whales, sperm, fin, sei, and blue whales are unlikely to overlap with the black sea bass pot fishery operated within the snapper grouper fishery. This sector of the fishery is executed primarily off North Carolina and South Carolina, in waters ranging from 70-120 feet deep (21.3-36.6 meters). There are no known interactions between the black sea bass pot fishery and large whales. It is believed that possible negative effects resulting from the fishery are extremely unlikely. Thus, the continued operation of the snapper grouper fishery in the southeast U.S. Atlantic EEZ is not likely to adversely affect sperm, fin, sei, and blue whales.

Right and humpback whales may overlap both spatially and temporally with the black sea bass pot fishery. Measures to reduce entanglement risk in pot/trap fisheries for these two species are being addressed under the revised Atlantic Large Whale Take Reduction Plan (72 FR 193; October 5, 2007).

The Bermuda petrel and roseate tern occur within the action area. Bermuda petrels are occasionally seen in the waters of the Gulf Stream off the coasts of North and South Carolina during the summer. Sightings are considered rare and only occurring in low numbers (Alsop 2001). Roseate terns occur widely along the Atlantic coast during the summer but in the southeast region they are found mainly off the Florida Keys (unpublished USFWS data). Interaction with fisheries has not been reported as a concern for either of these species.

4.11.5 Changes in Fishing, Processing, Disposal, and Marketing Costs

For discussion of any changes to fishing, processing, disposal, and marketing cost see Section 4.

4.11.6 Changes in Fishing Practices and Behavior of Fishermen

The Council's preferred alternative on sale of bag limit catch would require a valid Federal commercial permit to sell South Atlantic snappers and groupers. South Atlantic snapper and groupers possessed under the bag limits would not be able to be sold or purchased. Some recreational fishermen may intentionally catch more fish than they can consume with the intent to sell. Therefore, Amendment 15B could result in a decrease in recreational fishing effort. Although any decrease in effort would likely be minor, it is possible the action could reduce bycatch in the recreational sector.

Amendment 15B also includes alternatives that would require vessels to carry the entire suite of sea turtle release gear. In addition, to using the required gear to release incidentally sea turtles and sawfish, fishermen might change their behavior by using the gear to release incidentally caught or unwanted snapper grouper species; potentially increasing the survival of individuals taken as bycatch.

Amendment 15B would also adopt the ACCSP Release, Discard and Protected Species Module as the preferred methodology. Until this module is fully funded, the Council's preferred alternative would use a variety of sources to assess and monitor bycatch including: observer coverage on vessels; logbooks; electronic logbook; video monitoring; MRFSS; state cooperation; and grant funded projects to monitor bycatch. Furthermore, commercial vessels with a snapper grouper permit, for-hire vessels with a for-hire permit, and private recreational vessels if fishing for snapper grouper species in the EEZ, would be required, if selected, to use observer coverage, logbooks, electronic logbooks, video monitoring, or any other method deemed necessary to measure bycatch by NOAA Fisheries. Some fishermen could alter behavior when selected to carry an observer or electronic monitoring equipment by avoiding areas where high bycatch would be expected.

Future amendments will likely include actions to reduce bycatch of deepwater and shallow water groupers. Furthermore, fishermen can be educated about the methods to reduce bycatch, and enhance survival of regulatory discards. For example, fishermen may be able to modify their behavior by avoiding locations where high concentrations of a restricted species occurs. Fishermen could target a group of species during a particular time of the year and once the quotas are met, switch to other species that have some limited co-occurrence with the closed species.

Gear changes such as hook type or hook size could have some affect on a reduction in bycatch mortality. Furthermore, closed seasons, new or reduced quotas, reduced trip limits, and increased size limits could cause some commercial and recreational fishermen to reduce effort. Future measures, such as the establishment of additional species groups (i.e. shallow water groupers) that close when the quota is met for an indicator species may help to reduce bycatch. An IFQ program would likely influence fishing practices and behavior, thereby contributing to a reduction in bycatch. However, it is difficult to quantify any of the measures in terms of reducing discards until the magnitude of bycatch has been monitored over several years.

4.11.7 Changes in Research, Administration, and Enforcement Costs and Management Effectiveness

Research and monitoring is needed to understand the effectiveness of proposed management measure in reducing bycatch. The preferred Alternative 2 in Section 4.5 would allow for the implementation of interim programs to monitor and assess bycatch in the South Atlantic reef fish fishery until the ACCSP Release, Discard and Protected Species (Bycatch) Module can be fully funded. Additional work is needed to determine the effectiveness of measures being developed for gag and vermilion snapper, MPAs (Amendment 14) and by the Council (IFQs, Ecosystem Fishery Management Plan) to reduce bycatch. Some observer information has recently been provided by MARFIN and Cooperative Research Programs but more is needed. Approximately 20% of commercial fishermen are asked to fill out discard information in logbooks; however, a greater percentage of fishermen could be selected with emphasis on individuals that dominate landings. Furthermore, the use of electronic logbooks could be enhanced to enable fishery managers to obtain information on species composition, size distribution, geographic range, disposition, and depth of fishes that are released. Additional administrative and enforcement efforts will be needed to implement and enforce these regulations.

4.11.8 Changes in the Economic, Social, or Cultural Value of Fishing Activities and Non-Consumptive Uses of Fishery Resources

Preferred management measures, including those likely to decrease discards could result in social and/or economic impacts as discussed in Section 4.

4.11.9 Changes in the Distribution of Benefits and Costs

The extent to which these management measures will decrease the magnitudes of discards is unknown. Changes in the distribution of benefits and costs are described in Section 4.

4.11.10 Social Effects

The Social Effects of all the management measures are described in Section 4.

4.11.11 Conclusion

This section evaluates the practicability of taking additional action to minimize bycatch and bycatch mortality in the South Atlantic snapper grouper fishery using the ten factors provided at 50 CFR 600.350(d)(3)(i). In summary, Amendment 15B would require a valid commercial Federal snapper grouper permit to sell South Atlantic snapper and groupers, and could result in a decrease in recreational fishing effort. Although any decrease in effort would likely be minor, it is possible the action could reduce bycatch in the recreational sector. Amendment 15B also includes alternatives that would require vessels to carry the entire suite of sea turtle release gear. In addition to using the required gear to release incidentally sea turtles and sawfish, fishermen might change their behavior by using the gear to release incidentally caught or unwanted snapper grouper species, potentially increasing the survival of individuals taken as bycatch. Amendment 15B would also adopt the ACCSP Release, Discard and Protected Species Module as the preferred methodology. Until this module is fully funded, the Council's preferred alternative would use a variety of sources to assess and monitor bycatch including: observer coverage on vessels; logbooks; electronic logbook; video monitoring; MRFSS; state cooperation; and grant funded projects to monitor bycatch. Furthermore, commercial vessels with a snapper grouper permit, for-hire vessels with a for-hire permit, and private recreational vessels if fishing for snapper grouper species in the EEZ, would be required, if selected, to use observer coverage, logbooks, electronic logbooks, video monitoring, or any other method deemed necessary to measure bycatch by NOAA Fisheries.

Additional measures to reduce bycatch in the snapper grouper fishery are being developed. Amendment 16 is being developed to end overfishing of gag and vermilion snapper, which could propose additional measures to reduce bycatch in the snapper grouper fishery including requiring fishers to use venting tools and dehooking devices to reduce mortality of released fishes. Amendment 16 could also reduce bycatch by closing shallow water grouper species during a gag seasonal closure or when a quota for gag has been met.

An IFQ program for the golden tilefish fishery is being discussed. Under an IFQ program, commercial fishermen are allocated percentages of a TAC, which is set by fishery managers based on estimates of what level of catch the fishery can sustain. This program has the potential to substantially reduce bycatch by providing fishermen more flexibility to decide where and when to fish. IFQ systems could give fishermen the flexibility to target more favorable harvesting conditions and avoid areas where bycatch of certain species is more likely.

4.12 Unavoidable Adverse Effects

Actions specified in Amendment 15B are not expected to have unavoidable adverse effects.

According to the NEPA definitions of direct and indirect effects, defining MSY, OY, and MSST for golden tilefish will not directly affect the biological or ecological environment, including ESA-listed species, because these parameters are not used in determining immediate harvest objectives. MSY, OY, MFMT, and MSST are reference points used by fishery managers to assess fishery performance over the long term. As a result, redefined management reference points could require regulatory changes in the future as managers monitor long term performance of the stock with respect to the new reference points. Therefore, these parameter definitions will indirectly affect subject stocks and the ecosystem of which they are a part, by influencing decisions about how to maximize and optimize the long-term yield of fisheries under equilibrium conditions and triggering action when stock biomass decreases below a threshold level. Any subsequent management action(s) resulting from the definition of these reference points, particularly those influencing fishing effort, would be subject to section 7 consultation at that time to evaluate potential impacts on ESA-listed species.

Snowy grouper allocation alternatives that allocate a greater portion of the harvest to the commercial sector could have a greater negative impact on habitat as longline gear is considered to do greater damage to hard bottom habitat than vertical hook and line gear. However, damage to bottom habitat with longline gear has not been very well documented. Approximately 27% of the commercial catch of snowy grouper was with bottom longline gear during 1999-2003. Allocating a small percentage to the recreational sector may not be effective in reducing mortality since some snowy grouper will continue to be caught and killed when fishermen target co-occurring species.

Red porgy allocation alternatives that allocate a greater portion of the harvest to the commercial sector could have greater bycatch of deepwater species such as snowy grouper and speckled hind, which co-occur with red porgy in depths greater than 300 feet (92 m). However, most fishermen probably do not target red porgy in deepwater and instead, catch red porgy incidentally when targeting more valuable grouper species. Red porgy are primarily taken with hook and line gear by the commercial and recreational sector; therefore, little difference in habitat damage is expected by allocating catch to either sector.

The Council's preferred alternative for sale of bag limit fish would require a valid Federal commercial snapper grouper permit to sell South Atlantic snappers and groupers. South Atlantic snapper and groupers possessed under the bag limits would not be able to be sold or purchased. Some recreational fishermen may intentionally catch more fish than they can consume with the intent to sell. Therefore, the action could have a minor biological benefit if it results in a decrease in fishing effort but would not have any adverse environmental effects.

An increased biological benefit could be expected from requiring fishermen to have equipment onboard to remove gear from sea turtles and sawfish. Sea turtle release gear can also be used to release incidentally caught or unwanted snapper grouper species; potentially increasing the survival of individuals taken as bycatch. No unavoidable adverse effects would be expected from requiring fishermen to have equipment onboard to remove gear from sea turtles and sawfish. Similarly changes in permit renewal and transferability requirements are not expected to cause any unavoidable adverse effects.

4.13 Effects of the Fishery on the Environment

The biological impacts of the proposed actions are described in Section 4.0, including the 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 was considered; therefore, the Council has determined no new measures to address impacts on EFH are necessary at this time. The Council's adopted habitat policies, which may directly affect the area of concern, are available for download through the Habitat/Ecosystem section of the Council's website:

<http://www.safmc.net/EcosystemManagement/EcosystemBoundaries/MappingandGISData/tabid/62/Default.aspx>

NOTE: The Final EFH Rule, published on January 17, 2002, replaced the interim Final Rule of December 19, 1997 on which the original Essential Fish Habitat (EFH) and EFH Habitat Areas of Particular Concern (HAPC) designations were made. The Final Rule directs the Councils to periodically update EFH and HAPC information and designations within fishery management plans. As was done with the original Habitat Plan, a series of technical workshops are being conducted at this time by Council habitat staff to gather new information and review existing information as presented in the Habitat Plan to update information pursuant to the Final EFH Rule.

4.14 Damage to Ocean and Coastal Habitats

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

Management measures implemented in the original Snapper Grouper Fishery Management Plan through Amendment 7 combined have significantly reduced the impact of the snapper grouper fishery on essential fish habitat. The Council has reduced the impact of the fishery and protected essential habitat 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 longlines to depths greater than 50 fathoms north of St. Lucie Inlet and only for species other than wreckfish; prohibiting use of bottom longlines south 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 further restricted longlines to retention of only deepwater species and requiring that black sea bass pots have escape vents and escape panels with degradable fasteners, reduced the catch of undersized fish and bycatch and ensured that the pot, if lost, would not continue to “ghost” fish. Amendment 13C increased the mesh size in the back panel of the black sea bass pots which has reduced bycatch and retention of undersized fish. Also, 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 Fishery Management Plans 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 Habitat Area of Particular Concern and the Rock shrimp closed area (see the Shrimp and Coral FMP/Amendment documents for additional information).

The Council’s Comprehensive Habitat Amendment (SAFMC 1998c) contains measures that expanded the *Oculina* Bank HAPC and added two additional satellite HAPCs.

4.15 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. Allocation alternatives for snowy grouper and red porgy would be based on historical catches in the commercial and recreational sectors and would put a cap on the allowable catch in each sector. A valid Federal Commercial Snapper Grouper Permit would be required to sell South Atlantic snappers and groupers; thereby reducing the incentive for recreational fishermen to intentionally catch more fish than they can consume with the intent to sell. An increased biological benefit could be expected from requiring fishermen to have equipment onboard to remove gear from sea turtles and smalltooth sawfish. Sea turtle release gear can also be used to release incidentally caught or unwanted snapper grouper species, potentially increasing the survival of individuals taken as bycatch. Therefore, actions taken in Amendment 15B are intended to enhance the long-term productivity and sustainability of snapper grouper species, sea turtles and smalltooth sawfish.

4.16 Irreversible and Irretrievable Commitments of Resources

Irreversible commitments are defined as commitments, which cannot be reversed, except perhaps in the extreme long-term, whereas irretrievable commitments are lost for a period of time. No irreversible or irretrievable commitments have been identified for this amendment.

4.17 Mitigation Measures

Actions in Amendment 13C adversely affected the immediate, short-term net revenues of some commercial and for-hire fishermen in the South Atlantic. Actions also adversely affected short-term consumer surplus of some recreational anglers in the South Atlantic and may have resulted in cancelled trips and reduced expenditures to the fishery and associated industries. The anticipated reductions in fishing pressure was intended to end or phase-out overfishing and 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. Therefore, the short-term adverse effects of ending overfishing in Amendment 13C was mitigated to some degree in Amendment 15A by allowing increased in the allowable catch as biomass of overfished species increases.

Regulations in Amendments 15B including prohibiting bag limit sale, allocation alternatives for snowy grouper and red porgy, and extending the permit renewal period to one year could further mitigate the short-term negative economic and social effects of Amendment 13C. Currently, fishermen without Federal snapper grouper commercial permits sell their catch to dealers. With the recent introduction of more restrictive quotas on some snapper grouper species, commercial fishermen with Federal snapper grouper commercial permits are concerned catch will be counted toward the commercial quota when fishermen sell their catch to dealers. In addition, sales from fishermen who do not possess Federal snapper grouper commercial permits may result in double counting if catches are reported through the MRFSS and through commercial snapper grouper dealers. Furthermore, the Council has expressed an interest of establishing a “professional snapper grouper fishery” where sale is limited to the commercial sector. Therefore, the Council is considering in Amendment 15B options to prohibit the sale of snapper grouper species caught under the bag limit. The intent of this action is to ensure regulations are fair and equitable, fish harvested by the recreational sector are not counted toward commercial quotas, and total landings data are accurate.

Amendment 13C specified a commercial quota for snowy grouper and red porgy but did not specify a recreational allocation. Landings of snowy grouper have been dominated by the commercial sector. There is concern that with the decrease in the allowable catch of snowy grouper, there could a fishery dominated by the recreational sector as biomass of the stock and the number of recreational fishermen increases. Allocation alternatives for snowy grouper and red porgy in Amendment 15B would be based on historical

catches in the commercial and recreational sectors and would put a cap on the allowable catch in each sector; thereby mitigating some of the effect Amendment 13C had on commercial fishermen.

Currently, South Atlantic commercial snapper grouper permits must be renewed within 60 days of the date they expire. The Council believes the 60-day requirement is overly restrictive (many other fisheries provide fishermen one year to renew their permits) and presents an unnecessary hardship to snapper grouper participants, some of which have reportedly lost their permits because personal hardships prevented them from complying with this short renewal timeframe. As a result, the Council is considering in this amendment extending the commercial snapper grouper permit renewal deadline.

Additionally, the snapper grouper limited access program requires new entrants to purchase two commercial snapper grouper permits in exchange for one permit. This requirement also applies to individual permit holders who want to incorporate their business. Some permit holders would like to incorporate their business and transfer their snapper grouper permits to the new corporations without the need to buy a second snapper grouper permit. There are significant tax and liability benefits from doing so, including: Limited liability to the shareholder for the corporation's debt; the corporation pays taxes separate from its owners; and a business owner who works in his/her fishing operation as an employee may be eligible for reimbursement or deduction of many types of expenses, including life and health insurance. As a result, the Council is considering in this amendment an action that would promote family-owned fishing businesses and extend tax and liability benefits to fishermen by allowing them to transfer individual snapper grouper permits to family-owned corporations on a one-for-one basis.

5 Regulatory Impact Review

5.1 Introduction

The NOAA Fisheries Service requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: (1) it provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; (2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem; and, (3) it ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way. The RIR also serves as the basis for determining whether the proposed regulations are a “significant regulatory action” under the criteria provided in Executive Order (E.O.) 12866 and provides information that may be used in conducting an analysis of impacts on small business entities pursuant to the Regulatory Flexibility Act (RFA). This RIR analyzes the expected impacts that this action would be expected to have on the commercial and recreational snapper grouper fisheries. Additional details on the expected economic effects of the various alternatives in this action are included in Section 4.0 and are incorporated herein by reference.

5.2 Problems and Objectives

The purpose and need, issues, problems, and objectives of the proposed Amendment are presented in Section 1 and are incorporated herein by reference. In summary, the purpose for this amendment is to define interim allocation ratios for snowy grouper and red porgy; update management reference points for golden tilefish; examine prohibition of the sale of snapper grouper caught under the bag limit; implement a plan to monitor and assess bycatch; implement measures to minimize the impacts of incidental sea turtle and smalltooth sawfish take; and ease the requirements of snapper grouper permit renewal and transfer. These measures are expected to aid in the prevention of overfishing and the achievement of OY from the South Atlantic snapper grouper fishery and reduce the harm of incidentally caught protected species.

5.3 Methodology and Framework for Analysis

This RIR assesses management measures from the standpoint of determining the resulting changes in costs and benefits to society. To the extent practicable, the net effects of the proposed measures are stated in terms of producer and consumer surplus, changes in profits, employment in the direct and support industries, and participation by charter boat fishermen and private anglers. In addition, the public and private costs

associated with the process of developing and enforcing regulations on fishing for snapper grouper in waters of the U.S. South Atlantic are provided.

5.4 Description of the Fishery

A description of the South Atlantic snapper grouper fishery is contained in Section 3.4 and is incorporated herein by reference.

5.5 Impacts of Management Measures

Details on the economic impacts of all alternatives are included in Section 4 and are included herein by reference. The following discussion includes only the expected impacts of the preferred alternatives.

5.5.1 Snowy Grouper Allocation

Quantitative estimates of the expected impacts of the allocation alternatives have not been produced due to data deficiencies and modeling issues. **Preferred Alternative 2** would result in only a small reallocation, one percentage point, of harvests from the current circumstantial harvest ratio, defined as the 1999-2003 average sector harvest. As such, minimal to no economic impacts would be expected.

5.5.2 Red Porgy Allocation

Quantitative estimates of the expected impacts of the allocation alternatives have not been produced due to data deficiencies and modeling issues. **Preferred Alternative 4** would result in only a small reallocation, one percentage point, of harvests from the current circumstantial harvest ratio, defined as the 1999-2003 average sector harvest. As such, minimal to no economic impacts would be expected.

5.5.3 Golden Tilefish Management Reference Points

Defining the MSY for a species is an administrative action and does not alter the current harvest or use of the resource. Therefore, no direct economic effects would be expected to accrue. The proposed MSY, **Preferred Alternative 2**, is equivalent to status quo harvest and, thus, would support continued harvest at status quo levels, with no resultant direct or indirect economic effects, if the fishery TAC is set at MSY. However, since OY is established as a proportion of MSY, the proposed MSY specification implies further harvest restrictions if the fishery TAC is set at OY. The impacts of these restrictions

cannot be quantified at this time since they will be dependent upon the status and operational characteristics of the fishing fleet at the time of expanded quotas and the manner in which the fishery is managed, i.e., trip limits, size limits, closed seasons, limited access programs, etc. Such restrictions are not proposed at this time and their expected impacts will be quantified at the time such action is prepared, should such occur.

Defining the OY for a species is also an administrative action and does not alter the current harvest or use of the resource. Therefore, no direct economic effects would be expected to accrue. The proposed OY, **Preferred Alternative 3**, however, is approximately 3% less than status quo harvests and would, therefore, require harvest cuts relative to current levels, with accompanying adverse economic effects, if the fishery TAC is set at OY. As previously stated, these effects cannot be quantified at this time but will be quantified at the time an action to decrease the TAC is prepared, should such occur.

Defining the MSST for a species is also an administrative action would not result in any direct economic effects. The specific level of an MSST does, however, affect the likelihood of a fishery being declared overfished, which would induce short term adverse economic impacts from more restrictive management. The proposed MSST, **Preferred Alternative 3**, is intermediate to the alternative MSST specifications, thus reducing, but not eliminating, the likelihood of a declaration of overfishing and accompanying harvest restrictions and short term adverse economic impacts. The proposed MSST also mitigates the potential problems of an insufficiently conservative MSST, thereby avoiding the adverse economic impacts that would accrue to excessive reduction of the biomass. These impacts, as a result of either a declaration of overfishing or excessive reduction of biomass, cannot be quantified at this time but will be quantified at the time an action to address such condition, should it occur, is prepared.

In summary, no direct effects are expected to accrue to any of the alternative benchmark parameter specifications. Indirect effects could accrue if future assessment of the stock relative to the benchmarks identifies a need for restrictive management. The magnitude of these effects, however, will depend on the nature of the specific management measures adopted. These effects will be quantified when such action is prepared, if necessary.

5.5.4 Modification of Sales Provisions

Assuming the implementation of compatible regulations in all states, thus encompassing snapper grouper harvested in both state and Federal waters as well as marketed through all state licensed dealers, **Preferred Alternative 2** would eliminate all bag limit sales by entities that market their fish through legal recorded channels, estimated at approximately \$2.4 million in nominal ex-vessel value. This would constitute a total reduction of approximately \$316,000 per year for fish sales by vessels in the for-hire fishery, or a 17-percent reduction in average annual gross revenues per vessel, and approximately \$2.085 million per year in sales for commercial vessels that do not possess a Federal commercial

snapper grouper permit, or a 7-percent reduction in average annual gross revenues per vessel (Table 4-7).

Assuming compatible regulations are not adopted in any state, the estimated reduction in bag limit sales revenues under **Preferred Alternative 2** would be limited to those harvests that originate from the EEZ by all vessels, bag limit harvests from state waters by vessels with the Federal for-hire permit, and harvests that are marketed through dealers with a Federal permit. This would lower the reduction in bag limit sales to approximately \$1.562-\$1.799 million, accounting for the estimated portion of bag limit sales by the non-Federal sector that originate in state waters (approximately 8 percent; Table 4-6), the estimated portion of bag limit sales by entities without a Federal permit that are marketed through dealers without Federal licenses (approximately 23-35 percent), and total bag limit sales by vessels in the Federal for-hire fleet. For the Federal for-hire sector, since compliance would be a condition of permit renewal, the analysis assumes no bag limit sales will occur, resulting in a full reduction in all bag limit sales by vessels in this sector, or approximately \$316,000 (Table 4-6). For the non-Federal sector, using the average EEZ bag limit sales (approximately \$1.921 million; Table 4-6) and dealer proportions (approximately 23 percent state dealer sales if the North Carolina and South Carolina proportion is applied throughout and 35 percent otherwise; Table 4-8), the reduction would be approximately \$1.246 million to \$1.483 million. These values equate to approximately a 17 percent reduction in average annual for-hire fish-sales revenues (\$316,000/159 vessels/\$11,568 total average revenues) and approximately a 4-5 percent reduction in average annual non-Federally permitted revenues (\$1.246-\$1.483 million/1,439 vessels/\$21,317 total average revenues).

For the recreational angler (non-for-hire customer), **Preferred Alternative 2** would eliminate the ability to subsidize the cost of a fishing trip through the sales of snapper grouper. As a result, some decrease in recreational angler demand may occur. The magnitude of this decrease cannot be determined. However, no evidence has been identified to suggest that the incidence of this behavior – selling fish to subsidize the cost of the trip – is a significant component to total recreational demand. Therefore, reduced angler demand, and economic effects associated with such, is expected to be minimal.

A potentially more significant issue is that the loss of bag limit sales revenues by for-hire vessels may require fee increases or service reductions. The use of bag limit sales as a form of crew payment is understood to be a common industry practice, though the extent of such has not been quantified. The elimination of bag limit sales for vessels that engage in this practice would require that either charter fees increase to replace these revenues, crew receive lower wages, or fewer crew be utilized. Competition in the for-hire industry places limitations on the flexibility to increase charter fees, particularly under current conditions of cost increases for operational expenses, notably fuel, insurance, and docking. An increase in the charter fee would be expected to result in some reduction in angler demand, resulting in additional economic losses to the for-hire sector. Alternatively, crew reductions in lieu of fee increases would alter the nature of the service that the angler purchases, also potentially resulting in decreased angler demand. These phenomena and their expected economics effect are unknown.

Under current permit requirements, entry into the Federal commercial snapper grouper fishery would require acquisition of two commercial snapper grouper permits from current participants. Elimination of the two-for-one requirement is an option considered under the permit transferability action discussed in Section 4.8. The cost of a single permit is estimated to range from \$9,000-\$21,000 (Source: 2006 dollars). As depicted in Table 4-7, the average annual ex-vessel revenue derived from snapper grouper bag limit sales is estimated to be approximately \$2,000 for Federally permitted for-hire vessels and approximately \$1,400 for non-Federally permitted vessels. A decision to acquire the necessary Federal permit in order to continue selling snapper grouper species would represent a significant change in business orientation and may not be financially prudent. Since the opportunity to purchase these permits and enter the Federal commercial snapper grouper fishery currently exists, it is assumed that insufficient economic rationale exists for those businesses that have not done so to enter the fishery.

The revenues discussed above associated with bag limit sales, however, would be expected to be transferred to participants in the Federal commercial snapper grouper fishery. Thus, the revenues and economic activity the bag limit sales support would not be totally lost, though there some distributional effects may occur. These revenues would be expected to help offset the economic losses to the Federal commercial snapper grouper sector associated with recent management action, notably Snapper Grouper Amendment 13C (Amendment 13C; SAFMC 2006), which imposed a variety of quotas, trip limits, bag limits, and minimum size limits on the respective commercial and recreational sectors for snowy grouper, golden tilefish, vermilion snapper, black sea bass, and red porgy without the potential offset relief of protected access to fish intended for the Federally permitted commercial sector. The measures in Amendment 13C for snowy grouper, golden tilefish, vermilion snapper, and black sea bass were more restrictive than measures previously in place, while the red porgy measures loosened harvest restrictions. The estimated effects of Amendment 13C on the commercial Federally permitted snapper grouper fishery was a short-term annual loss of \$0.735 million in net revenues the first year, or approximately 12 percent to total net revenues for trips that harvested any of the affected species, increasing to \$1.085 million by the third year after implementation (2009) due to progressive restrictions. Although not implemented yet, additional harvest restrictions are anticipated for gag and red snapper through Snapper Grouper Amendments 16 and 18, respectively. The expected economic effects of these actions have not been determined. Conditions for the Federally permitted commercial snapper grouper sector could also worsen if general economic conditions increase the incentives for increased bag limit sales by either or both the Federal for-hire snapper grouper or non-permitted sectors. Transfer of the revenues associated with bag limit sales would more than offset the projected annual losses associated with Amendment 13C and improve the ability of the commercial sector to weather additional short-term adverse economic effects of future regulation.

The elimination of bag limit sales under **Preferred Alternative 2** is expected to be, overall, biologically neutral since the general expectation is that the harvest of these fish is for the purpose of sale and either alternative would simply result in the transference of

harvest and sales from one group of fishermen (those without the appropriate Federal permit) to Federally permitted fishermen. However, it is possible that restriction of bag limit sales could result in a biological gain (with associated future economic benefits, such as higher quotas, higher trip limits, longer seasons, etc.) if not all the fish previously harvested and sold under the bag limit in fact get harvested by fishermen with the commercial Federal snapper grouper permit, resulting in an overall reduction in harvest for that species. Conversely, it is possible that restriction of bag limit sales could result in biological harm (with future economic losses, associated with lower quotas, lower trip limits, shorter seasons, etc.) if those previously selling bag limit quantities continue to harvest some or all of these fish, particularly fish harvested on recreational trips (private or for-hire), and all that ceases is their sale. This would result in increased quota availability for fishermen who possess the commercial Federal snapper grouper permit, since fish sold under the bag limit would not be counted towards the commercial quota, but increased total mortality for the individual species. Either scenario, a biological gain due to reduced total harvest, or a biological loss due to increased total harvest, is not expected to be significant. Further, while a prohibition on bag limit sales may increase the possibility of increased total harvests for some species, the likelihood of adverse effects accruing to increased total harvests will be reduced by the accountability measures that will be developed in Snapper Grouper Amendment 17. These accountability measures will ensure harvests are maintained below specified levels, overages are not persistent, and adverse effects are minimized.

5.5.5 Monitor and Assess Bycatch

Quantitatively identifying the costs and impacts of the proposed bycatch and monitoring action, **Preferred Alternative 2**, is not possible at this time since full costs of neither the ACCSP module or interim methods, or the benefits of bycatch monitoring and assessment, are available. It is assumed, however, that the benefit of bycatch monitoring and assessment exceed the costs. Overall (short and long term), the cost of the proposed action would be more than **Alternative 4** but less than **Alternative 3**. Since the proposed action and **Alternative 3** end with the same system in the long term, the long term benefits of these two alternatives are presumed equal, though the net benefits of the proposed action are assumed to be less than those of **Alternative 3** due to the delay in implementing the preferred data program.

5.5.6 Sea Turtle and Smalltooth Sawfish Incidental Take Impact Minimization

The sea turtle and smalltooth sawfish release gear requirements specified by the proposed action, **Preferred Alternative 2**, are expected to result in a cost of \$1.32 to \$2.38 million to participants in the snapper grouper fishery. Out-of-pocket expenses per vessel are estimated to range from \$617-\$1,115 (2006 dollars). In addition to the out-of-pocket expenses for the release gear, fishery participants would be further burdened by the on-board storage requirements of the gear.

The minimization of impacts from incidental take on sea turtles and smalltooth sawfish would be expected to result in increased economic benefits relative to the status quo in the form of enhanced existence value and increased economic activity of industries that benefit from enhanced or recovered resources, such as diving or nest site tours. These benefits cannot be quantified at this time. Additionally, while this action will not lead to species recovery, minimization of the impacts of incidental take may contribute to species recovery and recovery may support increased economic benefits from directed harvest, should such harvest be determined to be appropriate.

5.5.7 Permit Renewal

The proposed action, **Preferred Alternative 3**, would allow the longest period for permit renewal and would, therefore, be expected to minimize the incidence of unintentional permit expiration relative to all alternatives considered and result in the largest gain in net benefits relative to the status quo. These benefits cannot be quantified. More flexible permit renewal conditions would reduce the need to purchase new unlimited permits, currently estimated to range from \$9,000-\$16,000 (Source: 2006 dollars) and subject for a two-for-one permit transfer requirement, as well as the need to lose all future snapper grouper revenues, estimated to average approximately \$15,000 per year per vessel over 1999-2003. Additional unquantifiable economic benefits may accrue to both fishery participants and the administrative environment through standardization of renewal periods since most other permits have similar 1-year renewal periods.

5.5.8 Permit Transferability

The proposed action, **Preferred Alternative 2-E**, would allow incorporation and the realization of associated benefits without the requirement to obtain a second permit, at an estimated cost of \$9,000-\$16,000 per permit, subject to the incorporation being limited to ownership by the original permit holder and immediate family members. The proposed action would, therefore, result in unquantifiable increased economic benefits over the status quo. Total net value of these economic benefits depends on renewal conditions. For this assessment, the economic benefits are assumed to increase with increased

renewal flexibility. **Alternative 2B** would have the most liberal renewal provisions since, after initial personal or family incorporation, renewal requirements would be the same for all corporations. This alternative would maintain the current situation that allows one-for-one effective transfer if an entity purchases a corporation and its assets. Since a permit is owned by the corporation and not the shareholder, transfer/sale of the corporation does not constitute transfer of the permit. Thus, participants would benefit from both the incorporation benefits and renewal flexibility. The proposed action would be the second-most flexible and economically beneficial since new immediate family members could be added as shareholders without renewal penalty. This would particularly benefit individuals who marry or have new children whom they wish to add as shareholders.

5.6 Public and Private Costs of Regulations

The preparation, implementation, enforcement, and monitoring of this or any Federal action involves the expenditure of public and private resources which can be expressed as costs associated with the regulations. Costs associated with this amendment include:

Council costs of document preparation, meetings, public hearings, and information dissemination	\$200,000
NOAA Fisheries administrative costs of document preparation, meetings and review	\$200,000
Annual law enforcement costs	unknown
TOTAL	\$400,000

Law enforcement currently monitors regulatory compliance in these fisheries under routine operations and does not allocate specific budgetary outlays to these fisheries, nor are increased enforcement budgets expected to be requested to address components of this action. In practice, some enhanced enforcement activity might initially occur while the fishery becomes familiar with the new regulations. However, the costs of such enhancements cannot be forecast. Thus, no specific law enforcement costs can be identified.

5.7 Summary of Economic Impacts

The two proposed interim allocation actions are expected to result in minimal to no adverse economic impacts since the proposed allocations each vary by only one percentage point from current harvest practices. Net impacts, however, cannot be quantified with current data. The golden tilefish management reference point actions are administrative actions and will not have any direct economic impacts. Indirect effects

could accrue if future assessment requires restrictive measures, but the magnitude of such effects cannot be determined at this time. The economic impacts of the action to monitor and assess bycatch and the two permit actions cannot be quantified but are assumed to be positive since the bycatch action will improve resource assessment and management capabilities, while the permit actions will increase permit renewal and transfer flexibility and reduce potential associated costs. Only the bag limit sales and protected resource impact minimization actions are expected to have any direct adverse economic impacts on participants directly involved in the respective fisheries. The gear requirements to minimize the impacts of incidental take of sea turtles and smalltooth sawfish are projected to increase gear costs by a maximum of \$1.32 to \$2.38 million (2006 dollars). However, many fishery participants may already possess suitable gear, such that additional expenditures may not be required. All costs are expected to be offset by unquantifiable increased economic benefits associated with enhanced protection of these protected species. The bag limit sales action is expected to result in the transfer of up to approximately \$2.4 million in nominal ex-vessel sales revenues from entities currently selling bag limit quantities of snapper grouper to participants in the Federal commercial snapper grouper fishery. Shift of these revenues will result in economic losses to participants in the non-Federal sector and economic gains to participants in the Federal sector. The transfer of these revenues, in whole or in part, depending upon the adoption of compatible state regulations and changes in fishing behavior and sales patterns, would not be expected to balance dollar-for-dollar through the economy and associated businesses due to differences in the business structure of the competing harvesters. While the net economic impact, however, of these gains and losses cannot be determined, the overall economic effect is expected to be small relative to the total revenues associated with the respective sectors.

5.8 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a “significant regulatory action” if it is expected to result in: (1) an annual effect of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order. Based on the information provided above, this regulatory action was determined not to be economically significant. However, the action has been determined to be significant for purposes of E.O. 12866.

6 Regulatory Flexibility Act Analysis

6.1 Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration. The RFA does not contain any decision criteria; instead, the purpose of the RFA is to inform the agency, as well as the public, of the expected economic impacts of various alternatives contained in the FMP or amendment (including framework management measures and other regulatory actions) and to ensure that the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the FMP and applicable statutes.

With certain exceptions, the RFA requires agencies to conduct a regulatory flexibility analysis for each proposed rule. The regulatory flexibility analysis is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. In addition to analyses conducted for the RIR, the regulatory flexibility analysis provides: (1) a statement of the reasons why action by the agency is being considered; (2) a succinct statement of the objectives of, and legal basis for the proposed rule; (3) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; (4) a description of the projected reporting, record-keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; (5) an identification, to the extent practical, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule; and (6) a description of any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities.

In addition to the information provided in this section, additional information on the expected economic impacts of the proposed action are included in Sections 4.0 and 5.0 and is included herein by reference.

6.2 Statement of Need for, Objectives of, and Legal Basis for the Rule

The purpose and need, issues, problems, and objectives of the proposed rule are presented in Section 1 and are incorporated herein by reference. In summary, the purpose for this amendment is to define interim allocation ratios for snowy grouper and red porgy; update management reference points for golden tilefish; examine prohibition of the sale of

snapper grouper caught under the bag limit; implement a plan to monitor and assess bycatch; implement measures to minimize the impacts of incidental sea turtle and smalltooth sawfish take; and ease the requirements of snapper grouper permit renewal and transfer. These measures are expected to aid in the prevention of overfishing and the achievement of OY from the South Atlantic snapper grouper fishery and reduce the harm of incidentally caught protected species. The Magnuson-Stevens Fishery Conservation and Management Act provides the statutory basis for the proposed rule.

6.3 Identification of All Relevant Federal Rules Which May Duplicate, Overlap, or Conflict with the Proposed Rule

No duplicative, overlapping, or conflicting Federal rules have been identified.

6.4 Description and Estimate of the Number of Small Entities to Which the Proposed Rule will Apply

This proposed action is expected to directly impact commercial fishers and for-hire operators. The SBA has established size criteria for all major industry sectors in the U.S. including fish harvesters and for-hire operations. A business involved in fish harvesting is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of \$4.0 million (NAICS code 114111, finfish fishing) for all its affiliated operations worldwide. For for-hire vessels, the other qualifiers apply and the annual receipts threshold is \$6.5 million (NAICS code 713990, recreational industries).

From 2001-2005, an average of 1,127 vessels per year were permitted to operate in the commercial snapper grouper fishery, ranging from a high of 1,264 vessels in 2001 to a low of 1,007 vessels in 2005. However, over the 2004-2006 fishing years, an average of 717 vessels per year that were permitted to operate in the fishery actually recorded snapper grouper sales. The average annual dockside value of snapper grouper sold by these vessels was approximately \$12.96 million (nominal dollars), while the value of all other species sold by these vessels was approximately \$14.33 million (nominal dollars), or total average annual revenues of approximately \$27.29 million. The average annual dockside revenue per vessel from sales of all marine species for this period was approximately \$38,000.

In 2005, 1,328 vessels were permitted to operate in the snapper grouper for-hire fishery, of which 82 are estimated to have operated as headboats. Within the total number of vessels, 201 vessels also possessed a commercial snapper grouper permit and would be included in the summary information provided on the Federal commercial sector. The for-hire fleet is comprised of charterboats, which charge a fee on a vessel basis, and headboats, which charge a fee on an individual angler (head) basis. The charterboat annual average gross revenue is estimated to range from approximately \$62,000-\$84,000 for Florida vessels, \$73,000-\$89,000 for North Carolina vessels, \$68,000-\$83,000 for

Georgia vessels, and \$32,000-\$39,000 for South Carolina vessels. For headboats, the appropriate estimates are \$170,000-\$362,000 for Florida vessels, and \$149,000-\$317,000 for vessels in the other states. From 2004-2006, an average of 159 vessels per year with the for-hire permit snapper grouper permit had recorded sales of snapper grouper species. The total average annual revenues from snapper grouper species were approximately \$316,000 (nominal dollars), while average annual revenues for all other species was approximately \$1.52 million (nominal dollars), for total average annual revenues from fish sales of approximately \$1.84 million. The average annual revenue per for-hire vessel from fish sales of all marine species for this period was approximately \$11,600. It should be noted that these revenues are not included in the average gross for-hire revenues listed above, which only reflect revenues from charter fees.

The proposed prohibition of bag limit sales would also affect vessels that have historically sold snapper grouper but do not possess either Federal snapper grouper permit. From 2004-2006, an average of 1,439 fishing vessels per year that could not be linked with either a commercial or for-hire snapper grouper permit had recorded snapper grouper sales. Total average annual revenues from snapper grouper species for these vessels were approximately \$2.09 million (nominal dollars), while average revenues from all other species were approximately \$28.59 million (nominal dollars), for total average annual revenues of approximately \$30.67 million. The average annual revenue per vessel from sales of all marine species for this period was approximately \$21,000.

Some fleet activity may exist in both the commercial and for-hire snapper grouper sectors, but the extent of such is unknown and all vessels are treated as independent entities in this analysis. Based on the average revenue figures described above, it is determined, for the purpose of this analysis, that all fishing operations that would be affected by this action are small entities.

6.5 Description of the Projected Reporting, Record-keeping and Other Compliance Requirements of the Proposed Rule, Including an Estimate of the Classes of Small Entities Which will be Subject to the Requirement and the Type of Professional Skills Necessary for the Preparation of the Report or Records

This action does not explicitly impose any new reporting, record-keeping or other compliance requirements. However, the proposed bycatch and monitoring assessment action could result in a requirement for the use of paper logbooks, electronic logbooks, or video cameras in the monitoring of bycatch. All commercial snapper grouper trips are currently required to complete logbook records, with each report estimated to take 10 minutes to complete. Over the years 2001-2005, commercial vessels operating in the snapper grouper fishery took almost 16,000 trips, or approximately 14 trips per vessel. Assuming modification to the current logbook to include bycatch increased the time required to complete the form by 25%, then the additional time burden to complete the form fishery-wide would be approximately 667 hours or 0.6 hours per vessel.

The headboat sector is also currently required to complete logbook reports for all trips, estimated to take 18 minutes per report. Assuming an average of 322 trips per vessel (Holland *et al.* 1999; note that approximately 74% of headboat trips from 2001-2005 were half-day trips, so the average number of trips does not equal days fished), 82 headboats, and a 25% increase in the amount of time required to complete the form to account for bycatch, the resultant increased time burden to the industry would be approximately 1,980 hours, or 24 hours per vessel.

The charterboat sector is not currently required to complete logbooks. Assuming it took a charterboat the same amount of time a commercial vessel required to complete a bycatch-augmented logbook, 12.5 minutes, 1,246 charterboats and 146 trips per charterboat per year, if all vessels were required to complete logbooks, the total time burden to the industry would be approximately 37,900 hours or 30.4 hours per vessel.

One hundred percent logbook coverage of recreational anglers is impractical and illogical, and if logbooks were required for the recreational sector, only a sample of anglers would likely be selected. Over the years 2001-2005, an average of 20.7 million trips per year were taken in the South Atlantic by recreational anglers. Assuming a 10% sample and 10 minutes to complete a logbook, 345,000 burden hours would be required to complete the logbooks. Complications in the computation of burden to the recreational sector exist, however, because the sample universe would likely be anglers, assuming a registry for sampling existed, rather than trips, and a sample of more or less than 10% of anglers may be required to achieve the desired target of sampled trips. Thus, total burden hours may be more or less than the estimates provided.

There would be no anticipated costs of logbook reporting beyond the opportunity cost of completing the logbook forms. Current logbook programs provide fishermen with addressed, pre-paid envelopes for returning completed forms. Completing the logbooks would not be expected to require special skills.

Similar burden estimates are not available for the use of electronic logbooks. Electronic logbooks would be expected to take less time to complete because certain response variables could be preprogrammed and transmission would be simplified. Logbooks are estimated to cost \$500 per unit, but responsibility for this expense is undetermined. Considering the widespread familiarity with and usage of computers throughout today's society, special skills to use an electronic logbook would not be expected, though some initial training or demonstration and a short learning curve would be logical.

The use of video cameras to monitor and record bycatch is likely a method that would, if used, be imposed on only a small portion of participants in the fishery due to its cost and complexity. Purchase, installation, and maintenance costs of video systems would likely be borne by the government, though some cost-sharing with fishermen may occur. Additional details are unavailable, so concrete determinations on fishermen burden or skill requirements cannot be made.

6.6 Substantial Number of Small Entities Criterion

The proposed action would be expected to directly affect all vessels that operate in the commercial snapper grouper fishery and all vessels that have a Federal snapper grouper for-hire permit. All affected entities have been determined, for the purpose of this analysis, to be small entities. Therefore, it is determined that the proposed action will affect a substantial number of small entities.

6.7 Significant Economic Impact Criterion

The outcome of “significant economic impact” can be ascertained by examining two issues: disproportionality and profitability.

Disproportionality: Do the regulations place a substantial number of small entities at a significant competitive disadvantage to large entities?

All entities that would be expected to be affected by the proposed rule are considered small entities so the issue of disproportionality does not arise in the present case.

Profitability: Do the regulations significantly reduce profit for a substantial number of small entities?

Only four of the actions in this amendment, the two proposed interim allocations, the proposed prohibition on bag limit sales, and the proposed gear requirements to minimize the incidental take of sea turtles and smalltooth sawfish, are expected to have direct adverse economic impacts on fishing entities. The proposed snowy grouper allocation would result in a loss of approximately 900 pounds of snowy grouper to the commercial sector (one percent of the 92,635 pounds gutted weight TAC). Assuming an average ex-vessel price of \$2.31 (2006 dollars) per pound, this reduction would be valued at approximately \$2,000, or a loss of approximately \$11 per vessel active in the fishery (190 vessels). The proposed red porgy allocation would result in a gain of approximately 3,660 pounds of red porgy to the commercial sector (one percent of the 366,001 pounds gutter weight TAC). Assuming an average ex-vessel price of \$1.40 (2006 dollars) per pound, this gain would be valued at approximately \$5,100, or a gain of approximately \$29 per vessel active in the fishery (179 vessels). Thus, either action would have only minimal economic impacts on commercial fishing operations. Either action might also be expected to affect for-hire businesses. However, similar to the conclusion for the commercial sector, the small quantities of affected harvests would be expected to have minimal to no impacts on individual for-hire businesses.

It should be noted that the increase in ex-vessel revenues associated with proposed red porgy allocation does not account for the increase in commercial quota that will occur as a result of the rebuilding strategy implemented through Amendment 15A. This rebuilding strategy would result in an increase in the commercial quota of approximately

59,000 lbs gutted weight for the 2009 and 2010 fishing years under the status quo commercial allocation of 49 percent of the total allowable catch for the fishery. Assuming an average ex-vessel price of \$1.40 (2006 dollars) per pound, this increase is valued at approximately \$82,600 per year (nominal value), or approximately \$460 per vessel active in the fishery.

Assuming the implementation of compatible regulations in all states, thus encompassing snapper grouper harvested in both state and Federal waters as well as marketed through all state or Federal licensed dealers, the proposed elimination of bag limit sales is projected to result in the transfer of approximately \$2.4 million in nominal ex-vessel revenues from for-hire and commercial fishing vessels that do not have a Federal commercial snapper grouper permit to the Federally permitted commercial snapper grouper sector. This would constitute a total reduction of approximately \$316,000 per year for fish sales by vessels in the for-hire fishery, or a 17-percent reduction in average annual gross revenues per vessel, and approximately \$2.085 million per year in sales for commercial vessels that do not possess a Federal commercial snapper grouper permit, or a 7-percent reduction in average annual gross revenues per vessel (Table 4-7). It should be noted that snapper grouper fish sales by for-hire vessels, estimated at approximately \$2,000 per vessel on average, constitute a minor portion of total average revenues, with the majority of revenues coming from charter fees. As discussed above, South Atlantic charterboats are estimated to have average gross annual revenues from of approximately \$32,000-\$89,000, across all states, while headboats revenues are estimated to range from \$149,000-\$362,000.

If compatible regulations are not adopted in any state, the estimated reduction in bag limit sales revenues under **Preferred Alternative 2** would be limited to those harvests that originate from the EEZ by all vessels, bag limit harvests from state waters by vessels with the Federal for-hire permit, and harvests that are marketed through dealers with a Federal permit. This would lower the reduction in bag limit sales to approximately \$1.562-\$1.799 million, accounting for the estimated portion of bag limit sales by the non-Federal sector that originate in state waters (approximately 8 percent; Table 4-6), the estimated portion of bag limit sales by entities without a Federal permit that are marketed through dealers without Federal licenses (approximately 23-35 percent), and total bag limit sales by vessels in the Federal for-hire fleet. For the Federal for-hire sector, since compliance would be a condition of permit renewal, the analysis assumes no bag limit sales will occur, resulting in a full reduction in all bag limit sales by vessels in this sector, or approximately \$316,000 (Table 4-6). For the non-Federal sector, using the average EEZ bag limit sales (approximately \$1.921 million; Table 4-6) and dealer proportions (approximately 23 percent state dealer sales if the North Carolina and South Carolina proportion is applied throughout and 35 percent otherwise; Table 4-8), the reduction would be approximately \$1.246 million to \$1.483 million. These values equate to approximately a 17 percent reduction in average annual for-hire fish-sales revenues (\$316,000/159 vessels/\$11,568 total average revenues) and approximately a 4-5 percent reduction in average annual non-Federally permitted revenues (\$1.246-\$1.483 million/1,439 vessels/\$21,317 total average revenues).

The transference of these revenues to the Federal commercial snapper grouper sector would result in an estimated increase of approximately 9 percent in nominal ex-vessel revenues per year (\$2.4 million/717 vessels/\$38,000 average annual revenues) if compatible regulations are adopted by all states, and from 6 percent to 7 percent if no states adopt compatible regulations (\$1.562-\$1.799 million/717 vessels/\$38,000 average annual revenues).

The proposed gear requirements to minimize the incidental take impact on sea turtles and smalltooth sawfish is estimated to increase vessel gear costs by \$617-\$1,115, based on low and high estimated costs for each of the 12 different pieces of required gear and assuming the vessel does not already possess any of the required gear. Few actual vessels would be expected to have to incur the maximum cost, however, since most vessels are expected to already possess and use most of this gear or allowable substitutes. For-hire vessels that exclusively harvest fish through snorkeling or diving activities and do not possess hook-and-line gear on-board would not have to carry the required gear. For those vessels that needed to carry the gear, any costs would be one-time expenditures, subject to breakage or loss replacement.

6.8 Description of Significant Alternatives

Four alternatives, including the status quo, were considered for the action to set the snowy grouper allocation. The proposed action would increase the allocation to the recreational sector by one percent from the current 4 percent. The first alternative to the proposed action, the status quo, would not establish commercial and recreational allocations. Because allocations are necessary to quantify the commercial quota and recreational allocation, this alternative would not achieve the Council's objective.

The second alternative to the proposed snowy grouper allocation would increase the recreational allocation to 7 percent, while the third alternative would increase the recreational allocation to 12 percent. Both alternatives would be expected to increase the economic benefits to the recreational sector while reducing the economic benefits to the commercial sector. Net economic benefits to the nation cannot be determined with available data. These alternatives were not selected as the proposed snowy grouper allocation because they were derived from shorter time periods than the proposed action, resulting in excess influence of unrealistic spikes in recreational landings.

Four alternatives, including the status quo, were considered for the action to set the red porgy allocation. The status quo would not establish commercial and recreational allocations. Because allocations are necessary to quantify the commercial quota and recreational allocation, this alternative would not achieve the Council's objective. The second alternative would decrease the recreational sector allocation from the current 51% to 32% while the third alternative would increase the recreational allocation to 56%. Each sector would be expected to receive increased or decreased economic benefits relative to the status quo as their allocation is increased or decreased. Net benefits to the nation under any alternative cannot be quantified. Neither of these alternatives were

selected as the preferred action since each would involve substantial changes from what the Council believes, based on advisory panel comment, is the most equitable allocation which is the average sector harvest from 1999-2003, or 49% commercial and 51% recreational. The proposed action varies from this allocation by only one percentage point, allocating 50% of the TAC to each sector. While not precisely matching the average 1999-2003 harvest, the Council believes that the proposed allocation equitably accounts for the increased value of red porgy to the recreational sector while reversing declines in commercial harvests due to previous regulatory action.

Two alternatives, including the status quo, were considered for the action to specify MSY for golden tilefish. The first alternative to the proposed MSY, the status quo, would not specify an MSY for golden tilefish. Since an MSY is a required component of an FMP, additional management action, with attendant duplication of time, effort, and administrative costs would be required. This alternative, therefore, would not meet the Council's objectives. Economic performance of the fishery, however, would be unaffected.

Four alternatives, including the status quo, were considered for the action to specify OY for golden tilefish. Similar to the status quo MSY, the first alternative to the proposed OY, the status quo, would not specify an OY for golden tilefish. Since an OY is a required component of an FMP, additional management action, with attendant duplication of time, effort, and administrative costs would be required. This alternative, therefore, would not meet the Council's objectives. Economic performance of the fishery, however, would be unaffected. The second and third alternatives are, respectively, more and less conservative than the proposed action. The second alternative to the proposed OY is more conservative than likely necessary to protect the resource and would be expected to result in greater foregone economic benefits than the proposed action. The third alternative to the proposed OY is believed to be insufficiently conservative to protect the resource. The proposed OY is believed to be the appropriate choice to minimize foregone economic benefits while protecting the resource.

Three alternatives, including the status quo, were considered for the action to specify the MSST for golden tilefish. The first alternative to the proposed MSST, the status quo, would require the largest minimum stock size and would increase the likelihood that the resource be declared overfished, necessitating harvest reductions and imposing short term adverse economic impacts. The second alternative to the proposed MSST would require the smallest minimum stock size. While this specification would minimize, among the three alternatives, the likelihood of the stock being declared overfished, this stock level is believed to be insufficiently conservative to provide adequate protection to the resource. The proposed MSST specifies a minimum stock size intermediate to the other alternatives and is believed to be the appropriate choice to minimize the likelihood of triggering restrictive management while protecting the resource.

Three alternatives, including the status quo, were considered for the action to address the sale of snapper grouper harvested under the bag limit. The first alternative, the status quo, would continue to allow the sale of snapper grouper harvested under the bag limit,

continue to allow the Federal commercial snapper grouper quota to be harvested and sold by vessels that did not possess the Federal commercial snapper grouper permit, continue increased commercial quota pressure and accelerated quota closures, result in continued adverse economic effects on the Federal commercial snapper grouper sector, continued data issues, and continued enforcement issues, and would not achieve the Council's objectives.

The second alternative to the proposed prohibition of sales snapper grouper harvested under the bag limit would allow continued sales by vessels with a Federal charter/headboat snapper grouper permit. While this would reduce the adverse economic effects on the Federal commercial snapper grouper sector, data issues, and enforcement issues associated with the status quo, these effects would not be eliminated, thereby generating less net economic benefits for this sector and associated businesses than the proposed action.

Four alternatives, including the status quo, were considered for the action to establish a program to monitor and assess bycatch. The first alternative to the proposed program, the status quo, would only utilize existing information, would not improve current capabilities to monitor and assess bycatch, and would not achieve the Council's objectives.

The second alternative to the proposed bycatch monitoring and assessment program would require the implementation of a program that currently cannot be funded or implemented. While this program would generate the best data in the shortest period of time, with accompanying social and economic benefits, the program lacks the flexibility of allowing interim methods until such time as the preferred methods can be funded and adopted. As a result, this alternative would not meet the Council's objectives.

The third alternative to the proposed bycatch monitoring and assessment program would implement a program that is less comprehensive. Thus, although the program would be less costly than the proposed program, the third alternative would generate fewer longterm benefits than the proposed program.

Three alternatives, including the status quo, were considered for the action to establish sea turtle and smalltooth sawfish take impact minimization measures. The first alternative to the proposed equipment requirements, the status quo, would not achieve the desired take-impact minimization and would not meet the Council's objectives.

The second alternative to the proposed equipment requirements would require the acquisition of less costly equipment. However, these requirements would not be expected to result in the same reduction in bycatch impact minimization for these species and, as a result, would not be expected to result in as much protection for the species and net economic and social benefits for society.

Three alternatives, including the status quo, were considered for the action to establish the permit renewal period. The first alternative to the proposed one-year extension

period, the status quo, would retain the current 60-day renewal requirement and would not achieve the Council's objective of increasing permit renewal flexibility.

The second alternative to the proposed one-year extension period would allow six months after permit expiration for permit renewal. While this would add greater flexibility for permit renewal relative to the status quo, thereby reducing the likelihood of unintended permit loss and associated economic losses, this alternative would not be consistent with the permit renewal period of most other permits and would not be as flexible as the proposed action.

Seven alternatives, including the status quo, were considered for the action to establish options for transfer provisions for permits owned by corporations comprised of family members. Five of the alternatives are variations of the proposed action and vary by differences in required action if the proposed requirement for the submission of the annual corporate report includes shareholders not listed on the original permit application. The first alternative to the proposed transferability option, the status quo, would continue to require a two-for-one permit exchange in order for a permit holder to incorporate their business operation and change the ownership of the permit to the corporation. Current permit holders would be prevented from receiving the tax and other financial benefits of incorporation without incurring the added expense of purchasing a second snapper grouper permit. Because this restriction was outside the scope of the Council's original intent for the two-for-one permit transfer requirement, maintaining the status quo would not achieve the Council's objectives.

The second alternative to the proposed permit transferability option would treat the addition of family members as corporate shareholders the same as non-family members. Thus, once a permit is transferred to a corporation, renewal of the permit would not be restricted by change in shareholders. This alternative would allow the most liberal transfer flexibility but would not preserve the Council's intent to treat family corporations differently than other corporations.

The third alternative to the proposed permit transferability option would not allow a permit to be renewed and transferred if the annual corporate report showed a shareholder not listed on the original corporate documentation. This alternative would be the most restrictive of the sub-set of alternatives that allow family incorporation. Because this alternative would eliminate the flexibility to change corporate shareholders even among family members, this alternative would result in less economic benefits than the proposed action.

The fourth alternative to the proposed permit transferability option would require a two-for-one transfer if the annual corporate report showed a shareholder not listed on the original corporate documentation. This requirement would increase the cost of transfer and generate less net economic benefits than the proposed action.

The fifth alternative to the proposed permit transferability option would require either a two-for-one transfer or a transfer back to person who is an immediate family member of

the permit holder who originally transferred the permit to the family corporation if the annual corporate report showed a shareholder not listed on the original corporate documentation. This requirement would either increase the cost of transfer or eliminate the tax and financial benefits of incorporation and, thus, generate less net economic benefits than the proposed action.

The sixth alternative to the proposed permit transferability option would eliminate the two-for-one permit transfer requirement. Permit holders would be able to transfer their permit to corporations, family owned or otherwise, and freely change shareholders without incurring the cost of obtaining an additional permit. While this would create the most flexible transfer conditions, it would eliminate this requirement as a source of contraction of the commercial snapper grouper fleet. While the optimal fleet size to maximize social and economic benefits to the nation has not been identified, the fishery is believed by the Council to still be overcapitalized and further contraction necessary. Thus, this alternative would generate less net economic benefits than the proposed action.

7 Fishery Impact Statement (FIS)

7.1 Introduction

Mandates to conduct Social Impact Assessments (SIA) come from both the National Environmental Policy Act (NEPA) and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). NEPA requires Federal agencies to consider the interactions of natural and human environments by using a “...systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences...in planning and decision-making” [NEPA section 102 (2) (a)]. Under the Council on Environmental Quality’s Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, a clarification of the terms “human environment” expanded the interpretation to include the relationship of people with their natural and physical environment (40 CFR 1508.14). Moreover, agencies need to address the aesthetic, historic, cultural, economic, social, or health effects which may be direct, indirect or cumulative.

Under the Magnuson-Stevens Act, FMPs must “...achieve and maintain, on a continuing basis, the optimum yield from each fishery” [Magnuson-Stevens Act Section 2 (b) (4)]. When considering “...a system for limiting access to the fishery in order to achieve optimum yield.” the Secretary of Commerce and Regional Fishery Management Councils are to consider both the social and economic impacts of the system [Magnuson-Stevens Act Section 303 (b) (6)]. The Magnuson-Stevens Act requires that FMPs address the impacts of any management measures on the participants in the affected fishery and those participants in other fisheries that may be affected directly or indirectly through the inclusion of a fishery impact statement [Magnuson-Stevens Act Section 303 (a) (9)]. National Standard 8, requires that FMPs must consider the impacts upon fishing communities to assure their sustained participation and minimize adverse economic impacts upon those communities [Magnuson-Stevens Act Section 301 (a) (8)].

7.2 Problems and Methods

Social impacts are generally the consequences to human populations that follow from some type of public or private action. Social impact analyses can be used to determine possible consequences management actions may have on fishing dependent communities. In order to do a full social impact analysis it is necessary to identify community participants who depend upon the fisheries in that area and to identify the amount of dependency they have upon a given fishery. Further it is necessary to understand the other opportunities for employment that exist within the community should fishery management measures become so restrictive that participants must switch their focus to other fisheries or other jobs outside of the fishing industry. Public hearings and scoping meetings may provide input from those concerned with a particular action, but they do not constitute a full overview of the fishery.

In attempting to assess the social impacts of the proposed amendment it must be noted that there are not enough data at the community level for these analyses to do a comprehensive overview of the fishery; therefore, analyses cannot predict all social impacts. Although research in communities is ongoing, at this time it is still not complete enough to fully describe possible consequences this amendment may have on individual fishing communities. A discussion of the expected economic and social effects of each alternative in this amendment is provided in Section 4

Today, more fisheries are managed by quotas and/or have restrictions on the number of participants. This limits the opportunities fishermen who fish for the species addressed by this amendment may have had in the past and may make it impossible to shift effort to other fisheries in response to further restrictions imposed by this amendment.

The information available for evaluating the possible impacts of this amendment is summarized in Section 3.4. There are not enough data on communities that may be dependent on these fisheries to fully describe the impacts of any change in fishing regulations on any one community. However, demographic information based on census data of key communities in the region is included to give some insight into the structure of these communities that operate in the snapper grouper fishery. The social impacts on recreational fishermen, the processing sector, the consumer, fishing communities, and society as a whole are not fully addressed due to data limitations. Data to define or determine impacts upon fishing communities are still very limited.

7.3 Social Impact Assessment Data Needs

Changes due to development and the increase of tourism infrastructure have been occurring rapidly in coastal communities of the South Atlantic make community descriptions more problematic. Recognizing that defining and understanding the social and economic characteristics of a fishery is critical to good management of the fishery. Therefore, more comprehensive work needs to be done on all of the fisheries in the region.

One of the critical data needs is complete community profiles of fishing communities in the southeast region in order to gain a better understanding of the fishery and those dependent on the fishery. At this time, due to limited staff and resources, NOAA Fisheries Service is conducting research in a few Southeast communities at a time and in-depth community profiling will take several years to complete.

Completion of the community profiles will support more complete descriptions of the impacts that new regulations will have upon fishing communities. For each community chosen for profiling, it will be important to understand the historical background of the community and its involvement with fishing through time. Furthermore, the fishing communities' dependence upon fishing and fishery resources

needs to be established. In order to achieve these goals, data needs to be gathered in three or more ways. First, in order to establish both baseline data and to contextualize the information already gathered by survey methods, an in-depth, ethnographic study of the different fishing sectors or subcultures is needed. Second, existing literature on social/cultural analyses of fisheries and other sources in social evaluation research needs to be assessed in order to offer a comparative perspective and to guide the SIAs. Third, socio-economic data need to be collected on a continuing basis for both the commercial and recreational sectors, including the for-hire sector. Methods for doing this would include regular collection of social and economic information in logbooks for the commercial sector, observer data, and dock surveys.

The following is a guideline to the types of data needed:

1. Demographic information may include but is not necessarily limited to: population; age; gender; ethnic/race; education; language; marital status; children, (age & gender); residence; household size; household income (fishing/non-fishing); occupational skills; and association with vessels & firms (role & status).
2. Social Structure information may include but is not necessarily limited to: historical participation; description of work patterns; kinship unit, size and structure; organization & affiliation; patterns of communication and cooperation; competition and conflict; spousal and household processes; and communication and integration.
3. In order to understand the culture of the communities that are dependent on fishing, research may include but is not necessarily limited to: occupational motivation and satisfaction; attitudes and perceptions concerning management; constituent views of their personal future of fishing; psycho-social well-being; and cultural traditions related to fishing (identity and meaning).
4. Fishing community information might include but is not necessarily limited to: identifying communities; dependence upon fishery resources (this includes recreational use); identifying businesses related to that dependence; and determining the number of employees within these businesses and their status.
5. This list of data needs is not exhaustive or all-inclusive, and should be revised periodically in order to better reflect on-going and future research efforts.

7.4 Note for CEQ Guidance to Section 1502.22

In accordance with the CEQ Guidance for Section 1502.22 of the NEPA (1986), the Council has made “reasonable efforts, in the light of overall costs and state of the art, to obtain missing information which, in its judgment, is important to evaluating significant adverse impacts on the human environment...” However, at this time the Council cannot obtain complete social and community information that will allow the full analysis of social impacts of the proposed action and its alternatives. There are an insufficient number of sociologists or anthropologists employed at this time (2007) and insufficient funds to conduct the community surveys and needed ethnographies that would allow full analysis.

7.5 E.O. 12898: Environmental Justice

This Executive Order requires federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, national origin, or income level. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence.

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 in the occupation category, and with agriculture, forestry, and hunting in the industry category. Therefore, the information needed to evaluate the effects of the proposed actions on low-income and minority populations is not available. Nevertheless, although the demographics of the snapper grouper fishery are unknown, the actions in this amendment 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.

7.6 Social Impact Assessment Summary

A detailed discussion of the expected social impacts of the proposed actions are provided in Section 4.

Minimal social impacts, either positive or negative, are expected to accrue to most of the proposed measures in this amendment with the exception of the proposed modification to bag limit sales. The proposed allocations for snowy grouper and red porgy represent only minimal adjustments, one percent, to assumed status quo harvest distributions between the recreational and commercial harvest sectors and are not expected to result in substantial social impacts to either sector.

The proposed golden tilefish MSY, OY, and MSST specifications are administrative requirements and are not expected to result in any change to current harvest or regulatory changes.

While bycatch monitoring programs have the potential of imposing excessive costs and associated adverse social impacts on individual fishery participants, improved monitoring is expected to improve the collection of bycatch data, thereby improving the quality of stock assessments and subsequent fishery decisions. Further, the proposed program may be viewed as a reasonable compromise to achieve bycatch monitoring progress while accommodating budgetary and practical realities.

The proposed bycatch release gear requirements are not expected to impose substantial new gear requirements over existing equipment typically present on fishing vessels, so prohibitive increases in gear costs, precipitating vessel exit from their respective fishery, with associated adverse social impacts, is not expected. Further, the expected reduction of impacts from the incidental take on sea turtles and smalltooth sawfish may enhance species recovery and aid development of activities associated with the species, such as diving and eco-tours. While the development of these types of activities and the infrastructure to support them would not preserve the character of communities that have evolved around extractive fisheries, such development may provide continued opportunities in ocean related activities, thereby mitigating any losses that might occur as a result of the increased gear costs.

The proposed permit renewal action is expected to reduce the incidence of unintended permit expiration, resulting in positive social benefits. The proposed permit transferability action is expected to increase social benefits by allowing individual or family businesses to continue to receive the benefits of incorporation when adding new immediate family members to an existing corporation.

The proposed prohibition of bag limit sales are expected to have positive social impacts on individuals, businesses, and communities associated with the Federal commercial snapper grouper fishery, and negative social impacts on individuals, businesses, and

communities associated with entities that historically have sold snapper grouper harvested under the bag limit. The proposed prohibition could result in reductions in for-hire revenues, expenditures, and profits, with concurrent affects on fishing businesses and associated industries, communities, and social structures. Although the prohibition would be expected to benefit and harm different participant groups, the relative impact, on average, to the different groups may not be equal. The value of the average expected revenue loss for entities that have historically sold fish harvested under the bag limit is expected to comprise a larger percentage of total average gross fishing revenues to these entities than would the transference of the revenues from these fish (i.e., the fish harvested under the bag limit) to fishermen in the Federal commercial snapper grouper fishery. Because over twice as many entities were identified as having historically engaged in the sale of fish harvested under the bag limit than operate in the current Federal commercial snapper grouper fishery, if social benefits are more strongly influenced by the number of sales pathways or social interactions (more fishermen equates to more social channels/networks) than simply the volume of sales (the general assumption of the action is that the total sales volume will remain unchanged, only the number of participants and paths of participation change), then a redistribution of harvests to the Federal commercial fleet could have net adverse social consequences. In addition to the positive social impacts expected to accrue to entities associated with the Federal commercial snapper grouper fishery, additional positive social impacts would be expected to accrue to the improvement of data collection and the reduction of fishery closure pressure.

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, NOAA Fisheries Service 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 wait 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 use their authorities to conserve threatened and endangered species. They must ensure actions they authorize, fund, or carry out are not likely to harm the continued existence of those 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, 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, including a biological opinion, are required when proposed actions may affect and are “likely to adversely affect” threatened or endangered or species adversely modify designated critical habitat. Biological opinions use the best available commercial and scientific data to evaluate the effects of a proposed action on threatened or endangered species. If a biological opinion finds the proposed action is not likely to

jeopardize the continued existence of threatened or endangered species, an Incidental Take Statement (ITS) is issued. An ITS specifies the impact, i.e., the amount or extent, of such incidental taking on threatened or endangered species. In conjunction with an ITS, Reasonable and Prudent Measures (RPM) are issued, which are non-discretionary actions, necessary to help minimize the impact of incidental take. Terms and conditions are issued simultaneously with RPMs, and are specific requirements that implement the RPMs. If a biological opinion finds that the proposed action is likely to jeopardize the continued existence of threatened or endangered species, the consulting agency is required to establish Reasonable and Prudent Alternatives (RPA) to the proposed action. RPAs are economically and technology feasible alternatives to the proposed action, that would allow that activity to occur, without jeopardizing threatened or endangered species.

NOAA Fisheries Service has recently completed a biological opinion on the ESA-listed species potentially impacted by the continued operation of the South Atlantic snapper grouper fishery. That opinion found that the management measures proposed under Amendment 13C to the South Atlantic Snapper Grouper Fishery Management Plan were not likely to jeopardize the continued existence of any ESA-listed species or adversely modify critical habitat. An incidental take statement was issued allotting take for green, hawksbill, loggerhead, leatherback, and Kemp's ridley 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.

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, NOAA Fisheries Service 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 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 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. Finally, the Order requires NOAA Fisheries Service and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

8.7 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.

Amendment 13A to the Snapper Grouper FMP, which would eliminate all potential adverse impacts to *Oculina* coral in the *Oculina* Experimental Closed Area that are associated with bottom fishing gear, fulfills the intentions of E.O. 13089. As noted in Section 1.3, the use of bottom trawls, bottom longlines, dredges, fish traps, and fish pots

is currently prohibited within the *Oculina* Experimental Closed Area and that prohibition would not be affected by the proposed actions.

8.8 Executive Order 13158: Marine Protected Areas

E. O. 13158 was signed on May 26, 2000 to strengthen the 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 Council has proposed a number of MPAs in Amendment 14 that was sent to the Secretary of Commerce in July 2007.

8.9 Marine Mammal Protection Act

The 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.

Part of the responsibility that NOAA Fisheries Service has under the MMPA involves monitoring populations of marine mammals to make sure that they stay at optimum levels. If a population falls below its optimum level, it is designated as “depleted.” A conservation plan is then developed to guide research and management actions to restore the population to healthy levels.

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; Category III designates fisheries with a remote likelihood or no known serious injuries or mortalities.

The commercial hook-and-line components of the South Atlantic snapper grouper fishery (i.e., bottom longline, bandit gear, and handline) are listed as Category III as there have been no documented interactions between this fishery and marine mammals (68 FR 41725, July 15, 2003). The black sea bass pot component of the South Atlantic snapper grouper fishery is considered part of the Atlantic mixed species trap/pot fishery, a Category II fishery, under the MMPA. An interaction with a marine mammal has never been documented in the South Atlantic black sea bass pot fishery. The fishery's classification changed as a precaution because of known interactions with marine mammals by gears very similar to those utilized in the black sea bass fishery.

Under the MMPA, to legally fish in a Category I and/or II fishery, a fisherman must take certain steps. For example, owners of vessels or gear engaging in a Category I or II fishery, are required to obtain a marine mammal authorization by registering with the Marine Mammal Authorization Program (50 CFR 229.4). They are also required to accommodate an observer if requested (50 CFR 229.7(c)) and they must 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 (71 FR 48802, August 22, 2006) 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, under the MMPA. 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 a 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 apart 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.

8.10 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 Socialist 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, 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 it.

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 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.

8.11 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 analysis 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 15B to the FMP serves as the documentation to satisfy the requirements of NEPA.

8.12 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.

8.13 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.

8.14 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, NOAA Fisheries Service 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.

8.15 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.

8.16 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. The public was requested to comment on this issue specifically. The public did not comment on this issue.

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
Heather Blough	NEPA Specialist	NMFS	SF	SERO
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
Stephen Holiman	Economist	NMFS	SF	SERO
Palma Ingles	Anthropologist	NMFS	SF	SERO
David Keys	NEPA Coordinator	NMFS	N/A	SERO
Jennifer Lee	Council Liaison	NMFS	PR	SERO
Jack McGovern*	Fishery Biologist	NMFS	SF	SERO
Kerry O'Malley	Fishery Scientist	SAFMC	N/A	SAFMC
Janet Miller	Permits	NMFS	SF	SERO
Kate Michie	Plan Coordinator	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
Julie Weeder	Fishery Management Specialist	NMFS	SF	SERO
Gregg Waugh	Deputy Director	SAFMC	N/A	SAFMC
Erik Williams	Stock Assessment Biologist	NMFS	SF	SEFSC
*Team co-leads				

10 List of Agencies, Organizations, and Persons To Whom Copies of the Statement Are Sent

Responsible Agency

Amendment 15B:
South Atlantic Fishery Management Council
4055 Faber Place, 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)
(727) 824-5320 (FAX)

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

11 References

- Adams, W.F. and C. Wilson. 1995. The status of the smalltooth sawfish, *Pristis pectinata* Latham 1794 (Pristiformes: Pristidae) in the United States. *Chondros* 6(4): 1-5.
- Anderes Alavrez, B.A., and I., Uchida. 1994. Study of the Hawksbill turtle (*Eretmochelys imbricata*) stomach content in Cuban waters. In: Study of the Hawksbill turtle in Cuba (I), Ministry of Fishing Industry, Cuba.
- Alsop, III, F. J. 2001. Smithsonian Handbooks: Birds of North America eastern region. DK Publishing, Inc. New York, NY.
- Bauchot, M.L. and J.C. Hureau. 1990. Sparidae. p. 790-812. In J.C. Quero, J.C. Hureau, C. Karrer, A. Post and L. Saldanha (eds.) Check-list of the fishes of the eastern tropical Atlantic (CLOFETA). JNICT, Lisbon; SEI, Paris; and UNESCO, Paris. Vol. 2.
- Bigelow, H.B. and W.C., Schroeder. 1953. Sawfishes, guitarfishes, skates and rays, pp. 1-514. In: Tee-Van, J., C.M Breder, A.E. Parr, W.C. Schroeder and L.P. Schultz (eds). Fishes of the Western North Atlantic, Part Two. Mem. Sears Found. Mar. Res. I.
- Bjorndal, K.A. 1980. Nutrition and grazing behavior of the green sea turtle, *Chelonia mydas*. *Marine Biology*. 56:147.
- Bjorndal, K.A. 1997. Foraging ecology and nutrition of sea turtles. In: Lutz, P.L. and J.A. Musick (eds.), *The Biology of Sea Turtles*. CRC Press, Boca Raton, Florida.
- Bolten, A.B. and G.H. Balazs. 1995. Biology of the early pelagic stage – the “lost year.” In: In: Bjorndal, K.A. (ed.), *Biology and Conservation of Sea Turtles*, Revised edition. Smithsonian Institution Press, Washington, D.C., 579.
- Brongersma, L.D. 1972. European Atlantic Turtles. *Zool. Verhand. Leiden*, 121:318.
- Bullock, L.H. and G.B. Smith. 1991. Seabasses (Pisces: Serranidae). *Memoirs of the Hourglass Cruises. St. Petersburg [Mem Hourglass Cruises.]*, Vol. 8, No. 2, Florida Marine Research Institute, Department of Natural Resources, St. Petersburg, Florida (USA). 243 pp.
- Burke, V.J., E.A. Standora, and S.J. Morreale. 1993. Diet of juvenile Kemp’s ridley and loggerhead sea turtles from Long Island, New York. *Copeia*, 1993, 1176.
- Burrell, V. G. 2000. The recreational fishery in South Carolina: The Little River Story. Educational Report 19, South Carolina Department of Natural Resources, Marine Resources Research Institute, Charleston, SC.

- Byles, R.A. 1988. Behavior and Ecology of Sea Turtles from Chesapeake Bay, Virginia. Ph.D. dissertation, College of William and Mary, Williamsburg, VA.
- Carr, A. 1986. Rips, FADS, and little loggerheads. *BioScience*, 36:92.
- Carr, A. 1987. New perspectives on the pelagic stage of sea turtle development. *Conservation Biology*, 1:103.
- CEQ. 1997. Considering Cumulative Effects Under the National Environmental Policy Act. U.S. Council on Environmental Quality, Washington, DC. 64 pp.
- Chevront, B. and M. Neal. 2004. A Social and Economic Analysis of Snapper Grouper Complex Fisheries in North Carolina South of Cape Hatteras. A report for the NC Technical Assistance to the SAFMC, Task 5: NEPA Related Activities, Contract No. SA-03-03-NC. Morehead City, NC. 50 pages.
- Daniel, E.A. 2003. Sexual maturity, spawning dynamics, and fecundity of red porgy, *Pagrus pagrus*, off the southeastern United States. M.S. Thesis, College of Charleston. 78pp.
- Dooley, J.K. 1978. Malacanthidae. In W. Fischer (ed.) FAO species identification sheets for fishery purposes. Western Central Atlantic (Fishing Area 31). Volume 3. FAO, Rome.
- Eckert, S.A., D.W., Nellis, K.L., Eckert and G.L., Kooyman. 1986. Diving patterns of two leatherback sea turtles (*Dermochelys coriacea*) during internesting intervals at Sandy Point, St. Croix, U.S. Virgin Islands. *Herpetologica*, 42:381.
- Eckert, S.A., K.L., Eckert, P., Ponganis, and G.L., Kooyman. 1989. Diving patterns of two leatherback sea turtles (*Dermochelys coriacea*). *Canadian Journal of Zoology*, 67:2834.
- Frick, J. 1976. Orientation and behaviour of hatchling green turtles (*Chelonia mydas*) in the sea. *Animal Behavior*, 24:849.
- Gentner, B., M. Price, and S. Steinback. 2001. Marine Angler Expenditures in the Southeast Region, 1999. NOAA Technical Memorandum NMFS-F/SPO-48.

- GMFMC. 2005. Final Amendment Number 13 to the Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, U.S. Waters with Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis. Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, FL 33607.
- Grimes, C.B., C.F. Idelberger, K.W. Able, and S.C. Turner. 1988. The reproductive biology of tilefish, *Lopholatilus chamaeleonticeps* Goode and Bean, from the United States Mid-Atlantic Bight, and the effects of fishing on the breeding system. Fish. Bull. 95: 732-747.
- Haab, T. C., J. C. Whitehead, and T. McConnell. 2001. The Economic Value of Marine Recreational Fishing in the Southeast United States. NOAA Technical Memorandum NMFS-SEFSC-466.
- Harris, P.J. and J.C. McGovern. 1997. Changes in the life history of red porgy, *Pagrus pagrus* from the southeastern United States, 1972-1994. Fish. Bull. 95:732-747.
- Harris, P.J., S.M. Padgett, and P.T. Powers. 2001. Exploitation-related changes in the growth and reproduction of tilefish and implications for the management of deep water fisheries. America Fisheries Society Symposium 23:199-210.
- Harris, P.J. and J. Stephen. 2005. Final Report Characterization of commercial reef fish catch and bycatch off the southeast coast of the United States. CRP Grant No. NA03NMF4540416.
- Heemstra, P.C. and J.E. Randall. 1993. FAO species catalogue. Vol. 16. Groupers of the world. (Family Serranidae, Subfamily Epinephelinae). An annotated and illustrated catalogue of the grouper, rockcod, hind, coral grouper and lyretail species known to date. FAO Fish. Synops. 16(125).
- Holland, S. M., A. J. Fedler, and J. W. Milon. 1999. The Operation and Economics of the Charter and Headboat Fleets of the Eastern Gulf of Mexico and South Atlantic Coasts. University of Florida Office of research, Technology, and Graduate Education. Report prepared for the National Marine Fisheries Service. Grant Number NA77FF0553.
- Hughes, G.R. 1974. The sea-turtles of south-east Africa. II. The biology of the Tongaland loggerhead turtle *Caretta caretta* L. with comments on the leatherback turtle *Dermochelys coriacea* L. and green turtle *Chelonia mydas* L. in the study region. Oceanographic Research Institute (Durban) Investigative Report. No. 36.
- Huntsman, G.R., D.S. Vaughan, and J. Potts. 1994. Trends in population status of the red porgy (*Pagrus pagrus*) in the Atlantic ocean off North Carolina and South Carolina, USA, 1972-1992. Beaufort Lab, Southeast Fisheries Science Center, NMFS, 101 Pivers Island Road, Beaufort, NC USA 28516-9722.

- Jepson, M., K. Kitner, A. Pitchon, W.W. Perry, and B. Stoffle. 2005. Potential fishing communities in the Carolinas, Georgia, and Florida: An effort in baseline profiling and mapping. NOAA Technical Report No. (TBD).
- Keinath, J.A. and J.A. Musick. 1993. Movements and diving behavior of a leatherback sea turtle, *Dermochelys coriacea*. *Copeia*, 1993:1010.
- Kozak, C. 2005. Wanchese braces for growth with land-use plan .The Virginian-Pilot.
- Lanyon, J.M., C.J. Limpus, and H. Marsh. 1989. Dugongs and turtles: grazers in the seagrass system. In: Larkum, A.W.D, A.J., McComb and S.A., Shepard (eds.) *Biology of Seagrasses*. Elsevier, Amsterdam, 610.
- Limpus, C.J. and N. Nichols. 1988. The southern oscillation regulates the annual numbers of green turtles (*Chelonia mydas*) breeding around northern Australia. *Australian Journal of Wildlife Research*, 15:157.
- Limpus, C.J. and N. Nichols. 1994. Progress report on the study of the interaction of El Niño Southern Oscillation on annual *Chelonia mydas* numbers at the southern Great Barrier Reef rookeries. In: Proceedings of the Australian Marine Turtle Conservation Workshop, Queensland Australia.
- Lutz, P.L. and J.A. Musick (eds.). 1997. *The Biology of Sea Turtles*. CRC Press, Boca Raton, Florida.
- Lutz, P.L., J.A. Musick, and J. Wyneken. 2002. *The Biology of Sea Turtles, Volume II*. CRC Press, Boca Raton, Florida.
- MacDonald, L.H. 2000. Evaluating and managing cumulative effects: process and constraints. *Environmental Management* 26(3): 299-315.
- Mace, P.M. 1994. Relationships between the common biological reference points used as thresholds and targets of fisheries management strategies. *Canadian Journal of Fish and Aquatic Sciences* 51:110-122.
- MacIntyre, I.G. and J.D. Milliman. 1970. Physiographic features on the outer shelf and upper slope, Atlantic continental margin, southeastern United States. *Geological Society of America Bulletin* 81:2577-2598.
- Manooch, C.S. 1976. Reproductive cycle, fecundity, and sex ratios of the red porgy, *Pagrus pagrus*, *Transactions of the American Fisheries Society* 106:26-33.
- Manooch, C.S. 1984. *Fisherman's Guide: Fishes of the Southeastern United States*. Raleigh, NC: Museum of Natural History. 362 pp.

- Márquez -M, R. 1994. Synopsis of biological data on the Kemp's ridley turtles, *Lepidochelys kempii* (Garman, 1880). NOAA Technical Memo, NMFS-SEFSC-343. Miami, FL.
- McElderry, H. 2003. Sustainable fisheries management using fisheries monitoring. *Seafood*. 11(6).
- McGovern, J.C. and H.M. Meister. 1999. Data Report on MARMAP Tagging Activities From the Southeast Coast of the United States. MARMAP Data Report.
- McGovern, J.C., G.R. Sedberry, H.S. Meister, T.M. Westendorff, D.M. Wyanski, and P.J. Harris. 2005. A Tag and Recapture Study of Gag, *Mycteroperca microlepis*, from the Southeastern United States. *Bulletin of Marine Science* 76:47-59.
- Mendonca, M.T. and P.C.H. Pritchard. 1986. Offshore movements of post-nesting Kemp's ridley sea turtles (*Lepidochelys kempi*). *Herpetologica*, 42:373.
- Meylan, A. 1984. Feeding Ecology of the Hawksbill turtle (*Eretmochelys imbricata*): Spongivory as a Feeding Niche in the Coral Reef Community. Dissertation, University of Florida, Gainesville, FL.
- Meylan, A. 1988. Spongivory in hawksbill turtles: a diet of glass. *Science* 239:393-395.
- Meylan, A.B. and M. Donnelly. 1999. Status justification for listing the hawksbill turtle (*Eretmochelys imbricata*) as critically endangered on the 1996 IUCN Red List of Threatened Animals. *Chelonian Conservation and Biology* 3(2): 200-204.
- Miller, G.C. and W.J. Richards. 1979. Reef fish habitat, faunal assemblages, and factors determining distributions in the South Atlantic Bight. *Proc. Gulf Caribb. Fish. Inst.* 32:114-130.
- Moore, C.M. and R.F. Labinsky. 1984. Population parameters of a relatively unexploited stock of snowy groupers in the lower Florida Keys. *Trans. Am. Fish. Soc.* 113:322-329.
- Mortimer, J.A. 1981. The feeding ecology of the West Caribbean green turtle (*Chelonia mydas*) in Nicaragua. *Biotropica*, 13:49.
- Mortimer, J.A. 1982. Feeding ecology of sea turtles. In: Bjorndal, K.A. (ed.), *Biology and Conservation of Sea Turtles*. Smithsonian Institution Press, Washington, D.C.
- Myers, R.A., A.A. Rosenberg, P.M. Mace, N. Barrowman, and V.R. Restrepo. 1994. In search of thresholds for recruitment overfishing. *ICES Journal of Marine Science*. 51:191-205.

- Nelson, R.S. 1988. A study of the life history, ecology, and population dynamics of four sympatric reef predators (*R. aurorubens*, *L. campechanus*, *H. melanurum*, and *P. pagrus*) on the East and West Flower Garden Banks, NW Gulf of Mexico. Ph.D. thesis, North Carolina State Univ., Raleigh, N.C., 197 p.
- Newton, J.G., O.H. Pilkey, and J.O. Blanton. 1971. An oceanographic atlas of the Carolina and continental margin. North Carolina Dept. of Conservation and Development, Raleigh. 57p.
- NMFS (National Marine Fisheries Service). 2005. Stock Assessment and Fishery Evaluation Report for the Snapper Grouper Fishery of the South Atlantic. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. Available at <http://sero.nmfs.noaa.gov>.
- NMFS. 2006. Endangered Species Act section 7 consultation on the Continued Authorization of Snapper grouper Fishing under the South Atlantic Snapper grouper Fishery Management Plan (RFFMP) and Proposed Amendment 13C. Biological Opinion. June 7.
- Norman, J. R. and F. C.. Fraser. 1938. Giant Fishes, Whales and Dolphins. W. W. Norton and Company, Inc, New York, NY. 361 pp.
- Ogren, L.H. 1989. Distribution of juvenile and subadult Kemp's ridley turtles: Preliminary results from the 1984-1987 surveys. In: C.W. Caillouet Jr. and A.M. Landry Jr. (eds.) Proceedings from the 1st Symposium on Kemp's ridley Sea Turtle Biology, Conservation, and Management. Sea Grant College Program, Galveston, TX. 116.
- O'Malley, K. 2003. South Atlantic Fishery Management Council Snapper/Grouper Electronic Logbook Final Report. Technology Planning & Management Corporation Mill Wharf Plaza, Suite 208, Scituate, Massachusetts 02066, www.tpmc.com.
- Paredes, R.P. 1969. Introduccion al Estudio Biologico de Chelonia mydas agassizi en el Perfil de Pisco, Masters thesis, Universidad Nacional Federico Villareal, Lima, Peru.
- Parker, Jr., R.O., D.R. Colby, and T.D. Willis. 1983. Estimated amount of reef habitat on a portion of the U. S. South Atlantic and Gulf of Mexico Continental Shelf. Bulletin of Marine Science 33: 935-940.
- Parker, Jr., R.O. and R.W. Mays. 1998. Southeastern U.S. deepwater reef fish assemblages, habitat characteristics, catches, and life history summaries. NOAA Tech. Report, National Marine Fisheries Service 138.
- Poffenberger, J. 2004. A Report on the Discard Data from the Southeast Fisheries Science Center's Coastal Fisheries Logbook Program.

- Potts, J.C. and C.S. Manooch, III. 2002. Estimated ages of red porgy (*Pagrus pagrus*) from fishery-dependent and fishery-independent data and a comparison of growth parameters. *Fish. Bull.* 100(2):81-89.
- Powers, J. 1999. Control parameters and alternatives for control rules for selected stocks under the jurisdiction of the South Atlantic Fishery Management Council. Southeast Fisheries Science Center.
- Poulakis, G. R. and J. C. Seitz. 2004. Recent occurrence of the smalltooth sawfish, *Pristis pectinata* (Elasmobranchiomorphi: Pristidae), in Florida Bay and the Florida Keys, with comments on sawfish ecology. *Florida Scientist* 67(27): 27-35.
- Restrepo, V.R., G.G. Thompson, P.M. Mace, W.L. Gabriel, L.L. Low, A.D. MacCall, R.D. Methot, J.E. Powers, B.L. Taylor, P.R. Wade, and J.F. Witzig. 1998. Technical guidance on the use of precautionary approaches to implementing National Standard 1 of the Magnuson-Stevens Fishery Conservation and Management Act. NOAA Technical Memorandum NMFS-F/SPO-31. Washington, D.C. 54 pp.
- Robins, C.R. and G.C. Ray. 1986. A field guide to Atlantic coast fishes of North America. Houghton Mifflin Company, Boston, U.S.A. 354 p.
- Rothschild, B.J. 1986. Dynamics of Marine Fish Populations. Harvard University Press. Cambridge, Massachusetts. 277pp.
- SAFMC (South Atlantic Fishery Management Council). 1983. Fishery Management Plan, Regulatory Impact Review and Final Environmental Impact Statement for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Circle, Suite 306, Charleston, South Carolina, 29407-4699.
- SAFMC (South Atlantic Fishery Management Council). 1986. Regulatory Amendment 1 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.
- SAFMC (South Atlantic Fishery Management Council). 1988a. Regulatory Amendment 2 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

- SAFMC (South Atlantic Fishery Management Council). 1988b. Amendment Number 1 and Environmental Assessment and Regulatory Impact Review to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 63 pp.
- SAFMC (South Atlantic Fishery Management Council). 1989. Regulatory Amendment 3 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.
- SAFMC (South Atlantic Fishery Management Council). 1990a. Amendment Number 2, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 28 pp.
- SAFMC (South Atlantic Fishery Management Council). 1990b. Amendment Number 3, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 34 pp.
- SAFMC (South Atlantic Fishery Management Council). 1991a. Amendment Number 4, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 200 pp.
- SAFMC (South Atlantic Fishery Management Council). 1991b. Amendment Number 5, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 200 pp.
- SAFMC (South Atlantic Fishery Management Council). 1992a. Regulatory Amendment 4 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.
- SAFMC (South Atlantic Fishery Management Council). 1992b. Regulatory Amendment 5 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

- SAFMC (South Atlantic Fishery Management Council). 1993. Amendment Number 6, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 155 pp.
- SAFMC (South Atlantic Fishery Management Council). 1994a. Amendment Number 7, Regulatory Impact Review, Social Impact Assessment, Initial Regulatory Flexibility Analysis and Supplemental Environmental Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 110 pp.
- SAFMC (South Atlantic Fishery Management Council). 1994b. Regulatory Amendment 6 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.
- SAFMC (South Atlantic Fishery Management Council). 1997. Amendment Number 8, Regulatory Impact Review, Social Impact Assessment, Initial Regulatory Flexibility Analysis and Supplemental Environmental Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 124 pp.
- SAFMC (South Atlantic Fishery Management Council). 1998a. Regulatory Amendment 7 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.
- SAFMC (South Atlantic Fishery Management Council). 1998b. Amendment Number 9, Final Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 246 pp.
- SAFMC (South Atlantic Fishery Management Council). 1998c. Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region (Amendment 10 to the Snapper Grouper Fishery Management Plan). South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.

- SAFMC (South Atlantic Fishery Management Council). 1998d. Comprehensive Amendment Addressing Sustainable Fishery Act Definitions and Other Required Provisions in Fishery Management Plans of the South Atlantic Region (Amendment 11 to the Snapper Grouper Fishery Management Plan). South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 151 pp.
- SAFMC (South Atlantic Fishery Management Council). 1998e. Habitat Plan for the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.
- SAFMC (South Atlantic Fishery Management Council). 2000a. Final Amendment 12 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 159 pp.
- SAFMC (South Atlantic Fishery Management Council). 2000b. Public Hearing Draft, Regulatory Amendment Number 8, Framework Adjustment to the Fishery Management Plan for the Snapper Grouper Fishery in the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699.
- SAFMC (South Atlantic Fishery Management Council). 2003. Amendment Number 13A, Final Environmental Assessment, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 177 pp.
- SAFMC (South Atlantic Fishery Management Council). 2006. Amendment Number 13C, Final Environmental Assessment, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 631 pp.
- SAFMC (South Atlantic Fishery Management Council). 2007a. Amendment Number 14, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405. 421 pp.

- SAFMC (South Atlantic Fishery Management Council). 2007b. Amendment Number 15A, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405. 301 pp.
- SAFMC (South Atlantic Fishery Management Council). 2007c. Amendment Number 15B, Draft Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405. 326 pp.
- Schwartz, F. J. 2003. Bilateral asymmetry in the rostrum of the smalltooth sawfish, *Pristis pectinata* (pristiformes: family pristidae). Journal of North Carolina Academy of Science, 119:41-47.
- SEDAR 1. 2002. Report of Red Porgy Stock Assessment Workshop. April 8 - May 6, 2002, Beaufort, NC. Prepared for the South Atlantic Fishery Management Council, Charleston, SC. Issued May 6, 2002. Corrected October 28, 2002.
- SEDAR 2-SAR2. 2003a. Complete Assessment and Review Report of South Atlantic Vermilion Snapper. Results of a series of workshops convened between October 2002 and February 2003. South Atlantic Fishery Management Council, One Southpark Circle #306, Charleston, SC 29414.
- SEDAR 2-SAR1. 2003b. Complete Assessment and Review Report of South Atlantic Black Sea Bass. Results of a series of workshops convened between October 2002 and February 2003. South Atlantic Fishery Management Council, One Southpark Circle #306, Charleston, SC 29414.
- SEDAR 4. 2004. Stock assessment of the deepwater snapper grouper complex in the South Atlantic. SEDAR 4 Stock Assessment Report 1. SEDAR4-SAR1. 2004.
- SEDAR Update #2. 2006. Stock Assessment of Red Porgy off the Southeastern United States. SEDAR Update Assessment Report of Assessment Workshop Beaufort, North Carolina April 4-5, 2006.
- Shaver, D.J. 1991. Feeding ecology of wild and head-started Kemp's ridley sea turtles in south Texas waters. Journal of Herpetology, 25:327.
- Simpfendorfer, CA. 2001. Essential habitat of the smalltooth sawfish, *Pristis pectinata*. Report to the National Fisheries Service's Protected Resources Division. Mote Marine Laboratory Technical Report (786) 21pp.

- Simpfendorfer, C.A. and T.R. Wiley. 2004. Determination of the distribution of Florida's remnant sawfish population, and identification of areas critical to their conservation. Mote Marine Laboratory Technical Report, July 2, 2004 37 pp.
- Soma, M. 1985. Radio biotelemetry system applied to migratory study of turtle. Journal of the Faculty of Marine Science and Technology, Tokai University, Japan, 21:47.
- Standora, E.A., J.R. Spotila, J.A. Keinath, and C.R. Shoop. 1984. Body temperatures, diving cycles, and movements of a subadult leatherback turtle, *Dermochelys coriacea*. Herpetologica, 40:169.
- Thayer, G.W. K.A. Bjorndal, J.C. Ogden, S.L. Williams, and J.C. Zieman. 1984. Role of large herbivores in seagrass communities. Estuaries, 7:351.
- Van Voorhees, D., J.W. Schlechte, D.M. Donaldson, T.R. Sminkey, K.J. Anson, J.R. O'Hop, M.D.B. Norris, J.A. Shepard, T. Van Devender, and R.F. Zales, II. 2000. The new Marine Fisheries Statistics Survey method for estimating charter boat fishing effort. Abstracts of the 53rd Annual Meeting of the Gulf and Caribbean Fisheries Institute.
- Van Dam, R. and C. Diéz. 1998. Home range of immature hawksbill turtles (*Eretmochelys imbricata*) at two Caribbean islands. Journal of Experimental Marine Biology and Ecology, 220(1):15-24.
- Vaughan, D.S. 1999. Population characteristics of the red porgy, *Pagrus pagrus*, from the U.S. Southern Atlantic Coast. Prepared for the South Atlantic Fishery Management Council. NMFS SEFSC Beaufort Lab. January 26.
- Vaughan, D. S., G. R. Huntsman, C. S. Manooch III, F. C. Rohde, and G. F. Ulrich. 1992. Population characteristics of the red porgy, *Pagrus pagrus*, stock off the Carolinas. Bulletin of Marine Science 50: 1-20.
- Walker, T.A. 1994. Post-hatchling dispersal of sea turtles. p. 79. In: Proceedings of the Australian Marine Turtle Conservation Workshop, Queensland Australia.
- Waters, J.R., R.J. Rhodes, W. Waltz, and R. Wiggers. 1997. Executive Summary: An economic survey of commercial reef fish boats along the U.S. South Atlantic Coast. USDC/NOAA/NMFS and SCDNR. November 1997. Unpublished.
- Witzell, W.N. 2002. Immature Atlantic loggerhead turtles (*Caretta caretta*): suggested changes to the life history model. Herpetological Review 33(4):266-269.
- Wyanski, D.M., D.B. White, and C.A. Barans. 2000. Growth, population age structure, and aspects of the reproductive biology of snowy grouper, *Epinephelus niveatus*, off North Carolina and South Carolina. Fish. Bull. 126:199-218.

12 Index

- Alternatives
 - comparison, 2-11–2-26
- Atlantic States Marine Fisheries Commission, I, 3-16, 10-1
- Community profiles, 3-49–3-74
- Effects
 - irretrievable, 4-111
 - irreversible, 4-111
 - unavoidable adverse, 4-108
- Essential fish habitat, I, 3-3, 4-109
- List of preparers, 9-1
- Magnuson-Stevens Fishery Conservation and Management Act, II, 1-1, 3-3, 3-16, 6-2, 7-1, 11-7
- Marine Resources Monitoring, Assessment, and Prediction Program (MARMAP), 3-2
- National Environmental Policy Act (NEPA), II, 4-78, 7-1, 8-6
- Optimum yield, 7-1
- Purpose and need, 1-3–1-17, 1-3–1-17
- Research needs, 4-73–4-77
- RIR, 5-1
- Scoping, III
- Sea turtles, III, XIII, XXVI, XXX, XXXI, XXXII, XLI, 1-3, 1-8, 1-16, 2-1, 2-6, 2-7, 2-8, 2-23, 2-24, 3-11, 3-12, 3-14, 4-54, 4-55, 4-56, 4-57, 4-58, 4-60, 4-61, 4-62, 4-80, 4-86, 4-92, 4-93, 4-102, 4-103, 4-105, 4-107, 4-109, 4-110, 4-111, 5-7, 7-5, 8-2, 8-7, 11-1, 11-2, 11-5, 11-11, 11-12
- Smalltooth sawfish, III, XIII, XXVI, XXX, XXXI, XLI, 1-3, 1-8, 1-16, 2-1, 2-6, 2-7, 2-23, 2-24, 3-11, 3-13, 3-14, 4-54, 4-55, 4-57, 4-58, 4-60, 4-61, 4-62, 4-80, 4-86, 4-92, 4-102, 4-103, 4-111, 5-1, 5-7, 6-2, 7-5, 8-2, 11-1, 11-7, 11-11
- Southeast Data, Assessment, and Review (SEDAR), II, 3-6

Appendix A. Alternatives the Council considered but eliminated from detailed study, and a brief discussion of the reasons for their elimination.

This section describes alternatives to the proposed actions that the Council considered in developing this document, but decided not to pursue. The description of each alternative is followed by a summary statement of why it was eliminated from more detailed summary.

Allocation Alternatives for Snowy Grouper

Rejected Alternative 1. The allocation would be based on ALS, MRFSS, and Headboat landings from the years 1999-2003. The allocation would be 96% commercial and 4% recreational.

Rationale for elimination: Rejected Alternative 1 is highly similar to another alternative that is included for detailed analysis. This alternative would set allocations to 95% commercial and 5% recreational based upon ALS, MRFSS, and Headboat landings data from 1986-2006. The Council believes that the differences in impacts between both alternatives are insignificant.

Rejected Alternative 2. Define allocations for snowy grouper based upon landings from the data used for SEDAR 4 (2004).

Sub-alternative 2a. The allocation would be based on landings from the years 1992-2002. The allocation would be 90% commercial and 10% recreational.

Sub-alternative 2b. The allocation would be based on landings from the years 1999-2002. The allocation would be 93% commercial and 7% recreational.

Rationale for elimination:

SEDAR incorporates the level of discards and discard mortality into the total landings. As such, a particular sector's allocation would increase with an increase in discard mortality. The Council felt that it was "unfair" to reward a sector for higher discard mortality.

Rejected Alternative 3. Define allocations for snowy grouper as 100% commercial and 0% recreational. This is a temporary allocation and will undergo periodic review.

Rationale for elimination:

The Council felt that it would be unfair to fully exclude the recreational sector from the snowy grouper fishery, especially since there has been historical participation in this fishery.

Allocation Alternatives for Red Porgy

Rejected Alternative 4. The allocation would be based on ALS, MRFSS, and Headboat landings from the years 1986-1998. The allocation would be 70% commercial and 30% recreational.

Rationale for elimination: Rejected Alternative 4 is highly similar to another alternative that is included for detailed analysis. This alternative would set allocations to 68% commercial and 32% recreational based upon ALS, MRFSS, and Headboat landings data from 1986-2005. The Council believes that the differences in impacts between both alternatives are insignificant.

Rejected Alternative 5. Define allocations for red porgy based upon landings from the data used for Red Porgy SEDAR Update (2006).

Sub-alternative 5a. The allocation would be based on landings from the years 1986-1998. The allocation would be 75% commercial and 25% recreational.

Sub-alternative 5b. The allocation would be based on landings from the years 1986-2004. The allocation would be 72% commercial and 28% recreational.

Sub-alternative 5c. The allocation would be based on landings from the years 1999-2004. The allocation would be 43% commercial and 57% recreational.

Rationale for elimination:

SEDAR incorporates the level of discards and discard mortality into the total landings. As such, a particular sector's allocation would increase with an increase in discard mortality. The Council felt that it was "unfair" to reward a sector for higher discard mortality.

Appendix B. Glossary

Allowable Biological Catch (ABC): Maximum amount of fish stock than can be harvested without adversely affecting recruitment of other components of the stock. The ABC level is typically higher than the total allowable catch, leaving a buffer between the two.

ALS: Accumulative Landings System. NMFS database which contains commercial landings reported by dealers.

Biomass: Amount or mass of some organism, such as fish.

B_{MSY}: Biomass of population achieved in long-term by fishing at F_{MSY}.

Bycatch: Fish harvested in a fishery, but not sold or kept for personal use. Bycatch includes economic discards and regulatory discards, but not fish released alive under a recreational catch and release fishery management program.

Caribbean Fishery Management Council (CFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The CFMC develops fishery management plans for fisheries off the coast of the U.S. Virgin Islands and the Commonwealth of Puerto Rico.

Catch Per Unit Effort (CPUE): The amount of fish captured with an amount of effort. CPUE can be expressed as weight of fish captured per fishing trip, per hour spent at sea, or through other standardized measures.

Charter Boat: A fishing boat available for hire by recreational anglers, normally by a group of anglers for a short time period.

Cohort: Fish born in a given year. (See year class.)

Control Date: Date established for defining the pool of potential participants in a given management program. Control dates can establish a range of years during which a potential participant must have been active in a fishery to qualify for a quota share.

Constant Catch Rebuilding Strategy: A rebuilding strategy where the allowable biological catch of an overfished species is held constant until stock biomass reaches B_{MSY} at the end of the rebuilding period.

Constant F Rebuilding Strategy: A rebuilding strategy where the fishing mortality of an overfished species is held constant until stock biomass reached B_{MSY} at the end of the rebuilding period.

Directed Fishery: Fishing directed at a certain species or species group.

Discards: Fish captured, but released at sea.

Discard Mortality Rate: The percent of total fish discarded that do not survive being captured and released at sea.

Derby: Fishery in which the TAC is fixed and participants in the fishery do not have individual quotas. The fishery is closed once the TAC is reached, and participants attempt to maximize their harvests as quickly as possible. Derby fisheries can result in capital stuffing and a race for fish.

Effort: The amount of time and fishing power (i.e., gear size, boat size, horsepower) used to harvest fish.

Exclusive Economic Zone (EEZ): Zone extending from the shoreline out to 200 nautical miles in which the country owning the shoreline has the exclusive right to conduct certain activities such as fishing. In the United States, the EEZ is split into state waters (typically from the shoreline out to 3 nautical miles) and federal waters (typically from 3 to 200 nautical miles).

Exploitation Rate: Amount of fish harvested from a stock relative to the size of the stock, often expressed as a percentage.

F: Fishing mortality.

Fecundity: A measurement of the egg-producing ability of fish at certain sizes and ages.

Fishery Dependent Data: Fishery data collected and reported by fishermen and dealers.

Fishery Independent Data: Fishery data collected and reported by scientists who catch the fish themselves.

Fishery Management Plan: Management plan for fisheries operating in the federal produced by regional fishery management councils and submitted to the Secretary of Commerce for approval.

Fishing Effort: Usually refers to the amount of fishing. May refer to the number of fishing vessels, amount of fishing gear (nets, traps, hooks), or total amount of time vessels and gear are actively engaged in fishing.

Fishing Mortality: A measurement of the rate at which fish are removed from a population by fishing. Fishing mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous is that percentage of fish dying at any one time.

Fishing Power: Measure of the relative ability of a fishing vessel, its gear, and its crew to catch fishes, in reference to some standard vessel, given both vessels are under identical conditions.

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_{OY}: Fishing mortality that will produce OY under equilibrium conditions and a corresponding biomass of B_{OY}. Usually expressed as the yield at 85% of F_{MSY}, yield at 75% of F_{MSY}, or yield at 65% of F_{MSY}.

F_{MSY}: Fishing mortality that if applied constantly, would achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}

Fork Length (FL): The length of a fish as measured from the tip of its snout to the fork in its tail.

Gear restrictions: Limits placed on the type, amount, number, or techniques allowed for a given type of fishing gear.

Growth Overfishing: When fishing pressure on small fish prevents the fishery from producing the maximum poundage. Condition in which the total weight of the harvest from a fishery is improved when fishing effort is reduced, due to an increase in the average weight of fishes.

Gulf of Mexico Fishery Management Council (GFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The GFMC develops fishery management plans for fisheries off the coast of Texas, Louisiana, Mississippi, Alabama, and the west coast of Florida.

Head Boat: A fishing boat that charges individual fees per recreational angler onboard.

Highgrading: Form of selective sorting of fishes in which higher value, more marketable fishes are retained, and less marketable fishes, which could legally be retained are discarded.

Individual Fishing Quota (IFQ): Fishery management tool that allocates a certain portion of the TAC to individual vessels, fishermen, or other eligible recipients.

Longline: Fishing method using a horizontal mainline to which weights and baited hooks are attached at regular intervals. Gear is either fished on the bottom or in the water column.

Magnuson-Stevens Fishery Conservation and Management Act: Federal legislation responsible for establishing the fishery management councils and the mandatory and discretionary guidelines for federal fishery management plans.

Marine Recreational Fisheries Statistics Survey (MRFSS): Survey operated by NMFS in cooperation with states that collects marine recreational data.

Maximum Fishing Mortality Threshold (MFMT): The rate of fishing mortality above which a stock's capacity to produce MSY would be jeopardized.

Maximum Sustainable Yield (MSY): The largest long-term average catch that can be taken continuously (sustained) from a stock or stock complex under average environmental conditions.

Minimum Stock Size Threshold (MSST): The biomass level below which a stock would be considered overfished.

Modified F Rebuilding Strategy: A rebuilding strategy where fishing mortality is changed as stock biomass increases during the rebuilding period.

Multispecies fishery: Fishery in which more than one species is caught at the same time and location with a particular gear type.

National Marine Fisheries Service (NMFS): Federal agency within NOAA responsible for overseeing fisheries science and regulation.

National Oceanic and Atmospheric Administration: Agency within the Department of Commerce responsible for ocean and coastal management.

Natural Mortality (M): A measurement of the rate at which fish are removed from a population by natural causes. Natural mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous is that percentage of fish dying at any one time.

Optimum Yield (OY): The amount of catch that will provide the greatest overall benefit to the nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems.

Overfished: A stock or stock complex is considered overfished when stock biomass falls below the minimum stock size threshold (MSST) (e.g., current biomass < MSST = overfished).

Overfishing: Overfishing occurs when a stock or stock complex is subjected to a rate of fishing mortality that exceeds the maximum fishing mortality threshold (e.g., current fishing mortality rate > MFMT = overfishing).

Quota: Percent or annual amount of fish that can be harvested.

Recruitment (R): Number or percentage of fish that survives from hatching to a specific size or age.

Recruitment Overfishing: The rate of fishing above which the recruitment to the exploitable stock becomes significantly reduced. This is characterized by a greatly reduced spawning stock, a decreasing proportion of older fish in the catch, and generally very low recruitment year after year.

Scientific and Statistical Committee (SSC): Fishery management advisory body composed of federal, state, and academic scientists, which provides scientific advice to a fishery management council.

Selectivity: The ability of a type of gear to catch a certain size or species of fish.

South Atlantic Fisheries Management Council (SAFMC): One of eight regional councils mandated in the Magnuson-Stevens Fishery Conservation and Management Act to develop management plans for fisheries in federal waters. The SAFMC develops fishery management plans for fisheries off North Carolina, South Carolina, Georgia, and the east coast of Florida.

Spawning Potential Ratio (Transitional SPR): Formerly used in overfished definition. The number of eggs that could be produced by an average recruit in a fished stock divided by the number of eggs that could be produced by an average recruit in an unfished stock. SPR can also be expressed as the spawning stock biomass per recruit (SSBR) of a fished stock divided by the SSBR of the stock before it was fished.

% Spawning Per Recruit (Static SPR): Formerly used in overfishing determination. The maximum spawning per recruit produced in a fished stock divided by the maximum spawning per recruit, which occurs under the conditions of no fishing. Commonly abbreviated as %SPR.

Spawning Stock Biomass (SSB): The total weight of those fish in a stock which are old enough to spawn.

Spawning Stock Biomass Per Recruit (SSBR): The spawning stock biomass divided by the number of recruits to the stock or how much spawning biomass an average recruit would be expected to produce.

Total Allowable Catch (TAC): The total amount of fish to be taken annually from a stock or stock complex. This may be a portion of the Allowable Biological Catch (ABC) that takes into consideration factors such as bycatch.

Total Length (TL): The length of a fish as measured from the tip of the snout to the tip of the tail.

Appendix C. Essential Fish Habitat and Movement towards Ecosystem-Based Management

The Council, using the Essential Fish Habitat Plan as the cornerstone, adopted a strategy to facilitate the move to an ecosystem-based approach to fisheries management in the region. This approach required a greater understanding of the South Atlantic ecosystem and the complex relationships among humans, marine life and the environment including essential fish habitat. To accomplish this, a process was undertaken to facilitate the evolution of the Habitat Plan into a Fishery Ecosystem Plan, thereby providing more comprehensive understanding of the biological, social and economic impacts of management necessary to initiate the transition from single species management to ecosystem-based management in the region.

The development of a South Atlantic Council Fishery Ecosystem Plan (FEP) (SAFMC, 2008a) provided the opportunity to expand the regional habitat and ecosystem network of partners necessary to compile, review and consolidate available habitat, biological, social, and economic fishery and resource information for fisheries in the South Atlantic ecosystem. Development of this source document expands and significantly updates habitat and species information presented in the SAFMC Habitat Plan (SAFMC, 1998) incorporating comprehensive details of all managed species (SAFMC, MAFMC, South Atlantic States, ASMFC, and NOAA Fisheries Highly Migratory Species and Protected Species) including their biology and food web, and economic and social characteristics of the fisheries prosecuted in those resources. In addition, development of the FEP has initiated coordination and integration of information from other developing regional initiatives including but not limited to the Southeast Coastal Ocean Observing Regional Association (SECOORA) and the Southeast Aquatic Resources Partnership (SARP) under the National Habitat Action Plan. The FEP development process has provided the Council with the opportunity to build on the existing comprehensive compendium of the habitat, fisheries, and ecosystem information in the South Atlantic Council's Habitat Plan. This effort has resulted in the development of a FEP that describes the South Atlantic Ecosystem and the impact of the fisheries on the environment. The FEP also updates available information on designated Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern, expands descriptions of biology and status of managed species, presents ecosystem considerations for managed species, and describes the social and economic characteristics of the fisheries in the region. In addition, it expands the discussion and description of existing comprehensive habitat research needs to include all biological, social, and economic research needed to fully address ecosystem-based management. This FEP 1 serves as a living source document of biological, economic, and social information for all Fishery Management Plans (FMP). Future Environmental Assessments and Environmental Impact Statements associated with subsequent amendments to Council FMPs will draw from or cite by reference the FEP.

The Fishery Ecosystem Plan for the South Atlantic Region encompasses the following volume structure:

FEP Volume I Introduction and Overview of FEP for the South Atlantic Region

FEP Volume II	South Atlantic Habitats and Species
FEP Volume III	South Atlantic Human and Institutional Environment
FEP Volume IV	Threats to South Atlantic Ecosystem and Recommendations
FEP Volume V	South Atlantic Research Programs and Data Needs
FEP Volume VI	References and Appendices

Comprehensive Ecosystem Amendment (CEA) 1 (SAFMC 2008b) is supported by this FEP and updates EFH and EFH-HAPC information and addresses the Final EFH Rule (e.g., GIS presented for all EFH and EFH-HAPCs). Management actions proposed in the CEA propose the establishment of deepwater Coral HAPCs to protect what is thought to be the largest continuous distribution (>25,000 square miles) of pristine, untouched, deepwater coral ecosystems in the world.

The CEA development process serves as the vehicle to move the Council to a new era of ecosystem-based management. While this first CEA focuses on deepwater coral ecosystem conservation and EFH related action, future FMP actions will be addressed by reviewing and developing the suite of potential management needs to initiate preparation of a new CEA to address all FMP amendment needs in the coming year. The Council has already adopted an annual scoping process that will facilitate this effort in the future. This effort will not only draw from and build on the biological, economic, and social information presented in the FEP, but will also address possible issues or future management actions identified in the FEP. This process will provide the Council with the opportunity to evaluate needed actions across multiple fisheries, evaluate the impacts of management, and facilitate development of FMP amendments or measures that could apply across FMPs. The Council, through the combined development of the first FEP and first CEA, establishes a process to facilitate the transition from single species to ecosystem-based management in the South Atlantic Region.

EFH and EFH-HAPC Designations Translated to Cooperative Habitat Policy Development and Protection

The Council actively comments on non-fishing projects or policies that may impact fish habitat. Appendix A of the Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region (SAFMC 1998b) outlines the Council's comment and policy development process and the establishment of a four-state Habitat Advisory Panel. Members of the Habitat Advisory Panel serve as the Council's habitat contacts and professionals in the field. AP members bring projects to the Council's attention, draft comment letters, and attend public meetings. With guidance from the Advisory Panel, the Council has developed and approved policies on:

1. Energy exploration, development, transportation and hydropower re-licensing;
2. Beach dredging and filling and large-scale coastal engineering;
3. Protection and enhancement of submerged aquatic vegetation;
4. Alterations to riverine, estuarine and nearshore flows; and
5. Marine aquaculture.

NOAA Fisheries, State and other Federal agencies apply EFH and EFH-HAPC designations and protection policies in the day-to-day permit review process. In addition

to the workshop process described above the revision and updating of existing habitat policies and the development of new policies is being coordinated with core agency representatives on the Habitat and Coral Advisory Panels. Existing policies are included at the end of this Appendix.

South Atlantic Bight Ecopath Model

The Council is developing a food web model (Ecopath with Ecosim) to characterize the ecological relationships of South Atlantic species, including those managed by the Council. This effort will help the Council and cooperators in identifying available information and data gaps while providing insight into ecosystem function. More importantly, the model will aid in identifying research necessary to better define populations, fisheries and their interrelationships. The model will include the area between Cape Hatteras, North Carolina, through the Florida Keys and extend from the upper wetlands to the 300-meter isobath.

Cooperative Research to Support Ecosystem-Based Management

Regional Internet Map Server for Coral and Live/Hard Bottom Habitat and South Atlantic Habitat/Ecosystem Web Site

The South Atlantic Council and the Florida Fish and Wildlife Research Institute (FWRI) developed a Habitat and Ecosystem web site. The website hosts an Internet Map Server (IMS) application that provides access to downloadable GIS data and metadata, imagery, and documents related to EFH, EFH-HAPCs, and coral and benthic habitats across the South Atlantic Region (the Carolinas, Georgia, and Florida). The IMS is an effective tool for displaying, sharing and querying information related to hard bottom and EFH across the South Atlantic coast. The video and still imagery archives served from this site provide researchers a unique opportunity to observe and monitor the health and abundance of coral and benthic habitats throughout the South Atlantic region. The IMS also serves as a repository of historic and current information to be used by managers, scientists and the general public.

The Habitat/Ecosystem website was designed to track the Council's Action Plan for Ecosystem-Based Management. The latter was designed to address the ecosystem-based management principles recommended by the Ecosystem Principles Advisory Panel in their 1999 report to Congress. Thus, visitors to the site can fully appreciate the Council's efforts in moving towards this new management approach and gain access to more detailed information as to the actions the Council is taking to fully embrace ecosystem-based fisheries management in the South Atlantic region. The website can be accessed through the Council's main website at www.safmc.net.

Essential Fish Habitat and Essential Fish Habitat Areas of Particular Concern

Following is a summary of the current South Atlantic Council's EFH and EFH-HAPCs. Information supporting their designation is being updated (pursuant to the EFH Final Rule) in the Council's Fishery Ecosystem Plan and Comprehensive Ecosystem Amendment:

Snapper Grouper FMP

Essential fish habitat for snapper-grouper species 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 600 feet (but to at least 2000 feet for wreckfish) where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for larval survival and growth up to and including settlement. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine dependent and nearshore snapper-grouper species, essential fish habitat includes areas inshore of the 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.

Areas which meet the criteria for 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; nearshore 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).

Shrimp FMP

For penaeid shrimp, Essential Fish Habitat includes inshore estuarine nursery areas, offshore marine habitats used for spawning and growth to maturity, and all interconnecting water bodies as described in the Habitat Plan. Inshore nursery areas include tidal freshwater (palustrine), estuarine, and marine emergent wetlands (e.g., intertidal marshes); tidal palustrine forested areas; mangroves; tidal freshwater, estuarine, and marine submerged aquatic vegetation (e.g., seagrass); and subtidal and intertidal non-vegetated flats. This applies from North Carolina through the Florida Keys.

For rock shrimp, essential fish habitat consists of offshore terrigenous and biogenic sand bottom habitats from 18 to 182 meters in depth with highest concentrations occurring between 34 and 55 meters. This applies for all areas from North Carolina through the Florida Keys. Essential fish habitat includes the shelf current systems near Cape Canaveral, Florida which provide major transport mechanisms affecting planktonic larval rock shrimp. These currents keep larvae on the Florida Shelf and may transport them

inshore in spring. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse rock shrimp larvae.

Essential fish habitat for royal red shrimp include the upper regions of the continental slope from 180 meters (590 feet) to about 730 meters (2,395 feet), with concentrations found at depths of between 250 meters (820 feet) and 475 meters (1,558 feet) over blue/black mud, sand, muddy sand, or white calcareous mud. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse royal red shrimp larvae.

Areas which meet the criteria for EFH-HAPCs for penaeid shrimp include all coastal inlets, all state-designated nursery habitats of particular importance to shrimp (for example, in North Carolina this would include all Primary Nursery Areas and all Secondary Nursery Areas), and state-identified overwintering areas.

Coastal Migratory Pelagics FMP

Essential fish habitat for coastal migratory pelagic species includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone, but from the Gulf stream shoreward, including *Sargassum*. In addition, all coastal inlets, all state-designated nursery habitats of particular importance to coastal migratory pelagics (for example, in North Carolina this would include all Primary Nursery Areas and all Secondary Nursery Areas).

For Cobia essential fish habitat also includes high salinity bays, estuaries, and seagrass habitat. In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse coastal migratory pelagic larvae.

For king and Spanish mackerel and cobia essential fish habitat occurs in the South Atlantic and Mid-Atlantic Bights.

Areas which meet the criteria for EFH-HAPCs include sandy shoals of Capes Lookout, Cape Fear, and Cape Hatteras from shore to the ends of the respective shoals, but shoreward of the Gulf stream; The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and Hurl Rocks (South Carolina); The Point off Jupiter Inlet (Florida); *Phragmatopoma* (worm reefs) reefs off the central east coast of Florida; nearshore hard bottom south of Cape Canaveral; The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The “Wall” off of the Florida Keys; Pelagic *Sargassum*; and Atlantic coast estuaries with high numbers of Spanish mackerel and cobia based on abundance data from the ELMR Program. Estuaries meeting this criteria for Spanish mackerel include Bogue Sound and New River, North Carolina; Bogue Sound, North Carolina (Adults May-September salinity >30 ppt); and New River, North Carolina (Adults May-October salinity >30 ppt). For Cobia they include Broad River, South Carolina; and Broad River, South Carolina (Adults & juveniles May-July salinity >25ppt).

Golden Crab FMP

Essential fish habitat for golden crab includes the U.S. Continental Shelf from Chesapeake Bay south through the Florida Straits (and into the Gulf of Mexico). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse golden crab larvae. The detailed description of seven essential fish habitat types (a flat foraminiferan ooze habitat; distinct mounds, primarily of dead coral; ripple habitat; dunes; black pebble habitat; low outcrop; and soft-bioturbated habitat) for golden crab is provided in Wenner et al. (1987). There is insufficient knowledge of the biology of golden crabs to identify spawning and nursery areas and to identify HAPCs at this time. As information becomes available, the Council will evaluate such data and identify HAPCs as appropriate through the framework

Spiny Lobster FMP

Essential fish habitat for spiny lobster includes nearshore shelf/oceanic waters; shallow subtidal bottom; seagrass habitat; unconsolidated bottom (soft sediments); coral and live/hard bottom habitat; sponges; algal communities (*Laurencia*); and mangrove habitat (prop roots). In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse spiny lobster larvae.

Areas which meet the criteria for EFH-HAPCs for spiny lobster include Florida Bay, Biscayne Bay, Card Sound, and coral/hard bottom habitat from Jupiter Inlet, Florida through the Dry Tortugas, Florida.

Coral, Coral Reefs, and Live/Hard Bottom Habitats FMP

Essential fish habitat for corals (stony corals, octocorals, and black corals) must incorporate habitat for over 200 species. EFH for corals include the following:

- A. Essential fish habitat for hermatypic stony corals includes rough, hard, exposed, stable substrate from Palm Beach County south through the Florida reef tract in subtidal to 30 m depth, subtropical (15°-35° C), oligotrophic waters with high (30-35‰) salinity and turbidity levels sufficiently low enough to provide algal symbionts adequate sunlight penetration for photosynthesis. Ahermatypic stony corals are not light restricted and their essential fish habitat includes defined hard substrate in subtidal to outer shelf depths throughout the management area.
- B. Essential fish habitat for *Antipatharia* (black corals) includes rough, hard, exposed, stable substrate, offshore in high (30-35‰) salinity waters in depths exceeding 18 meters (54 feet), not restricted by light penetration on the outer shelf throughout the management area.
- C. Essential fish habitat for octocorals excepting the order Pennatulacea (sea pens and sea pansies) includes rough, hard, exposed, stable substrate in subtidal to outer shelf depths within a wide range of salinity and light penetration throughout the management area.

- D. Essential fish habitat for Pennatulacea (sea pens and sea pansies) includes muddy, silty bottoms in subtidal to outer shelf depths within a wide range of salinity and light penetration.

Areas which meet the criteria for EFH-HAPCs for coral, coral reefs, and live/hard bottom include: The 10-Fathom Ledge, Big Rock, and The Point (North Carolina); Hurl Rocks and The Charleston Bump (South Carolina); Gray's Reef National Marine Sanctuary (Georgia); The *Phragmatopoma* (worm reefs) reefs off the central east coast of Florida; *Oculina* Banks off the east coast of Florida from Ft. Pierce to Cape Canaveral; nearshore (0-4 meters; 0-12 feet) hard bottom off the east coast of Florida from Cape Canaveral to Broward County); offshore (5-30 meter; 15-90 feet) hard bottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary.

Dolphin and Wahoo FMP

EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum*. This EFH definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the South Atlantic Council's Comprehensive Habitat Amendment (SAFMC, 1998b) (dolphin was included within the Coastal Migratory Pelagics FMP).

Areas which meet the criteria for EFH-HAPCs for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and The Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic *Sargassum*. This EFH-HAPC definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the South Atlantic Council's Comprehensive Habitat Amendment (dolphin was included within the Coastal Migratory Pelagics FMP).

Actions Implemented That Protect EFH and EFH-HAPCs Snapper Grouper FMP

- Prohibited the use of the following gears to protect habitat: bottom longlines in the EEZ inside of 50 fathoms or anywhere south of St. Lucie Inlet Florida, fish traps, bottom tending (roller-rig) trawls on live bottom habitat, and entanglement gear.
- Established the *Oculina* Experimental Closed Area where the harvest or possession of all species in the snapper grouper complex is prohibited

Shrimp FMP

- Prohibition of rock shrimp trawling in a designated area around the *Oculina* Bank,
- Mandatory use of bycatch reduction devices in the penaeid shrimp fishery,
- Mandatory Vessel Monitoring System (VMS) in the Rock Shrimp Fishery.
- A mechanism that provides for the concurrent closure of the EEZ to penaeid shrimping if environmental conditions in state waters are such that the overwintering spawning stock is severely depleted.

***Sargassum* FMP**

- Prohibited all harvest and possession of *Sargassum* from the South Atlantic EEZ south of the latitude line representing the North Carolina/South Carolina border (34° North Latitude).
- Prohibited all harvest of *Sargassum* from the South Atlantic EEZ within 100 miles of shore between the 34° North Latitude line and the Latitude line representing the North Carolina/Virginia border.
- Harvest of *Sargassum* from the South Atlantic EEZ is limited to the months of November through June.
- Established an annual Total Allowable Catch (TAC) of 5,000 pounds landed wet weight.
- Required that an official observer be present on each *Sargassum* harvesting trip. Require that nets used to harvest *Sargassum* be constructed of four inch stretch mesh or larger fitted to a frame no larger than 4 feet by 6 feet.

Coastal Migratory Pelagics FMP

- Prohibited of the use of drift gill nets in the coastal migratory pelagic fishery;

Golden Crab FMP

- In the northern zone golden crab traps can only be deployed in waters deeper than 900 feet; in the middle and southern zones traps can only be deployed in waters deeper than 700 feet. Northern zone - north of the 28°N. latitude to the North Carolina/Virginia border; Middle zone - 28°N. latitude to 25°N. latitude; and Southern zone - south of 25°N. latitude to the border between the South Atlantic and Gulf of Mexico Fishery Management Councils.

Coral, Coral Reefs and Live/Hard Bottom FMP

- Established an optimum yield of zero and prohibiting all harvest or possession of these resources which serve as essential fish habitat to many managed species.
- Designated of the *Oculina* Bank Habitat Area of Particular Concern
- Expanded the *Oculina* Bank Habitat Area of Particular Concern (HAPC) to an area bounded to the west by 80°W. longitude, to the north by 28°30' N. latitude, to the south by 27°30' N. latitude, and to the east by the 100 fathom (600 feet) depth contour.
- Established the following two Satellite *Oculina* HAPCs: (1) Satellite *Oculina* HAPC #1 is bounded on the north by 28°30'N. latitude, on the south by 28°29'N. latitude, on the east by 80°W. longitude, and on the west by 80°3'W. longitude, and (2) Satellite *Oculina* HAPC #2 is bounded on the north by 28°17'N. latitude, on the south by 28°16'N. latitude, on the east by 80°W. longitude, and on the west by 80°3'W. longitude.
- Prohibited the use of all bottom tending fishing gear and fishing vessels from anchoring or using grapples in the *Oculina* Bank HAPC.
- Established a framework procedure to modify or establish Coral HAPCs.

South Atlantic Council Policies for Protection and Restoration of Essential Fish Habitat.

SAFMC Habitat and Environmental Protection Policy

In recognizing that species are dependent on the quantity and quality of their essential habitats, it is the policy of the SAFMC to protect, restore, and develop habitats upon which fisheries species depend; to increase the extent of their distribution and abundance; and to improve their productive capacity for the benefit of present and future generations. For purposes of this policy, “habitat” is defined as the physical, chemical, and biological parameters that are necessary for continued productivity of the species that is being managed. The objectives of the SAFMC policy will be accomplished through the recommendation of no net loss or significant environmental degradation of existing habitat. A long-term objective is to support and promote a net-gain of fisheries habitat through the restoration and rehabilitation of the productive capacity of habitats that have been degraded, and the creation and development of productive habitats where increased fishery production is probable. The SAFMC will pursue these goals at state, Federal, and local levels. The Council shall assume an aggressive role in the protection and enhancement of habitats important to fishery species, and shall actively enter Federal, decision-making processes where proposed actions may otherwise compromise the productivity of fishery resources of concern to the Council.

SAFMC Policy Statement Concerning Beach Dredging and Filling and Large-Scale Coastal Engineering

Policy Context

This document establishes the policies of the South Atlantic Fishery Management Council (SAFMC) regarding protection of the essential fish habitats (EFH) and habitat areas of particular concern (EFH-HAPCs) impacted by beach dredge and fill activities, and related large-scale coastal engineering projects. The policies are designed to be consistent with the overall habitat protection policies of the SAFMC as formulated and adopted in the Habitat Plan (SAFMC, 1998a) and the Comprehensive EFH Amendment (SAFMC, 1998b).

The findings presented below assess the threats to EFH potentially posed by activities related to the large-scale dredging and disposal of sediments in the coastal ocean and adjacent habitats, and the processes whereby those resources are placed at risk. The policies established in this document are designed to avoid, minimize and offset damage caused by these activities, in accordance with the general habitat policies of the SAFMC as mandated by law.

EFH at Risk from Beach Dredge and Fill Activities

The SAFMC finds:

- 1) In general, the array of large-scale and long-term beach dredging projects and related disposal activities currently being considered for the United States

southeast together constitute a real and significant threat to EFH under the jurisdiction of the SAFMC.

- 2) The cumulative effects of these projects have not been adequately assessed, including impacts on public trust marine and estuarine resources, use of public trust beaches, public access, state and federally protected species, state critical habitat, SAFMC-designated EFH and EFH-HAPCs.
- 3) Individual beach dredge and fill projects and related large-scale coastal engineering activities rarely provide adequate impact assessments or consideration of potential damage to fishery resources under state and federal management. Historically, emphasis has been placed on the logistics of dredging and economics, with environmental considerations dominated by compliance with the Endangered Species Act for sea turtles, piping plovers and other listed organisms. There has been little or no consideration of hundreds of other species affected, many with direct fishery value.
- 4) Opportunities to avoid or minimize impacts of beach dredge and fill activities on fishery resources, and offsets for unavoidable impacts have rarely been proposed or implemented. Monitoring is rarely adequate to develop statistically appropriate impact evaluations.
- 5) Large-scale beach dredge and fill activities have the potential to impact a variety of habitats across the shelf, including:
 - a) waters and benthic habitats near the dredging sites
 - b) waters between dredging and filling sites
 - c) waters and benthic habitats in or near the fill sites, and
 - d) waters and benthic habitats potentially affected as sediments move subsequent to deposition in fill areas.
- 6) Certain nearshore habitats are particularly important to the long-term viability of commercial and recreational fisheries under SAFMC management, and potentially threatened by large-scale, long-term or frequent disturbance by dredging and filling:
 - a) the swash and surf zones and beach-associated bars
 - b) underwater soft-sediment topographic features
 - c) onshore and offshore coral reefs, hardbottom and worm reefs
 - d) inlets
- 7) Large sections of South Atlantic waters potentially affected by these projects, both individually and collectively, have been identified as EFH or EFH-HAPC by the SAFMC, as well as the Mid-Atlantic Fishery Management Council (MAFMC) in the case of North Carolina. Potentially Affected species and their EFH under federal management include (SAFMC, 1998b):

- a) summer flounder (various nearshore waters, including the surf zone and inlets; certain offshore waters)
- b) bluefish (various nearshore waters, including the surf zone and inlets)
- c) red drum (ocean high-salinity surf zones and unconsolidated bottoms nearshore waters)
- d) many snapper and grouper species (live hardbottom from shore to 600 feet, and – for estuarine-dependent species [e.g., gag grouper and gray snapper] – unconsolidated bottoms and live hardbottoms to the 100 foot contour).
- e) black sea bass (various nearshore waters, including unconsolidated bottom and live hardbottom to 100 feet, and hardbottoms to 600 feet)
- f) penaeid shrimp (offshore habitats used for spawning and growth to maturity, and waters connecting to inshore nursery areas, including the surf zone and inlets)
- g) coastal migratory pelagics [e.g., king mackerel, Spanish mackerel] (sandy shoals of capes and bars, barrier island ocean-side waters from the surf zone to the shelf break inshore of the Gulf Stream; all coastal inlets)
- h) corals of various types (hard substrates and muddy, silt bottoms from the subtidal to the shelf break)
- i) areas identified as EFH for Highly Migratory Species (HMS) managed by the Secretary of Commerce (e.g., sharks: inlets and nearshore waters, including pupping and nursery grounds)

In addition, hundreds of species of crustaceans, mollusks, and annelids that are not directly managed, but form the critical prey base for most managed species, are killed or directly affected by large dredge and fill projects.

- 8) Beach dredge and fill projects also potentially threaten important habitats for anadromous species under federal, interstate and state management (in particular, inlets and offshore overwintering grounds), as well as essential overwintering grounds and other critical habitats for weakfish and other species managed by the Atlantic States Marine Fisheries Commission (ASMFC) and the states. The SAFMC also identified essential habitats of anadromous and catadromous species in the region (inlets and nearshore waters).
- 9) Many of the habitats potentially affected by these projects have been identified as EFH-HAPCs by the SAFMC. The specific fishery management plan is provided in parentheses:
 - a) all nearshore hardbottom areas (SAFMC, snapper grouper).
 - b) all coastal inlets (SAFMC, penaeid shrimps, red drum, and snapper grouper).
 - c) near-shore spawning sites (SAFMC, penaeid shrimps, and red drum).
 - d) benthic *Sargassum* (SAFMC, snapper grouper).
 - e) from shore to the ends of the sandy shoals of Cape Lookout, Cape Fear, and Cape Hatteras, North Carolina; Hurl Rocks, South Carolina; *Phragmatopora* (worm reefs) reefs off the central coast of Florida and nearshore hardbottom south of Cape Canaveral (SAFMC, coastal migratory pelagics).

- f) Atlantic coast estuaries with high numbers of Spanish mackerel and cobia from ELMR, to include Bogue Sound, New River, North Carolina; Broad River, South Carolina (SAFMC, coastal migratory pelagics).
 - g) Florida Bay, Biscayne Bay, Card Sound, and coral hardbottom habitat from Jupiter Inlet through the Dry Tortugas, Florida (SAFMC, Spiny Lobster)
 - h) Hurl Rocks (South Carolina), The *Phragmatopoma* (worm reefs) off central east coast of Florida, nearshore (0-4 meters; 0-12 feet) hardbottom off the east coast of Florida from Cape Canaveral to Broward County; offshore (5-30 meters; 15-90 feet) hardbottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary (SAFMC, Coral, Coral Reefs and Live Hardbottom Habitat).
 - i) EFH-HAPCs designated for HMS species (e.g., sharks) in the South Atlantic region (NMFS, Highly Migratory Species).
- 10) Habitats likely to be affected by beach dredge and fill projects include many recognized in state-level fishery management plans. Examples of these habitats include Critical Habitat Areas established by the North Carolina Marine Fisheries Commission, either in FMPs or in Coastal Habitat Protection Plans (CHAs).
- 11) Recent work by scientists in east Florida has documented important habitat values for nearshore, hardbottom habitats often buried by beach dredging projects, is used by over 500 species of fishes and invertebrates, including juveniles of many reef fishes. Equivalent scientific work is just beginning in other South Atlantic states, but life histories suggest that similar habitat use patterns will be found.

Threats to Marine and Estuarine Resources from Beach Dredge and Fill Activities and Related Large Coastal Engineering Projects

The SAFMC finds that beach dredge and fill activities and related large-scale coastal engineering projects (including inlet alteration projects) and disposal of material for navigational maintenance, threaten or potentially threaten EFH through the following mechanisms:

- 1) Direct mortality and displacement of organisms at and near sediment dredging sites.
- 2) Direct mortality and displacement of organisms at initial sediment fill sites.
- 3) Elevated turbidity and deposition of fine sediments down-current from dredging sites.
- 4) Alteration of seafloor topography and associated current and waves patterns and magnitudes at dredging areas.
- 5) Alteration of seafloor sediment size-frequency distributions at dredging sites, with secondary effects on benthos at those sites.
- 6) Elevated turbidity in and near initial fill sites, especially in the surf zone, and deposition of fine sediment down-current from initial fill sites (ASMFC, 2002).
- 7) Alteration of nearshore topography and current and wave patterns and magnitudes associated with fill.

- 8) Movement of deposited sediment away from initial fill sites, especially onto hardbottoms.
- 9) Alteration of large-scale sediment budgets, sediment movement patterns and feeding and other ecological relationships, including the potential for cascading disturbance effects.
- 10) Alteration of large-scale movement patterns of water, with secondary effects on water quality and biota.
- 11) Alteration of movement patterns and successful inlet passage for larvae, post-larvae, juveniles and adults of marine and estuarine organisms.
- 12) Alteration of long-term shoreline migration patterns (inducing further ecological cascades with consequences that are difficult to predict).
- 13) Exacerbation of transport and/or biological uptake of toxicants and other pollutants released at either dredge or fill sites.

In addition, the interactions between cumulative and direct (sub-lethal) effects among the above factors certainly trigger non-linear impacts that are completely unstudied.

SAFMC Policies for Beach Dredge and Fill Projects and Related Large Coastal Engineering Projects

The SAFMC establishes the following general policies related to large-scale beach dredge and fill and related projects, to clarify and augment the general policies already adopted in the Habitat Plan and Comprehensive Habitat Amendment (SAFMC 1998a; SAFMC 1998b):

- 1) Projects should avoid, minimize and where possible offset damage to EFH and EFH-HAPCs.
- 2) Projects requiring expanded EFH consultation should provide detailed analyses of possible impacts to each type of EFH, with careful and detailed analyses of possible impacts to EFH-HAPCs and state CHAs, including short and long-term, and population and ecosystem scale effects. Agencies with oversight authority should require expanded EFH consultation.
- 3) Projects requiring expanded EFH consultation should provide a full range of alternatives, along with assessments of the relative impacts of each on each type of EFH, HAPC and CHAs.
- 4) Projects should avoid impacts on EFH, HAPCs and CHAs that are shown to be avoidable through the alternatives analysis, and minimize impacts that are not.
- 5) Projects should include assessments of potential unavoidable damage to EFH and other marine resources, using conservative assumptions.
- 6) Projects should be conditioned on the avoidance of avoidable impacts, and should include compensatory mitigation for all reasonably predictable impacts to EFH,

- taking into account uncertainty about these effects. Mitigation should be local, up-front and in-kind, and should be adequately monitored, wherever possible.
- 7) Projects should include baseline and project-related monitoring adequate to document pre-project conditions and impacts of the projects on EFH.
 - 8) All assessments should be based upon the best available science, and be appropriately conservative so follow and precautionary principles as developed for various federal and state policies.
 - 9) All assessments should take into account the cumulative impacts associated with other beach dredge and fill projects in the region, and other large-scale coastal engineering projects that are geographically and ecologically related.

References

- ASMFC, 2002. Beach Nourishment: A Review of the Biological and Physical Impacts ASMFC Habitat Management Series # 7 November 2002, Atlantic States Marine Fisheries Commission, 1444 Eye Street NW, Sixth Floor, Washington DC 20005. 179 pp.
- Butler IV, M. J., J. H. Hunt, W. F. Herrnkind, M. J. Childress, R. Bertelsen, W. Sharp, T. Matthews, J. M. Field, and H. G. Marshall. 1995. Cascading disturbances in Florida Bay, U.S.A.: cyanobacteria blooms, sponge mortality, and implications for juvenile spiny lobsters *Panulirus argus*. Mar. Ecol. Prog. Ser. 129:119-125.
- Dodge, R. E., R. C. Aller and J. Thomson. 1974. Coral growth related to resuspension of bottom sediments. Nature 247: 574-576.
- Gilmore, R. G., Jr. 1977. Fishes of the Indian River Lagoon and adjacent waters, Florida. Bull. Fl. St. Mus. Bio. Sci. 22(3), 147 p.
- Gilmore, R. G., Jr. 1992. Striped croaker, *Bairdiella sanctaeluciae*. pp. 218-222. In C. R. Gilbert, ed. Rare and endangered biota of Florida. II. Fishes. Univ. Press of Florida, Gainesville, FL, 242 p.
- Greene, Karen. 2002. Beach nourishment: a review of the biological and physical impacts. Atlantic States Marine Fisheries Commission. Habitat Management Series #7, November 2002. 174 pp.
- Hackney, C.T., M. Posey, S. Ross and A. Norris. 1996. A review and synthesis of data on surf zone fishes and invertebrates in the South Atlantic Bight and the potential impacts from beach renourishment. Report to the U.S. Army Corps of Engineers, Wilmington District.
- Kirtley, D. W. and W. F. Tanner. 1968. Sabellariid worms: builders of a major reef type. J. Sed. Petrol. 38(1):73-78.

- Lindeman, K. C. 1997. Comparative management of beach systems of Florida and the Antilles: applications using ecological assessment and decision support procedures. pp. 134-164. In: G. Cambers, ed. Managing beach resources in the smaller Caribbean islands. UNESCO Coastal Region & Small Island Papers # 1, 269 p.
- Lindeman, K.C. and D.B. Snyder. 1999. Nearshore hardbottom fishes of southeast Florida and effects of habitat burial caused by dredging. *Fish. Bull.* 97(3):508-525.
- Nelson, W. G. 1989. Beach nourishment and hardbottom habitats: the case for caution. pp. 109-116. In: S. Tait, ed. Proc. 1989 National Conf. Beach Preserv. Technol. FL Shore and Beach Preserv. Assoc., Tallahassee, FL, 236 p.
- Nelson, W. G. and L. Demetriades. 1992. Peracarids associated with sabellariid worm rock (*Phragmatopoma lapidosa* Kinberg) at Sebastian Inlet, Florida, U.S.A. *J. Crust. Bio.* 12(4):647-654.
- Odum, W. E. 1982. Environmental degradation and the tyranny of small decisions. *BioScience* 32(9):728-29.
- Pandolfi, J., D. R. Robertson, and D. R. Kirtley. 1998. Sabellariid worms: builders of a major reef type. *Coral Reefs* 17:120.
- Peterson, C.H., D.H.M. Hickerson and G.G. Johnson. 2000. Short-term consequences of nourishment and bulldozing on the dominant large invertebrates of a sandy beach. *J. Coastal Res.* 16(2): 368-378.
- Sedberry, G. R. and R. F. Van Dolah. 1984. Demersal fish assemblages associated with hard-bottom habitat in the South Atlantic Bight of the U. S. A. *Environ. Biol. Fishes* 11(4):241-258.
- SAFMC. 1998a. Final habitat plan for the South Atlantic region: Essential Fish Habitat requirements for fishery management plans of the South Atlantic Fishery Management Council. 457 pp + appendices.
- SAFMC. 1998b. Final Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region. Including a Final Environmental Impact Statement /Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 136pp.
- Telesnicki, G.J. and W.M. Goldberg. 1995. Effects of turbidity on the photosynthesis and respiration of two South Florida reef coral species. *Bull. Mar. Sci.* 57(2):527-539.

Wilber, P. and M. Stern. 1992. A re-examination of infaunal studies that accompany beach nourishment projects. Proc. 1992 Natl. Conf. Beach Preserv. Tech. pp: 242-256.

SAFMC Policy Statement Concerning Energy Exploration, Development, Transportation and Hydropower Re-licensing

Policy Context

This document establishes the policies of the South Atlantic Fishery Management Council (SAFMC) regarding protection of Essential Fish Habitat (EFH) and Essential Fish Habitat - Habitat Areas of Particular Concern (EFH-HAPCs) from threats associated with energy exploration, development, transportation and hydropower re-licensing. The policies are designed to be consistent with the overall habitat protection policies of the SAFMC as formulated and adopted in the Habitat Plan (SAFMC 1998a), the Comprehensive EFH Amendment (SAFMC 1998b) and the various Fishery Management Plans (FMPs) of the Council.

The findings presented below assess the threats to EFH potentially posed by activities related to energy development and hydropower re-licensing in offshore and coastal waters, riverine systems, and adjacent wetland habitats, and the processes whereby those resources are placed at risk. The policies established in this document are designed to avoid, minimize, and offset damage caused by these activities, in accordance with the general habitat policies of the SAFMC as mandated by law. To address any future energy projects in the South Atlantic region, the SAFMC reserves the right to revise this policy when more information becomes available.

EFH at Risk from Energy Exploration, Development Transportation and Hydropower Re-licensing Activities

The SAFMC finds:

1. That oil or gas drilling for exploration or development on or closely associated with EFH including – but not limited to – coral, coral reefs, and live/hardbottom habitat at all depths in the Exclusive Economic Zone (EEZ), EFH-HAPCs, or other special biological resources essential to commercial and recreational fisheries under SAFMC jurisdiction, be prohibited.
2. That all facilities associated with oil and gas exploration, development, and transportation be designed to avoid impacts on coastal ecosystems and sand sharing systems.
3. That adequate spill containment and cleanup equipment be maintained for all development and transportation facilities and, that the equipment be available on-site or located so as to be on-site within the landing time trajectory. An environmental bond should be required to assure that adequate resources will be available for unanticipated environmental impacts, spill response, clean-up and environmental impact assessment.

4. That exploration and development activities should be scheduled to avoid migratory patterns, breeding and nesting seasons of endangered and threatened species, including – but not limited to – northern right whales in coastal waters off the southeastern United States.
5. That the Environmental Impact Statement (EIS) for any Lease Sale address impacts from activities specifically related to natural gas production, safety precautions required in the event of the discovery of “sour gas” or hydrogen sulfide reserves and the potential for transport of hydrocarbons to nearshore and inshore estuarine habitats resulting from the cross-shelf transport by Gulf Stream spin-off eddies. The EIS should also address the development of contingency plans to be implemented if problems arise due to oceanographic conditions or bottom topography, the need for and availability of onshore support facilities in coastal areas, and an analysis of existing facilities and community services in light of existing major coastal developments.
6. That EISs prepared for liquefied natural gas (LNG) pipeline projects or other energy-related projects must fully describe direct and cumulative impacts to EFH, including deepwater coral communities. Impact evaluations should include quantitative assessments for each habitat based on recent scientific studies pertinent to that habitat, and the best available information.
7. That construction and operation of open-loop (flow-through) LNG processing facilities be prohibited in areas that support EFH.
8. That hydropower project prescriptions include measures that ensure that the amount and timing of flows mimic natural conditions. In addition, the best available technologies that allow for fish passage should be integrated into the project design.
9. That projects requiring expanded EFH consultation provide a full range of alternatives, along with assessments of the relative impacts of each on each type of EFH, EFH-HAPC and state-designated Critical Habitat Areas (CHAs).
10. That energy development activities have the potential to cause impacts to a variety of habitats across the shelf and to nearshore, estuarine, and riverine systems and wetlands, including:
 - a) waters and benthic habitats in or near drilling and disposal sites, including those potentially affected by sediment movement and by physical disturbance associated with drilling activities and site development;
 - b) waters and benthic habitats in or near LNG processing facilities or other energy development or transportation sites,
 - c) exposed hardbottom (e.g. reefs and live bottom) in shallow and deep waters,
 - d) coastal wetlands and
 - e) riverine systems and associated wetlands.

11. That certain offshore, nearshore and riverine habitats are particularly important to the long-term viability of commercial and recreational fisheries under SAFMC management, and potentially threatened by oil and gas and other energy exploration, development, transportation, and hydropower re-licensing activities:
 - a) coral, coral reef and live/hardbottom habitat, including deepwater coral communities,
 - b) marine and estuarine waters,
 - c) estuarine wetlands, including mangroves and marshes,
 - d) submersed aquatic vegetation,
 - e) waters that support diadromous fishes, and
 - f) waters hydrologically connected to waters that support EFH.

12. That siting and design of onshore receiving, holding, and transport facilities could have impacts on wetlands and endangered species' habitats if they are not properly located.

13. Sections of South Atlantic waters potentially affected by these projects, both individually and collectively, have been identified as EFH or EFH-HAPC by the SAFMC. Potentially affected species and their EFH under federal management include (SAFMC, 1998b):
 - a) summer flounder (various nearshore waters, including the surf zone and inlets; certain offshore waters),
 - b) bluefish (various nearshore waters, including the surf zone and inlets),
 - c) red drum (ocean high-salinity surf zones and unconsolidated bottoms in the nearshore),
 - d) many snapper and grouper species (live hardbottom from shore to 600 feet, and – for estuarine-dependent species (e.g., gag grouper and gray snapper) – unconsolidated bottoms and live hardbottoms to the 100 foot contour),
 - e) black sea bass (various nearshore waters, including unconsolidated bottom and live hardbottom to 100 feet, and hardbottoms to 600 feet),
 - f) penaeid shrimp (offshore habitats used for spawning and growth to maturity, and waters connecting to inshore nursery areas, including the surf zone and inlets),
 - g) coastal migratory pelagics (e.g., king mackerel, Spanish mackerel) (sandy shoals of capes and bars, barrier island ocean-side waters from the surf zone to the shelf break inshore of the Gulf Stream; all coastal inlets),
 - h) corals of various types and associated organisms (on hard substrates in shallow, mid-shelf, and deepwater),
 - i) muddy, silt bottoms from the subtidal to the shelf break, deepwater corals and associated communities),
 - j) areas identified as EFH for Highly Migratory Species managed by the Secretary of Commerce (e.g., sharks: inlets and nearshore waters, including pupping and nursery grounds), and
 - k) riverine areas that support diadromous fishes, including important prey species such as shad and herring, in addition to shortnose and Atlantic sturgeon.

14. Many of the habitats potentially affected by these activities have been identified as EFH-HAPCs by the SAFMC. Each habitat, type of activity posing a potential threat and FMP is provided as follows:
- a) all nearshore hardbottom areas – exploration, transportation and development (SAFMC snapper grouper);
 - b) all coastal inlets – transportation and development (SAFMC penaeid shrimp, red drum, and snapper grouper);
 - c) nearshore spawning sites – transportation and development (SAFMC penaeid shrimps and red drum);
 - d) benthic Sargassum – exploration, transportation and development (SAFMC snapper grouper);
 - e) from shore to the ends of the sandy shoals of Cape Lookout, Cape Fear, and Cape Hatteras, North Carolina; Hurl Rocks, South Carolina; and *Phragmatopoma* (worm reefs) reefs off the central coast of Florida and near shore hardbottom south of Cape Canaveral – transportation and development (SAFMC coastal migratory pelagics);
 - f) Atlantic coast estuaries with high numbers of Spanish mackerel and cobia from ELMR, to include Bogue Sound, New River, North Carolina; Broad River, South Carolina – transportation and development (SAFMC coastal migratory pelagics);
 - g) Florida Bay, Biscayne Bay, Card Sound, and coral hardbottom habitat from Jupiter Inlet through the Dry Tortugas, Florida – exploration, transportation and development (SAFMC spiny lobster);
 - h) Hurl Rocks (South Carolina); The *Phragmatopoma* (worm reefs) off central east coast of Florida; nearshore (0-4 meters; 0-12 feet) hardbottom off the east coast of Florida from Cape Canaveral to Broward County; offshore (5-30 meters; 15-90 feet) hardbottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary – transportation and development (SAFMC Coral, Coral Reefs and Live Hardbottom Habitat); and
 - i) EFH-HAPCs designated for HMS species (e.g., sharks) in the South Atlantic region – exploration, transportation and development (NMFS Highly Migratory Species).
15. Habitats likely to be affected by oil and gas exploration, development and transportation, and hydropower re-licensing activities include many recognised in state level fishery management plans. Examples of these habitats include Critical Habitat Areas (CHAs) established by the North Carolina Marine Fisheries Commission, either in FMPs or in Coastal Habitat Protection Plans.
16. Scientists in east Florida have documented exceptionally important habitat values for nearshore hardbottom used by over 500 species of fishes and invertebrates, including juveniles of many reef fishes. Equivalent scientific work is just beginning in other South Atlantic states, but life histories suggest that similar habitat use patterns will be found.

Threats to Marine and Estuarine Resources from Energy Exploration, Development, Transportation and Hydropower Re-licensing Activities

The SAFMC finds that energy exploration, development, transportation and hydropower re-licensing activities threaten or potentially threaten EFH through the following mechanisms:

- 1) Direct mortality and displacement of organisms at and near drilling, dredging, and/or trenching sites,
- 2) Deposition of fine sediments (sedimentation) and drilling muds down-current from drilling, dredging, trenching, and/or backfilling sites,
- 3) Chronic elevated turbidity in and near drilling, dredging, trenching, and/or backfilling sites,
- 4) Direct mortality of larvae, post-larvae, juveniles and adults of marine and estuarine organisms occurring from spills from pipelines or from vessels in transit near or close to inlet areas,
- 5) Alteration of long-term shoreline migration patterns (with complex, often indeterminable, ecological consequences),
- 6) Burial of sensitive coral resources and associated habitat resulting from “frac-outs” associated with horizontal directional drilling,
- 7) Permanent conversion of soft bottom habitat to artificial hardbottom habitat through installing a hard linear structure (i.e., a pipe covered in articulated concrete mats),
- 8) Impacts to benthic resources from placement and shifting of pipelines and cables, and from other types of direct mechanical damage,
- 9) Alterations in amount and timing of streamflow and significant reductions in fish passage resulting from damming or diverting rivers, and
- 10) Alteration of community diversity, composition, food webs and energy flow due to addition of structure.

In addition, the interactions between cumulative and direct (lethal and sub-lethal) effects among the above-listed can affect the magnitude of the overall impacts. Such interactions may result in a scale of effect that is multiplicative rather than additive. Those effects are at present nearly completely unstudied.

SAFMC Policies for Energy Exploration, Development, Transportation and Hydropower Re-licensing Activities

The SAFMC establishes the following general policies related to energy exploration, development, transportation, and hydropower re-licensing activities and related projects, to clarify and augment the general policies already adopted in the Habitat Plan and Comprehensive Habitat Amendment (SAFMC, 1998a; SAFMC, 1998b):

1. Projects should avoid, minimize, and – where possible – offset damage to EFH and EFH-HAPCs. This should be accomplished, in part, by integrating the best available and least impactful technologies into the construction design.
2. Agencies with oversight authority should require expanded EFH consultation for projects with the potential to significantly damage EFH. Projects requiring expanded EFH consultation should include detailed analyses for a full range of alternatives of possible impacts to each type of EFH, each EFH-HAPC and each CHA, including short and long-term effects and cumulative impacts at local, population and ecosystem scales. These analyses should utilize resource-protective assumptions and the best available science.
3. Projects should utilize the alternative that minimizes total impact EFH, EFH-HAPCs, and CHAs.
4. Projects should include detailed assessments of potentially unavoidable damage to EFH and other marine resources associated with the preferred or selected alternative and cumulative impacts, using conservative assumptions and the best available science.
5. Compensatory mitigation should not be considered until avoidance and minimization measures have been duly demonstrated. Compensatory mitigation should be required to offset losses to EFH, including losses associated with temporary impacts, and should take into account uncertainty and the risk of the chosen mitigation measures inadequately offsetting the impacts. Mitigation should be local, “up-front,” and “in-kind,” and include long-term monitoring to assess and ensure the efficacy of the mitigation program selected.
6. Projects should include pre-project, project-related, and post-project monitoring adequate to document pre-project conditions and the initial, long-term and cumulative impacts of the project on EFH.
7. All EFH assessments should be based upon the best available science, be conservative, and follow precautionary principles as developed for various Federal and State policies.
8. All EFH assessments should document the cumulative impacts associated with all natural and anthropogenic stressors on EFH, including other energy exploration,

development, transportation, and re-licensing projects that are geographically and ecologically related.

9. Projects should comply with existing standards and requirements regulating domestic and international transportation of energy products including regulated waste disposal and emissions which are intended to minimize negative impacts on and preserve the quality of the marine environment.
10. Open-loop LNG processing facilities should be avoided in favor of closed-loop systems.
11. The re-licensing of hydropower projects should provide for adequate amount and timing of water flow, in addition to fish passage.
12. Third party environmental inspectors should be required on all projects to provide for independent monitoring and permit compliance.
13. Resource sensitivity training modules should be developed specific to each project, construction procedures and habitat types found within the project impact area. This training should be provided to all contractors and sub-contractors that are anticipated to work in or adjacent to areas that support sensitive habitats.

The SAFMC recommends the following specific concerns and issues be addressed by the Federal Energy Regulatory Commission, Minerals Management Service, and/or the U.S. Army Corps of Engineers prior to approval of any license, application, or permit.

A. The following requirements should apply to any permit to drill any exploratory well or wells in any Lease Sale with the potential to affect EFH in the SAFMC's jurisdiction. These concerns and issues should also be included in a new EIS for any future Outer Continental Shelf (OCS) Leasing Plan:

1. Identification of the on-site fisheries resources, including both pelagic and benthic communities, that inhabit, spawn, or migrate through the lease sites with special focus on those specific lease blocks where industry has expressed specific interest in the pre-lease phases of the leasing process. Particular attention should be given to critical life history stages (i.e. eggs and larvae) that are most sensitive to oil spills and seismic exploration.
2. Identification of on-site or potentially affected state or federally-listed species (e.g. endangered, threatened, special concern, etc.), marine mammals, pelagic birds, diadromous fishes, and all species regulated under federal fishery management plans.
3. Determination of impacts of all exploratory and development activities on the fisheries resources prior to MMS approval of any applications for permits to drill

in the Exploratory Unit area, including effects of seismic survey signals on fish behavior, eggs and larvae.

4. Identification of commercial and recreational fishing activities in the vicinity of the lease or Exploratory Unit area, their season of occurrence and intensity, and any impacts whether temporary or permanent on the potential to continue those activities associated with the project or activity.
5. Determination of the physical and chemical oceanographic and meteorological characteristics of the area through field studies by MMS or the applicant, including on-site direction and velocity of currents and tides, sea states, temperature, salinity, water quality, wind storms frequencies, and intensities and icing conditions. Such studies must be required prior to approval of any exploration plan submitted in order to have adequate information upon which to base decisions related to site-specific proposed activities. Studies should include detailed characterization of seasonal surface currents and likely spill trajectories.
6. Description of required monitoring activities to be used to evaluate environmental conditions, and assess the impacts of exploration activities in the lease area or the Exploratory Unit.
7. Identification of the quantity, composition, and method of disposal of solid and liquid wastes and pollutants likely to be generated by offshore, onshore, and transportation operations associated with oil and gas exploration development and transportation.
8. Development of an oil spill contingency plan which includes oil spill trajectory analyses specific to the area of operations, dispersant-use plan including a summary of toxicity data for each dispersant, identification of response equipment and strategies, establishment of procedures for early detection and timely notification of an oil spill, and “chain-of-command” and notification procedures inclusive of all local, state and federal agencies and agency personnel to be notified when an oil spill is discovered, as well as defined and specific actions to be taken after discovery of an oil spill.
9. Mapping of environmentally sensitive areas (e.g., spawning aggregations of snappers and groupers); coral resources and other significant benthic habitats (e.g., tilefish mudflats) along the edge of the continental shelf (including the upper slope); calico scallop, royal red shrimp, and other productive benthic fishing grounds; other special biological resources; and northern right whale calving grounds and migratory routes, and subsequent deletion from inclusion in the respective lease block(s).
10. Planning for oil and gas product transport should be done to determine methods of transport, pipeline corridors, and onshore facilities.

11. The applicant, or MMS, must provide an analysis of biological community dynamics, and pathways and flows of energy, to ascertain accumulation of toxins and impacts on biological communities.
12. Due to the critical nature of canyons and steep relief to important fisheries (e.g. billfishes, swordfish and tunas) an evaluation of shelf-edge and down-slope dynamics, and a resource assessment to determine transport and fate of contaminants should be required.
13. Discussion of the potential adverse impacts upon fisheries resources of the discharges of all drill cuttings and all drilling muds that may be approved for use in the lease area or the Exploration Unit, as well as discharges associated with production activities (i.e. produced waters). This should include: physical and chemical effects upon pelagic and benthic species and communities, including spawning behavior, effects on eggs and larval stages; effects upon sight-feeding species of fish; and analysis of methods and assumptions underlying the model used to predict the dispersion of discharged muds and cuttings from exploration activities.
14. Discussion of secondary impacts affecting fishery resources associated with onshore oil and gas related development such as storage and processing facilities, dredging and dredged material disposal, roads and rail lines, fuel and electrical transmission line routes, waste disposal, and others.

B. The following requirements should apply to any permit or license to construct LNG gas pipelines and related facilities with the potential to affect EFH in the SAFMC's jurisdiction:

1. The least damaging construction method for traversing reef tracts and deepwater corals should be integrated into the project design.
2. Hydrotest chemicals that may be harmful to fish and wildlife resources shall not be discharged into waters of the United States.
3. Geotechnical studies shall be completed to ensure that the geology of the area is appropriate for the construction method and that geological risks are appropriately mitigated.
4. All work vessels associated with construction that traverses any reef system should be equipped with standard navigation aids, safety lighting and communication equipment. A vessel monitoring system with global positioning system will be employed to continuously monitor all vessel movements and locations in real time.
5. Any anchor placement should completely avoid corals and be diver verified. In addition, measures to avoid anchor sweep should be developed and implemented.

6. Appropriate exclusion zones should be designated around sensitive marine habitats.
7. Pre- and post-project monitoring should be completed in addition to monitoring during construction. The pre-project monitoring should establish pre-project conditions; project monitoring should examine if unanticipated impacts are occurring and if corrective actions are needed; and post-project (immediate and long-term) monitoring should document impacts to resources resulting from the project, and any recovery from those impacts.
8. All feasible avoidance and minimization measures must be used to protect deepwater coral communities. Those measures must be fully described in detail prior to authorization of any permit or license.
9. A contingency plan should be required to address catastrophic blowouts or more chronic material losses from LNG facilities, including trajectory and other impact analyses and remediation measures and responsibilities.
10. Periodic long-term monitoring of pipelines and nearby deepwater resources should be conducted to evaluate the environmental effects of these installations on deepwater marine communities.
11. Appropriate mitigation should be developed in concert with the NMFS Habitat Conservation Division to offset unavoidable impacts.

C. The requirement listed below should apply to any relevant permit or license to construct windfarms or hydroturbine energy producing facilities with the potential to affect EFH in the SAFMC jurisdiction. To date, such projects are conceptual, yet reasonably foreseeable as future proposed actions. Given the existing information, it is reasonable to conclude that such projects may have an impact on EFH. However, at this time sufficient information is not available to make general project-type recommendations.

1. Submarine cables should be placed in a manner that avoids impacts to EFH. The best available technologies should be used to install such cables to avoid and minimize temporary and long-term impacts to EFH. If placed on the seabed, cables should be anchored and/or stabilized, and stability analyses should be conducted to ensure that the cable can withstand a 100-year storm event in appropriate water depths.
2. Many of the areas designated as EFH are important to protected resources (e.g., endangered and threatened species and marine mammals) in the region. Direct and indirect impacts may result from noise, electromagnetic fields, vessel traffic, pollutants/water quality issues, alteration of the benthos and habitat degradation or habitat exclusion. The degree of impact can depend on the species, the type of

turbine, the method of installation, site characteristics and the layout and size of the facility. Therefore, any EIS prepared for the construction, operation or decommissioning of a wind energy generating facility should include maps of species' ranges, migratory pathways, and use of habitat as part of an evaluation of direct and cumulative impacts to protected resources.

D. The following requirements should apply to the re-licensing of hydropower plants on rivers draining to waters under SAFMC jurisdiction:

1. The construction of fish ladders should be implemented into the project design to provide for the safe and effective passage of fish to and from vital upstream habitats.
2. Instream flows prescriptions should ensure adequate quality, timing, and amount of water flow.

SAFMC Policy and Position on Previous Oil and Gas Exploration Proposals

The SAFMC urged the Secretary of Commerce to uphold the 1988 coastal zone inconsistency determination of the State of Florida for the respective plans of exploration filed with MMS by Mobil Exploration and Producing North America, Inc. for Lease OCS-G6520 (Pulley Ridge Block 799) and by Union Oil Company of California for Lease OCS-G6491/6492 (Pulley Ridge Blocks 629 & 630). Both plans of exploration involved lease blocks lying within the lease area comprising the offshore area encompassed by Part 2 of Lease Sale 116, and south of 26° North latitude. The Council's objection to the proposed exploration activities was based on the potential degradation or loss of extensive live bottom and other habitat essential to fisheries under Council jurisdiction.

The SAFMC also supported North Carolina's determination that the plans of exploration filed with MMS by Mobil Exploration and Producing North America, Inc. for Lease OCS Manteo Unit are not consistent with North Carolina's Coastal Zone Management program.

The Council has expressed concern to the Outer Continental Shelf Leasing and Development Task Force about the proposed area and recommended that no further exploration or production activity be allowed in the areas subject to Presidential Task Force Review (the section of Sale 116 south of 26° N latitude).

The following section addresses the recommendations, concerns and issues expressed by the South Atlantic Council (Source: Memorandum to Regional Director, U.S. Fish and Wildlife Service, Atlanta, Georgia from Regional Director, Gulf of Mexico OCS Region dated October 27, 1995):

“The MMS, North Carolina, and Mobil entered into an innovative Memorandum of Understanding on July 12, 1990, in which the MMS agreed to prepare an Environmental Report (ER) on proposed drilling offshore North Carolina. The scope of the ER prepared by the MMS was more comprehensive than an EIS would be. The normal scoping

process used in preparation of a NEPA-type document would not only ‘identify significant environmental issues deserving of study’ but also ‘de-emphasize insignificant issues, narrowing the scope’ (40 CFR 1500.4) by scoping out issues not ripe for decisions.

Of particular interest to North Carolina are not the transient effects of exploration, but rather the downstream and potentially broader, long-term effects of production and development. The potential effects associated with production and development would normally be “scoped out” of the (EIS-type) document and would be the subject of extensive NEPA analysis only after the exploration phase proves successful, and the submittal of a full-scale production and development program has been received for review and analysis. The ER addressed three alternatives: the proposed Mobil plan to drill a single exploratory well, the no-action alternative and the alternative that the MMS approve the Mobil plan with specific restrictions (monitoring programs and restrictions on discharges). The ER also analyzes possible future activities, such as development and production, and the long-term environmental and socioeconomic effects associated with such activities. The MMS assured North Carolina that all of the State’s comments and concerns would be addressed in the Final ER (USDOJ 1990).

The MMS also funded a Literature Synthesis study (USDOJ MMS 1993a) and a Physical Oceanography study (USDOJ MMS 1994), both recommended by the Physical Oceanography Panel and the Environmental Sciences Review Panel (ESRP). Mobil also submitted a draft report to the MMS titled *Characterization of Currents at Manteo Block 467 off Cape Hatteras, North Carolina*. The MMS also had a Cooperative Agreement with the Virginia Institute of Marine Science to fund a study titled *Seafloor Survey in the Vicinity of the Manteo Prospect Offshore North Carolina* (USDOJ MMS 1993b). The MMS had a Cooperative Agreement with East Carolina University to conduct a study titled *Coastal North Carolina Socioeconomic Study* (USDOJ MMS 1993c). The above-mentioned studies were responsive to the ESRP’s recommendations as well as those of the SAFMC and the State of North Carolina.”

Copies of these studies can be acquired from the address below:
Minerals Management Service, Technical Communication Services
MS 4530 381 Elden Street
Herndon, VA 22070-4897 (703) 787-1080

In addition, by letter dated November 21, 2003, the SAFMC provided the following recommendations on the AES Ocean Express LNG pipeline project:

- The deepwater touch-down route should be pre-inspected by ROV and the pipeline right of way shall be clear of all deepwater resources;
- Adjust deepwater touchdown position to maintain an appropriate buffer from any such deepwater resources;
- Require deepwater resources, other EFH and the deepwater touchdown position be mapped by ROV to confirm the resource position in relation to the installed pipeline;

- Conduct pre-installation video surveys to select the route that maximizes avoidance of these deepwater coral and live bottom habitats; and
- Monitor pipelines and nearby deepwater resources after installation to evaluate the environmental effects of these installations on deepwater marine communities.

References

SAFMC. 1998a. Final Habitat Plan for the South Atlantic region: Essential Fish Habitat requirements for fishery management plans of the South Atlantic Fishery Management Council. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, SC 29407-4699. 457 pp. + appendices.

SAFMC. 1998b. Final Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region. Including a Final Environmental Impact Statement /Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, SC 29407-4699. 136pp.

USDOJ, MMS. 1990. Atlantic Outer Continental Shelf, Final Environmental Report on Proposed Exploratory Drilling Offshore North Carolina, Vols. I-III.

USDOJ, MMS. 1993a. North Carolina Physical Oceanography Literature Study. Contract No. 14-35-0001-30594.

USDOJ, MMS. 1993b. Benthic Study of the Continental Slope Off Cape Hatteras, North Carolina. Vols. I-III. MMS 93-0014, -0015, -0016.

USDOJ, MMS. 1993c. Coastal North Carolina Socioeconomic Study. Vols. I-V. MMS 93-0052, -0053, -0054, -0055, and -0056.

USDOJ, MMS. 1994. North Carolina Physical Oceanographic Field Study. MMS 94-0047.

SAFMC Policy Statement Concerning Alterations to Riverine, Estuarine and Nearshore Flows

Policy Context

This document establishes the policies of the South Atlantic Fishery Management Council (SAFMC) regarding protection of the essential fish habitats (EFH) and habitat areas of particular concern (EFH-HAPCs) associated with alterations of riverine, estuarine and nearshore flows. Such hydrologic alterations occur through activities such as flood control reservoir and hydropower operations, water supply and irrigation withdrawals, deepening of navigational channels and inlets, and other modifications to the normative hydrograph. The policies are designed to be consistent with the overall

habitat protection policies of the SAFMC as formulated and adopted in the Habitat Plan (October 1998) and the Comprehensive EFH Amendment (October 1998).

The findings presented below assess the threats to EFH potentially posed by activities related to the alteration of flows in southeast rivers, estuaries and nearshore ocean habitats, and the processes whereby those resources are placed at risk. The policies established in this document are designed to avoid, minimize and offset damage caused by these activities, in accordance with the general habitat policies of the SAFMC as mandated by law.

EFH at Risk from Flow-Altering Activities

The SAFMC finds:

- 1) In general, the array of existing and proposed flow-altering projects being considered for the Southeastern United States for states with river systems that drain into the South Atlantic Fishery Management Council area of jurisdiction together constitutes a real and significant threat to EFH under the jurisdiction of the SAFMC.
- 2) The cumulative effects of these projects have not been adequately assessed, including impacts on public trust marine and estuarine resources (especially diadromous species), use of public trust waters, public access, state and federally protected species, state critical habitat, SAFMC-designated EFH and EFH-HAPCs.
- 3) Individual proposals resulting in hydrologic alterations rarely provide adequate assessments or consideration of potential damage to fishery resources under state and federal management. Historically, emphasis has been placed on the need for human water supply, hydropower generation, agricultural irrigation, flood control and other human uses. Environmental considerations have been dominated by compliance with limitations imparted by the Endangered Species Act for shortnose sturgeon, and/or through provisions of Section 18 of the Federal Power Act, as administered by the Federal Energy Regulatory Commission, which applies to the provision of passage for anadromous species, as well as the provisions of the Fish and Wildlife Act.
- 4) Opportunities to avoid and minimize impacts of hydrologic alterations on fishery resources, and offsets for unavoidable impacts have rarely been proposed or implemented.
- 5) Hydrologic alterations have caused impacts to a variety of habitats including:
 - a) waters, wetlands and benthic habitats near the discharge and withdrawal points, especially where such waters are used for spawning by anadromous species;
 - b) waters, wetlands and benthic habitats in the area downstream of discharge or withdrawal points;
 - c) waters wetlands and benthic habitats in receiving estuaries of southeast rivers; and
 - d) waters and benthic habitats of nearshore ocean habitats receiving estuarine discharge.

6) Certain riverine, estuarine and nearshore habitats are particularly important to the long-term viability of commercial and recreational fisheries under SAFMC management, and threatened by large-scale, long-term or frequent hydrologic alterations:

- e) freshwater riverine reaches and/or wetlands used for anadromous spawning;
- f) downstream freshwater, brackish and mid-salinity portions of rivers and estuaries serving as nursery areas for anadromous and estuarine-dependant species; and
- g) nearshore oceanic habitats off estuary mouths.

7) Large sections of South Atlantic waters potentially affected by these projects, both individually and collectively, have been identified as EFH or EFH-HAPC by the SAFMC, as well as the Mid-Atlantic Fishery Management Council (MAFMC) in the case of North Carolina. Potentially affected species and their EFH under federal management include (SAFMC, 1998) include:

- a) summer flounder (various nearshore waters, including the surf zone and inlets; certain offshore waters).
- b) bluefish (various nearshore waters, including the surf zone and inlets)
- c) red drum (ocean high-salinity surf zones and unconsolidated bottoms in the nearshore).
- d) many snapper and grouper species (live hard bottom from shore to 600 feet, and – for estuarine-dependent species [e.g., gag grouper and gray snapper] – unconsolidated bottoms and live hard bottoms to the 100 foot contour).
- e) black sea bass (various nearshore waters, including unconsolidated bottom and live hard bottom to 100 feet, and hard bottoms to 600 feet).
- f) penaeid shrimp (offshore habitats used for spawning and growth to maturity, and waters connecting to inshore nursery areas, including the surf zone and inlets).
- g) coastal migratory pelagics (e.g., king mackerel, Spanish mackerel) (sandy shoals of capes and bars, barrier island ocean-side waters from the surf zone to the shelf break inshore of the Gulf Stream; all coastal inlets).
- h) corals of various types (hard substrates and muddy, silt bottoms from the subtidal to the shelf break).
- i) areas identified as EFH for Highly Migratory managed by the Secretary of Commerce (e.g., sharks / inlets and nearshore waters, including pupping and nursery grounds).

8) Projects which entail hydrologic alterations also threaten important fish habitats for anadromous species under federal, interstate and state management (in particular, riverine spawning habitats, riverine and estuarine habitats, including state designated areas - e.g. Primary and Secondary Nursery Areas of North Carolina), as well as essential overwintering grounds in nearshore and offshore waters. All diadromous species are under management by the Atlantic States Marine Fisheries Commission and the states. The SAFMC also identified essential habitats of anadromous and catadromous species in the region (inlets and nearshore waters).

- 9) Numerous habitats that have been by these projects causing hydrologic alterations have been identified as EFH-HAPCs by the SAFMC. The specific fishery management plan is provided in parentheses:
- a) all nearshore hard bottom areas (SAFMC, snapper-grouper).
 - b) all coastal inlets (SAFMC, penaeid shrimps, red drum, and snapper-grouper).
 - c) near-shore spawning sites (SAFMC, penaeid shrimps, and red drum).
 - d) benthic *Sargassum* (SAFMC, snapper-grouper).
 - e) from shore to the ends of the sandy shoals of Cape Lookout, Cape Fear, and Cape Hatteras, North Carolina; Hurl Rocks, South Carolina; *Phragmatopora* (worm reefs) reefs off the central coast of Florida and near-shore hard-bottom south of Cape Canaveral (SAFMC, coastal migratory pelagics).
 - f) Atlantic coast estuaries with high numbers of Spanish mackerel and Cobia from ELMR, to include Bogue Sound, New River, North Carolina; Broad River, South Carolina (SAFMC, coastal migratory pelagics).
 - g) Florida Bay, Biscayne Bay, Card Sound, and coral hard bottom habitat from Jupiter Inlet through the Dry Tortugas, Florida (SAFMC, Spiny Lobster)
 - h) Hurl Rocks (South Carolina), The *Phragmatopoma* (worm reefs) off central east coast of Florida, nearshore (0-4 meters; 0-12 feet) hard bottom off the east coast of Florida from Cape Canaveral top Broward County); offshore (5-30 meters; 15-90 feet) hard bottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary (SAFMC, Coral, Coral Reefs and Live hard Bottom Habitat).
 - i) EFH-HAPCs designated for HMS species (e.g., sharks) in the South Atlantic region (NMFS, Highly Migratory Species).
- 10) Habitats likely to be affected by projects which alter hydrologic regimes include many recognized in state level fishery management plans. Examples of these habitats include Critical Habitat Areas established by the North Carolina Marine Fisheries Commission, either in FMPs or in Coastal Habitat Protection Plans.

Threats to Marine and Estuarine Resources from Hydrologically-Altering Activities

The SAFMC finds that activities which alter normative hydrologic regimes of rivers, estuaries, inlets and nearshore oceanic habitats threaten or potentially threaten EFH through the following mechanisms:

Direct mortality of organisms at withdrawal points through hydrologic regimes

In addition, the interactions between cumulative and direct (sub-lethal) effects among the above factors certainly trigger non-linear impacts that are completely unstudied.

SAFMC Policies for Flow-altering Projects

The SAFMC establishes the following general policies related projects resulting in hydrologic alterations, to clarify and augment the general policies already adopted in the Habitat Plan and Comprehensive Habitat Amendment (SAFMC 1998a; SAFMC 1998b):

- 1) Projects should avoid, minimize and where possible offset damage to EFH and EFH-HAPCs.
- 2) Projects requiring expanded EFH consultation should provide detailed analyses of possible impacts to each type of EFH, with careful and detailed analyses of possible impacts to EFH-HAPCs and state Critical Habitat Areas (CHAs), including short and long term, and population and ecosystem scale effects. Agencies with oversight authority should require expanded EFH consultation.
- 3) Projects requiring expanded EFH consultation should provide a full range of alternatives, along with assessments of the relative impacts of each on each type of EFH, HAPC and CHAs.
- 4) Projects should avoid impacts on EFH, HAPCs and CHAs that are shown to be avoidable through the alternatives analysis, and minimize impacts that are not.
- 5) Projects should include assessments of potential unavoidable damage to EFH and other marine resources, using conservative assumptions.
- 6) Projects should be conditioned on the avoidance of avoidable impacts, and should include compensatory mitigation for all reasonably predictable impacts to EFH, taking into account uncertainty about these effects. Mitigation should be local, up-front and in-kind, and should be adequately monitored, wherever possible.
- 7) Projects should include baseline and project-related monitoring adequate to document pre-project conditions and impacts of the projects on EFH.
- 8) All assessments should be based upon the best available science, and be appropriately conservative so follow and precautionary principles as developed for various federal and state policies.
- 9) All assessments should take into account the cumulative impacts associated with other projects in the same southeast watershed.

References

- SAFMC. 1998a. Final habitat plan for the South Atlantic region: Essential Fish Habitat requirements for fishery management plans of the South Atlantic Fishery Management Council. 457 pp plus appendices.
- SAFMC. 1998b. Final Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region. Including a Final Environmental Impact Statement /Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 136pp.

SAFMC Policy for Protection and Enhancement of Marine Submerged Aquatic Vegetation (SAV) Habitat

The South Atlantic Fishery Management Council (SAFMC) and the Habitat and Environmental Protection Advisory Panel has considered the issue of the decline of Marine Submerged Aquatic Vegetation SAV (or seagrass) habitat in Florida and North Carolina as it relates to Council habitat policy. Subsequently, the Council's Habitat Committee requested that the Habitat Advisory Panel develop the following policy statement to support Council efforts to protect and enhance habitat for managed species.

Description and Function

In the South Atlantic region, SAV is found primarily in the states of Florida and North Carolina where environmental conditions are ideal for the propagation of seagrasses. The distribution of SAV habitat is indicative of its importance to economically important fisheries: in North Carolina, total SAV coverage is estimated to be 200,000 acres; in Florida, the total SAV coverage is estimated to be 2.9 million acres. SAV serves several valuable ecological functions in the marine systems where it occurs. Food and shelter afforded by SAV result in a complex and dynamic system that provides a primary nursery habitat for various organisms that is important both to the overall system ecology as well as to commercial and recreationally important fisheries. SAV habitat is valuable both ecologically as well as economically; as feeding, breeding, and nursery ground for numerous estuarine species, SAV provides for rich ecosystem diversity. Further, a number of fish and shellfish species, around which is built several vigorous commercial and recreational fisheries, rely on SAV habitat for at least a portion of their life cycles. For more detailed discussion, please see Appendix 1.

Status

SAV habitat is currently threatened by the cumulative effects of overpopulation and consequent commercial development and recreation in the coastal zone. The major anthropogenic threats to SAV habitat include:

- (1) mechanical damage due to:
 - (a) propeller damage from boats,
 - (b) bottom-disturbing fish harvesting techniques,
 - (c) dredging and filling;

- (2) biological degradation due to:
 - (a) water quality deterioration by modification of temperature, salinity, and light attenuation regimes;
 - (b) addition of organic and inorganic chemicals.

SAV habitat in both Florida and North Carolina has experienced declines from both natural and anthropogenic causes. However, conservation measures taken by state and federal agencies have produced positive results. The national Marine Fisheries Service has produced maps of SAV habitat in the Albemarle-Pamlico Sound region of North Carolina to help stem the loss of this critical habitat. The threats to this habitat and the

potential for successful conservation measures highlight the need to address the decline of SAV. Therefore, the South Atlantic Council recommends immediate and direct action be taken to stem the loss of this essential habitat. For more detailed discussion, please see Appendix 2.

Management

Conservation of existing SAV habitat is critical to the maintenance of the living resources that depend on these systems. A number of federal and state laws and regulations apply to modifications, either direct or indirect, to SAV habitat. However, to date the state and federal regulatory process has accomplished little to slow the decline of SAV habitat. Furthermore, mitigative measures to restore or enhance impacted SAV have met with little success. These habitats cannot be readily restored; the South Atlantic Council is not aware of any seagrass restoration project that has ever prevented a net loss of SAV habitat. It has been difficult to implement effective resource management initiatives to preserve existing seagrass habitat resources due to the lack of adequate documentation and specific cause/effect relationships. (for more detailed discussion, please see Appendix 3)

Because restoration/enhancement efforts have not met with success, the South Atlantic Council considers it imperative to take a directed and purposeful action to protect remaining SAV habitat. The South Atlantic Council strongly recommends that a comprehensive strategy to address the disturbing decline in SAV habitat in the South Atlantic region. Furthermore, as a stepping stone to such a long-term protection strategy, the South Atlantic Council recommends that a reliable status and trend survey be adopted to verify the scale of local declines of SAV.

The South Atlantic Council will address the decline of SAV, and consider establishing specific plans for revitalizing the SAV resources of the South Atlantic region. This may be achieved by the following integrated triad of efforts:

Planning

- The Council promotes regional planning which treats SAV as a integral part of an ecological system.
- The Council supports comprehensive planning initiatives as well as interagency coordination and planning on SAV matters.
- The Council recommends that the Habitat Advisory Panel members actively seek to involve the Council in the review of projects which will impact, either directly or indirectly, SAV habitat resources.

Monitoring and Research

- Periodic surveys of SAV in the region are required to determine the progress toward the goal of a net resource gain.
- The Council supports efforts to
 - (1) standardize mapping protocols,

- (2) develop a Geographic Information System databases for essential habitat including seagrass, and
- (3) (3) research and document causes and effects of SAV decline including the cumulative impacts of shoreline development.

Education and Enforcement

- The Council supports education programs designed to heighten the public's awareness of the importance of SAV. An informed public will provide a firm foundation of support for protection and restoration efforts.
- Existing regulations and enforcement need to be reviewed for their effectiveness.
- Coordination with state resource and regulatory agencies should be supported to assure that existing regulations are being enforced.

SAFMC SAV Policy Statement- Appendix 1

DESCRIPTION AND FUNCTION

Worldwide, Submerged Aquatic Vegetation (SAV) constitutes one of the most conspicuous and common shallow-water habitat types. These angiosperms have successfully colonized standing and flowing fresh, brackish, and marine waters in all climatic zones, and most are rooted in the sediment. Marine SAV beds occur in the low intertidal and subtidal zones and may exhibit a wide range of habitat forms, from extensive collections of isolated patches to unbroken continuous beds. The bed is defined by the presence of either aboveground vegetation, its associated root and rhizome system (with living meristem), or the presence of a seed bank in the sediments, as well as the sediment upon which the plant grows or in which the seed bank resides. In the case of patch beds, the unvegetated sediment among the patches is considered seagrass habitat as well.

There are seven species of seagrass in Florida's shallow coastal areas: turtle grass (*Thalassia testudium*); manatee grass (*Syringodium filiforme*); shoal grass (*Halodule wrightii*); star grass (*Halophila engelmanni*); paddle grass (*Halophila decipiens*); and Johnson's seagrass (*Halophila johnsonii*) (See distribution maps in Appendix 4). Recently, *H. johnsonii* has been proposed for listing by the National Marine Fisheries Service as an endangered plant species. Areas of seagrass concentration along Florida's east coast are Mosquito Lagoon, Banana River, Indian River Lagoon, Lake Worth and Biscayne Bay. Florida Bay, located between the Florida Keys and the mainland, also has an abundance of seagrasses, but is currently experiencing an unprecedented decline in SAV distribution.

The three dominant species found in North Carolina are shoalgrass (*Halodule wrightii*), eelgrass (*Zostera marina*), and widgeongrass (*Ruppia maritima*). Shoalgrass, a subtropical species has its northernmost distribution at Oregon Inlet, North Carolina. Eelgrass, a temperate species, has its southernmost distribution in North Carolina. Areas

of seagrass concentration in North Carolina are southern and eastern Pamlico Sound, Core Sound, Back Sound, Bogue Sound and the numerous small southern sounds located behind the beaches in Onslow, Pender, Brunswick, and New Hanover Counties (See distribution maps in Appendix 4 [of Habitat Plan (SAFMC 1998a)]).

Seagrasses serve several valuable ecological functions in the marine estuarine systems where they occur. Food and shelter afforded by the SAV result in a complex and dynamic system that provides a primary nursery habitat for various organisms that are important both ecologically and to commercial and recreational fisheries. Organic matter produced by these seagrasses is transferred to secondary consumers through three pathways: herbivores that consume living plant matter; detritivores that exploit dead matter; and microorganisms that use seagrass-derived particulate and dissolved organic compounds. The living leaves of these submerged plants also provide a substrate for the attachment of detritus and epiphytic organisms, including bacteria, fungi, meiofauna, micro- and macroalgae, macroinvertebrates. Within the seagrass system, phytoplankton are also present in the water column, and macroalgae and microalgae are associated with the sediment. No less important is the protection afforded by the variety of living spaces in the tangled leaf canopy of the grass bed itself. In addition to biological benefits, the SAVs also cycle nutrients and heavy metals in the water and sediments, and dissipate wave energy (which reduces shoreline erosion and sediment resuspension).

There are several types of association fish may have with the SAVs. Resident species typically breed and carry out much of their life history within the meadow (e.g., gobiids and syngnathids). Seasonal residents typically breed elsewhere, but predictably utilize the SAV during a portion of their life cycle, most often as a juvenile nursery ground (e.g., sparids and lutjanids). Transient species can be categorized as those that feed or otherwise utilize the SAV only for a portion of their daily activity, but in a systematic or predictable manner (e.g., haemulids).

In Florida many economically important species utilize SAV beds as nursery and/or spawning habitat. Among these are spotted seatrout (*Cynoscion nebulosus*), grunts (Haemulids), snook (*Centropomus sp.*), bonefish (*Albula vulpes*), tarpon (*Megalops atlanticus*) and several species of snapper (Lutianids) and grouper (Serranids). Densities of invertebrate organisms are many times greater in seagrass beds than in bare sand habitat. Penaeid shrimp, spiny lobster (*Panulirus argus*), and bay scallops (*Argopecten irradians*) are also dependent on seagrass beds.

In North Carolina 40 species of fish and invertebrates have been captured on seagrass beds. Larval and juvenile fish and shellfish including gray trout (*Cynoscion regalis*), red drum (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), mullet (*Mugil cephalus*), spot (*Leiostomus xanthurus*), pinfish (*Orthopristis chrysoptera*), gag (*Mycteroperca microlepis*), white grunt (*Haemulon plumieri*), silver perch (*Bairdiella chrysoura*), summer flounder (*Paralichthys dentatus*), southern flounder (*P. lethostigma*), blue crabs (*Callinectes sapidus*), hard shell clams (*Mercenaria mercenaria*), and bay scallops (*Argopecten irradians*) utilize the SAV beds as nursery areas. They are the sole nursery grounds for bay scallops in North Carolina. SAV meadows are also frequented

by adult spot, spotted seatrout, bluefish (*Pomatomus saltatrix*), menhaden (*Brevortia tyrannus*), summer and southern flounder, pink and brown shrimp, hard shell clams, and blue crabs. Offshore reef fishes including black sea bass (*Centropristis striata*), gag (*Mycteroperca microlepis*), gray snapper (*Lutjanus griseus*), lane snapper (*Lutjanus synagris*), mutton snapper (*Lutjanus annalis*), and spottail pinfish (*Diplodus holbrooki*). Ospreys, egrets, herons, gulls and terns feed on fauna in SAV beds, while swans, geese, and ducks feed directly on the grass itself. Green sea turtles (*Chelonia mydas*) also utilize seagrass beds, and juveniles may feed directly on the seagrasses.

SAFMC SAV Policy Statement- Appendix 2

Status

The SAV habitat represents a valuable natural resource which is now threatened by overpopulation in coastal areas. The major anthropogenic activities that impact seagrass habitats are: 1) dredging and filling, 2) certain fish harvesting techniques and recreational vehicles, 3) degradation of water quality by modification of normal temperature, salinity, and light regimes, and 4) addition of organic and inorganic chemicals. Although not caused by man, disease (“wasting disease” of eelgrass) has historically been a factor. Direct causes such as dredging and filling, impacts of bottom disturbing fishing gear, and impacts of propellers and boat wakes are easily observed, and can be controlled by wise management of our seagrass resources (See Appendix 3). Indirect losses are more subtle and difficult to assess. These losses center around changes in light availability to the plants by changes in turbidity and water color. Other indirect causes of seagrass loss may be ascribed to changing hydrology which may in turn affect salinity levels and circulation. Reduction in flushing can cause an increase in salinity and the ambient temperature of a water body, stressing the plants. Increase in flushing can mean decreased salinity and increased turbidity and near-bottom mechanical stresses which damage or uproot plants.

Increased turbidity and decreasing water transparency are most often recognized as the cause of decreased seagrass growth and altered distribution of the habitats. Turbidity may result from upland runoff, either as suspended sediment or dissolved nutrients. Reduced transparency due to color is affected by freshwater discharge. The introduction of additional nutrients from terrigenous sources often leads to plankton blooms and increased epiphytization of the plants, further reducing light to the plants. Groundwater enriched by septic systems also may infiltrate the sediments, water column, and near-shore seagrass beds with the same effect. Lowered dissolved oxygen is detrimental to invertebrate and vertebrate grazers. Loss of these grazers results in overgrowth by epiphytes.

Large areas of Florida where seagrasses were abundant have now lost these beds from both natural and man-induced causes. (This is not well documented on a large scale except in the case of Tampa Bay). One of these depleted areas is Lake Worth in Palm Beach County. Here, dredge and fill activities, sewage disposal and stormwater runoff have almost eliminated this resource. North Biscayne Bay lost most of its seagrasses

from urbanization. The Indian River Lagoon has lost many seagrass beds from stormwater runoff has caused a decrease in water transparency and reduced light penetration. Many seagrass beds in Florida have been scarred from boat propellers disrupting the physical integrity of the beds. Vessel registrations, both commercial and recreational, have tripled from 1970-71 (235, 293) to 1992-93 (715,516). More people engaged in marine activities having an effect on the limited resources of fisheries and benthic communities, Florida's assessment of dredging/propeller scar damage indicates that Dade, Lee, Monroe, and Pinellas Counties have the most heavily damaged seagrass beds. Now Florida Bay, which is rather remote from human population concentrations, is experiencing a die-off of seagrasses, the cause of which has not yet been isolated. Cascading effects of die-offs cause a release of nutrients resulting in algal blooms which, in turn, adversely affect other seagrass areas, and appear to be preventing recolonization and natural succession in the bay. It appears that Monroe County's commercial fish and shellfish resources, with a dockside landing value of \$50 million per year, is in serious jeopardy.

In North Carolina total SAV coverage is estimated at 200,000 acres. Compared to the state's brackish water SAV community, the marine SAVs appear relatively stable. The drought and increased water clarity during the summer of 1986 apparently caused an increase in SAV abundance in southeastern Pamlico Sound and a concomitant increase in bay scallop densities. Evidence is emerging, however, that characteristics of "wasting disease" are showing up in some of the eelgrass populations in southern Core Sound, Back Sound, and Bogue Sound. The number of permits requested for development activities that potentially impact SAV populations is increasing. The combined impacts of a number of small, seemingly isolated activities are cumulative and can lead to the collapse of large seagrass biosystems. Also increasing is evidence of the secondary removal of seagrasses. Clam-kicking (the harvest of hard clams utilizing powerful propeller wash to dislodge the clams from the sediment) is contentious issue within the state of North Carolina. The scientific community is convinced that mechanical harvesting of clams damages SAV communities. The scallop fishery also could be harmed by harvest-related damage to eelgrass meadows.

SAFMC SAV Policy Statement- Appendix 3 MANAGEMENT

Conservation of existing SAV habitat is critical to the maintenance of the living resources that depend on these systems. A number of federal and state laws require permits for modification and/or development in SAV. These include Section 10 of the Rivers and Harbors Act (1899), Section 404 of the Clean Water Act (1977), and the states' coastal area management programs. Section 404 prohibits deposition of dredged or fill material in waters of the United States without a permit from the U.S. Army Corps of Engineers. The Fish and Wildlife Coordination Act gives federal and state resource agencies the authority to review and comment on permits, while the National Environmental Policy Act requires the development and review of Environmental Impact Statements. The Magnuson Fisheries Conservation and Management Act has been amended to require that each fishery management plan include a habitat section. The Council's habitat

subcommittee may comment on permit requests submitted to the Corps of Engineers when the proposed activity relates to habitat essential to managed species. State and federal regulatory processes have accomplished little to slow the decline of SAV habitat. Many of the impacts cannot be easily controlled by the regulations as enforced. For example, water quality standards are written so as to allow a specified deviation from background concentration, in this manner standards allow a certain amount of degradation. An example of this is Florida's class III water transparency standard, which defines the compensation depth to be where 1% of the incident light remains. The compensation depth for seagrass is in excess of 10% and for some species is between 15 and 20%. The standard allows a deviation of 10% in the compensation depth which translates into 0.9% incident light or an order of magnitude less than what the plants require. Mitigative measures to restore or enhance impacted areas have met with little success. SAV habitats cannot be readily restored; in fact, the South Atlantic Council is not aware of any seagrass restoration project that has ever avoided a net loss of seagrass habitat. It has been difficult to implement effective resource management initiatives to preserve seagrass habitat due to the lack of documentation on specific cause/effect relationships. Even though studies have identified certain cause/effect relationships in the destruction of these areas, lack of long-term, ecosystem-scale studies precludes an accurate scientific evaluation of the long-term deterioration of seagrasses. Some of the approaches to controlling propeller scar damage to seagrass beds include: education, improved channel marking restricted access zones, (complete closure to combustion engines, pole or troll areas), and improved enforcement. The South Atlantic Council sees the need for monitoring of seagrass restoration and mitigation not only to determine success from plant standpoint but also for recovery of faunal populations and functional attributes of the essential habitat type. The South Atlantic Council also encourages long-term trend analysis monitoring of distribution and abundance using appropriate protocols and Geographic Information System approaches.

SAFMC Policy Statement Concerning Dredging and Dredge Material Disposal Activities

Ocean Dredged Material Disposal Sites (ODMDS) and SAFMC Policies.

The shortage of adequate upland disposal sites for dredged materials has forced dredging operations to look offshore for sites where dredged materials may be disposed. These Ocean Dredged Material Disposal Sites (ODMDSs) have been designated by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE) as suitable sites for disposal of dredged materials associated with berthing and navigation channel maintenance activities. The South Atlantic Fishery Management Council (SAFMC; the Council) is moving to establish its presence in regulating disposal activities at these ODMDSs. Pursuant to the Magnuson Fishery Conservation and Management Act of 1976 (the Magnuson Act), the regional fishery management Councils are charged with management of living marine resources and their habitat within the 200 mile Exclusive Economic Zone (EEZ) of the United States. Insofar as dredging and disposal activities at the various ODMDSs can impact fishery resources or essential habitat under Council jurisdiction, the following policies address the Council's role in the designation, operation, maintenance, and enforcement of activities in the ODMDSs:

The Council acknowledges that living marine resources under its jurisdiction and their essential habitat may be impacted by the designation, operation, and maintenance of ODMDSs in the South Atlantic. The Council may review the activities of EPA, COE, the state Ports Authorities, private dredging contractors, and any other entity engaged in activities which impact, directly or indirectly, living marine resources within the EEZ.

The Council may review plans and offer comments on the designation, maintenance, and enforcement of disposal activities at the ODMDSs.

ODMDSs should be designated or redesignated so as to avoid the loss of live or hard bottom habitat and minimize impacts to all living marine resources.

Notwithstanding the fluid nature of the marine environment, all impacts from the disposal activities should be contained within the designated perimeter of the ODMDSs.

The final designation of ODMDSs should be contingent upon the development of suitable management plans and a demonstrated ability to implement and enforce that plan. The Council encourages EPA to press for the implementation of such management plans for all designated ODMDSs.

All activities within the ODMDSs are required to be consistent with the approved management plan for the site.

The Council's Habitat and Environmental Protection Advisory Panel when requested by the Council will review such management plans and forward comment to the Council. The Council may review the plans and recommendations received from the advisory sub-panel and comment to the appropriate agency. All federal agencies and entities receiving

a comment or recommendation from the Council will provide a detailed written response to the Council regarding the matter pursuant to 16 U.S.C. 1852 (i). All other agencies and entities receiving a comment or recommendation from the Council should provide a detailed written response to the Council regarding the matter, such as is required for federal agencies pursuant to 16 U.S.C. 1852 (i).

ODMDSs management plans should indicate appropriate users of the site. These plans should specify those entities/ agencies which may use the ODMDSs, such as port authorities, the U.S. Navy, the Corps of Engineers, etc. Other potential users of the ODMDSs should be acknowledged and the feasibility of their using the ODMDSs site should be assessed in the management plan.

Feasibility studies of dredge disposal options should acknowledge and incorporate ODMDSs in the larger analysis of dredge disposal sites within an entire basin or project. For example, Corps of Engineers analyses of existing and potential dredge disposal sites for harbor maintenance projects should incorporate the ODMDSs as part of the overall analysis of dredge disposal sites.

The Council recognizes that EPA and other relevant agencies are involved in managing and/or regulating the disposal of all dredged material. The Council recognizes that disposal activities regulated under the Ocean Dumping Act and dredging/filling carried out under the Clean Water Act have similar impacts to living marine resources and their habitats. Therefore, the Council urges these agencies apply the same strict policies to disposal activities at the ODMDSs. These policies apply to activities including, but not limited to, the disposal of contaminated sediments and the disposal of large volumes of fine-grained sediments. The Council will encourage strict enforcement of these policies for disposal activities in the EEZ. Insofar as these activities are relevant to disposal activities in the EEZ, the Council will offer comments on the further development of policies regarding the disposal/ deposition of dredged materials.

The Ocean Dumping Act requires that contaminated materials not be placed in an approved ODMDS. Therefore, the Council encourages relevant agencies to address the problem of disposal of contaminated materials. Although the Ocean Dumping Act does not specifically address inshore disposal activities, the Council encourages EPA and other relevant agencies to evaluate sites for the suitability of disposal and containment of contaminated dredged material. The Council further encourages those agencies to draft management plans for the disposal of contaminated dredge materials. A consideration for total removal from the basin should also be considered should the material be contaminated to a level that it would have to be relocated away from the coastal zone.

Offshore and Nearshore Underwater Berm Creation

The use of underwater berms in the South Atlantic region has recently been proposed as a disposal technique that may aid in managing sand budgets on inlet and beachfront areas. Two types of berms have been proposed to date, one involving the creation of a long offshore berm, the second involving the placement of underwater berms along

beachfronts bordering an inlet. These berms would theoretically reduce wave energy reaching the beaches and/or resupply sand to the system.

The Council recognizes offshore berm construction as a disposal activity. As such, all policies regarding disposal of dredged materials shall apply to offshore berm construction. Research should be conducted to quantify larval fish and crustacean transport and use of the inlets prior to any consideration of placement of underwater berms. Until the impacts of berm creation in inlet areas on larval fish and crustacean transport is determined, the Council recommends that disposal activities should be confined to approved ODMDs. Further, new offshore and near shore underwater berm creation activities should be reviewed under the most rigorous criteria, on a case-by-case basis.

Open Water Disposal

The SAFMC is opposed to the open water disposal of dredged material into aquatic systems which may adversely impact habitat that fisheries under Council jurisdiction are dependent upon. The Council urges state and federal agencies, when reviewing permits considering open water disposal, to identify the direct and indirect impacts such projects could have on fisheries habitat.

The SAFMC concludes that the conversion of one naturally functioning aquatic system at the expense of creating another (marsh creation through open water disposal) must be justified given best available information.

Policies for the Protection and Restoration of Essential Fish Habitats from Marine Aquaculture

Policy Context

This document establishes the policies of the South Atlantic Fishery Management Council (SAFMC) regarding protection of Essential Fish Habitat (EFH) and Essential Fish Habitat - Habitat Areas of Particular Concern (EFH-HAPCs) from potential impacts associated with marine aquaculture. The policies are designed to be consistent with the overall habitat protection policies of the SAFMC as formulated in the Habitat Plan (SAFMC 1998a) and adopted in the Comprehensive EFH Amendment (SAFMC 1998b) and the various Fishery Management Plans (FMPs) of the Council.

The findings presented below assess potential impacts, negative and positive to EFH and EFH-HAPCs posed by activities related to marine aquaculture in offshore and coastal waters, riverine systems and adjacent wetland habitats, and the processes which could place those resources at risk. The policies and recommendations established in this document are designed to avoid, minimize, and offset potential impacts from these activities, in accordance with the general habitat policies of the SAFMC as mandated by law. To address any future marine aquaculture projects in the South Atlantic region, or as legislation is developed to provide additional guidelines, the SAFMC will revise this policy when more information becomes available.

The recommendations presented here should be applied to aquaculture facilities in reasonable proximity to EFH and EFH-HAPCs, however managed. Current laws, regulations and policies differ for offshore aquaculture, and for aquaculture activities in nearshore and inshore waters managed by the various states. As the federal FMPs in the region are amended to address offshore aquaculture as “fishing” activities, then these recommendations should be factored into those FMPs. Where aquaculture remains outside federal FMP-based management, then EFH protection mechanisms for “non-fishing” activities should be used to protect EFH, wherever possible.

EFH Potentially At Risk from Marine Aquaculture Activities

The SAFMC finds that:

1. Properly sited, designed and managed marine aquaculture operations can have beneficial economic and environmental outcomes. However, marine aquaculture activities or associated support facilities can have the potential to cause adverse impacts to a variety of habitats across the shelf and to nearshore systems including:
 - a) waters and benthic habitats in or near marine aquaculture sites,
 - b) exposed hardbottom (e.g. reefs and live bottom) in shallow and deep waters,
 - c) submerged aquatic vegetation beds,
 - d) shellfish beds,
 - e) spawning and nursery areas,
 - f) coastal wetlands, and
 - g) riverine systems and associated wetlands.
2. Certain offshore, nearshore and riverine habitats are particularly important to the long-term viability of commercial and recreational fisheries under SAFMC management, and are potentially threatened by marine offshore aquaculture activities, including:
 - a) coral, coral reef and live/hardbottom habitat, including deepwater coral communities;
 - b) marine and estuarine waters;
 - c) estuarine wetlands, including mangroves and marshes;
 - d) submerged aquatic vegetation;
 - e) waters that support diadromous fishes, and their spawning and nursery habitats; and
 - f) waters hydrologically and ecologically connected to waters that support EFH.
3. Construction and operation of poorly sited and/or designed aquaculture support facilities could adversely impact wetlands, other EFH and protected species’ habitats.
4. Sections of South Atlantic waters potentially affected by these projects, both individually and collectively, have been identified as EFH or EFH-HAPC by the SAFMC. Potentially affected species and their EFH under federal management include (SAFMC, 1998b):
 - a) summer flounder (various nearshore waters; certain offshore waters);
 - b) bluefish (various nearshore waters);

- c) red drum (unconsolidated bottoms in the nearshore);
 - d) many snapper and grouper species (live hardbottom from shore to 600 feet, and – for estuarine-dependent species (e.g., gag grouper and gray snapper) – unconsolidated bottoms and live hardbottoms to the 100 foot contour);
 - e) black sea bass (various nearshore waters, including unconsolidated bottom and live hardbottom to 100 feet, and hardbottoms to 600 feet);
 - f) penaeid shrimp (offshore habitats used for spawning and growth to maturity, and waters connecting to inshore nursery areas);
 - g) coastal migratory pelagics (e.g., king mackerel, Spanish mackerel) (sandy shoals of capes and bars, barrier island ocean-side waters from the surf zone to the shelf break inshore of the Gulf Stream);
 - h) corals of various types and associated organisms (on hard substrates in shallow, midshelf, and deep water);
 - i) muddy, silt bottoms from the subtidal to the shelf break, deepwater corals and associated communities; and
 - j) areas identified as EFH for Highly Migratory Species managed by the Secretary of Commerce (e.g., sharks: inlets and nearshore waters, including pupping and nursery grounds).
5. Many of the habitats potentially affected by these activities have been identified as EFH-HAPCs by the SAFMC. Each habitat and FMP is provided as follows:
- a) all hardbottom areas (SAFMC snapper grouper);
 - b) nearshore spawning and nursery sites (SAFMC penaeid shrimps and red drum);
 - c) benthic Sargassum (SAFMC snapper grouper);
 - d) from shore to the ends of the sandy shoals of Cape Lookout, Cape Fear, and Cape Hatteras, North Carolina; Hurl Rocks, South Carolina; and *Phragmatopoma* (worm reefs) reefs off the central coast of Florida and near shore hardbottom south of Cape Canaveral (SAFMC coastal migratory pelagics);
 - e) Hurl Rocks (South Carolina); the *Phragmatopoma* (worm reefs) off central east coast of Florida; nearshore (0-4 meters; 0-12 feet) hardbottom off the east coast of Florida from Cape Canaveral to Broward County; offshore (5-30 meters; 15-90 feet) hardbottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary (SAFMC Coral, Coral Reefs and Live Hardbottom Habitat);
 - f) EFH-HAPCs designated for HMS species (e.g., sharks) in the South Atlantic region (NMFS Highly Migratory Species);
 - g) *Oculina* Bank HAPC and proposed deepwater coral HAPCs (SAFMC Coral, Coral Reefs and Live Hardbottom Habitat); and
 - h) HAPCs for diadromous species adopted by the Atlantic States Marine Fisheries Commission (ASMFC).

6. Habitats likely to be affected by marine aquaculture activities include many recognized in state-level fishery management plans and interstate fishery management plans of the ASMFC. Examples of these habitats include state-designated Critical Habitat Areas (CHAs) or Strategic Habitat Areas (SHAs) established by the North Carolina Marine Fisheries Commission, either in FMPs or in Coastal Habitat Protection Plans. Many state-managed and interstate-managed species serve as key prey for SAFMC-managed species.
7. Scientists have documented exceptionally important habitat values for East coast Florida nearshore hardbottom used by over 500 species of fishes and invertebrates, including juveniles of many reef fishes. Equivalent scientific work is just beginning in other South Atlantic states, but life histories suggest that similar habitat use patterns will be found.

Threats to EFH from Marine Aquaculture Activities

Aquaculture-related development without adequate safeguards may threaten wild stocks and the habitats that support them. The future of some aquaculture sectors is inextricably intertwined with fisheries and the health of marine ecosystems. Some coastal forms of aquaculture are known to degrade marine ecosystems, and may result in a net loss of fish. Finfish netpens in offshore waters may pose risks similar to netpens in inshore waters, where several potential environmental issues have been documented (summarized in Naylor et al., 2000; and Nash, ed, 2005).

Experimental or small-scale commercial fish farms are unlikely to have major environmental effects. However, if marine aquaculture booms, and becomes a major means of food production, the potential impacts on marine ecosystems and wild fisheries – and the communities that depend upon them – could be significant. An analysis of the potential cumulative impacts of aquaculture development in the Southeast region is essential prior to any large-scale expansion, onshore or offshore.

The SAFMC finds the following to constitute potential threats to EFH:

1) *Escapement*: Ecological damage caused by escaped organisms has been documented, including the introduction of non-native species, and reduced fitness of wild stocks as a result of interbreeding with escapees of the same species. The likelihood of escapes from farms may be high, if cages are sited in storm-prone areas, either offshore or nearshore.

Moreover, species potentially targeted for offshore or nearshore production may spawn in netpens. Ocean fish cages are incapable of containing fish eggs. The impacts of fertilized egg releases on the health of wild fisheries could be significant if farmed fish are genetically less well adapted to the ocean environment, as a result of selective breeding, genetic engineering, or simply because animals being farmed were taken from a geographic area with different ecological conditions

2) *Spread of pathogens and use of antibiotics and other drugs*: Concentration of large numbers of animals in a small area can facilitate outbreaks of disease and parasites,

potentially jeopardizing wild stocks. Disease and parasite outbreaks can also lead producers to administer antibiotics and other drugs, usually via feed. Drugs can end up in marine ecosystems where they can select for resistant bacteria, sometimes in species targeted by fisheries (Ervik et al., 1994). Note that the U.S. Food and Drug Administration regulates the use of drugs in aquaculture and there are only a very few drugs approved for controlled and limited use.

3) *Water pollution*: Concentrated animal production operations use substantial amounts of feeds. Even very efficient operations may lose a portion of the nutrients in feeds through uneaten food and through oxygen-demanding wastes, which are transmitted to surrounding waters.

Nitrogen is the nutrient primarily responsible for eutrophication in marine waters in the U.S. southeast, resulting in algal blooms and deoxygenation. In inshore waters, both nitrogen and phosphorus are nutrients of concern.

Nutrient impacts can be considerable in oligotrophic oceanic systems at levels significantly below those used as benchmarks for pollution in inshore and estuarine waters. The importance of the surface microlayer to larval ecology and its vulnerability to perturbations from airborne or locally-sourced excess nutrients cannot be overstated. Standards and criteria for nutrient-related water quality impacts on these oceanic ecological functions do not yet exist, and compliance with state-based water quality standards and national water quality criteria for nutrients may not prevent loading-based impacts.

Fish farms may cluster geographically near infrastructure such as processing plants and transportation, like terrestrial hog farms, concentrating potential impacts. However, widely-spaced marine farms sited in areas with strong currents and strong mixing would have less localized impact.

Finally, other feed additives, including metals and persistent organic pollutants, may contribute to longer-term bioaccumulation.

SAFMC Policies for Marine Aquaculture Projects

The SAFMC establishes the following general policies related to marine aquaculture projects, to clarify and augment the general policies already adopted in the Habitat Plan and Comprehensive Habitat Amendment (SAFMC 1998a; SAFMC 1998b):

1. The Council strongly supports thorough public review and effective regulation of marine aquaculture activities in the South Atlantic EEZ. South Atlantic fisheries are exceptionally dependent upon healthy habitat already under attack from many sources.
2. Permits should be for at least a ten-year duration with annual reporting requirements (activity reports) and a five-year comprehensive operational review with the option for revocation at any time in the event there is no prolonged activity or there is

documented adverse impacts to marine resources. Given the changes underway in coastal ecosystems in response to storm events, rising seas and introduced species, such a review cycle is essential.

3. Environmental review and performance expectation are paramount. This is a new and totally optional class of private uses being imposed on already at-risk ecosystems where unacceptable ecological cascades could occur. The Council is committed to ensuring that marine aquaculture activities are held to the same level of EFH conservation protections as are other non-fishing¹ activities.
4. The Council approves of use of therapeutic agents and feed additives, that have been approved by the FDA specifically for use in offshore open-water or net pen aquaculture.
5. The use of genetically modified and non-native species should be prohibited.
6. Given the critical nature of proper siting, the applicant should provide all needed information to evaluate in full the suitability of potential sites. If sufficient information is not provided in the application review time allotted by existing processes, the permit should be denied or held in abeyance until required information is available.
7. Monitoring plans should be developed by the applicant/permit holder and approved by NOAA Fisheries with input from the Council. Monitoring plans should be reviewed, approved, and funded prior to implementation.
8. Permittees must have adequate resources legally committed to ensure proper decommissioning of obsolete or storm-damaged facilities.
9. The issuing agency should have clear authority to repeal or condition permits in order to prevent environmental damage and exercise its authority to repeal permits if it becomes evident that environmental damage is occurring or if permit conditions are not met.

References

Arnold, W., M. White, H. Norris, M. Berrigan. 2000. Hard clam (*Mercenaria* spp.) aquaculture in Florida, U.S.A: geographic information system applications to lease site selection. *Aquacultural Engineering* 23:203-231

¹ The reference to non-fishing activities is meant to clarify that the Council's role is to comment on aquaculture activities similar to process the Council uses for non-fishing activities. The MSA currently defines aquaculture as a fishing activity. However, the proposed Aquaculture Bill would remove aquaculture as a fishing activity. The Council applies the same EFH standards to both fishing and non-fishing impacts.

- Atlantic States Marine Fisheries Commission. 2002. *Guidance Relative to Development of Responsible Aquaculture Activities in Atlantic Coast States*. Special Report No. 76 of the Atlantic States Marine Fisheries Commission, Washington, D.C. 74 pages
- Ervik, A., Thorsen, B., Eriksen, V., Lunestad, B.T., Samuelsen, O.B. 1994. Impact of administering antibacterial agents on wild fish and blue mussels *Mytilus edulis* in the vicinity of fish farms. *Diseases of Aquatic Organisms* 18:45-51.
- Florida Department of Agriculture. 2005. *Aquaculture Best Management Practices Rule, January 2005*. Division of Aquaculture, Florida Department of Agriculture, Tallahassee, FL. 104 pages
- Goldburg, R., Naylor, R. 2005. Transformed seascapes, fishing, and fish farming. *Frontiers in Ecology and the Environment* 3:21-28.
- Krosek, M., Lewis, M.A., Volpe, J. 2005. Transmission dynamics of parasitic sea lice from farm to wild salmon. *Proceedings of the Royal Society. Series B. Biological Sciences* 272:689-696.
- Marine Aquaculture Task Force. 2007. *Sustainable Marine Aquaculture: Fulfilling the Promise; Managing the Risks*. Woods Hole Oceanographic Institute, Woods Hole, MA. 128 pages
- Nash, C.E., P.R. Burbridge, and J.K. Volkman (editors). 2005. *Guidelines for ecological risk assessment of marine fish aquaculture*. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-71. 90 pages
- Naylor, R.L., Goldburg, R.J., Primavera, J., Kautsky, N., Beveridge, M., Clay, J., Folke, C., Mooney, H., Lubchenco, J., Troell, M. 2000. Effect of Aquaculture on World Fish Supplies. *Nature* 405: 1017-1024.
- Naylor, R., Hindar, K., Fleming, I., Goldburg, R., Mangel, M., Williams, S., Volpe, J., Whoriskey, F., Eagle, J., Kelso, D. 2005. Fugitive Salmon: Assessing Risks of Escaped Fish from Aquaculture. *BioScience* 55:427-437.
- Naylor, R., Burke, M. 2005. Aquaculture and ocean resources: Raising tigers of the sea. *Annual Review of Environmental Resources* 30:1.1.1.34
- Naylor, R. L. 2006. Environmental safeguards for open-ocean aquaculture. *Issues in Science and Technology*. Spring issue: 53-58.
- Nesheim, M, and A. Yaktine (editors). 2007. *Seafood Choices: Balancing Benefits and Risks*. Institute of Medicine of the National Academies, National Academy Press, Washington, D.C. 722 pages

SAFMC. 1998a. Final Habitat Plan for the South Atlantic region: Essential Fish Habitat Requirements for Fishery Management Plans of the South Atlantic Fishery Management Council. South Atlantic Fishery Management Council, 1 Southpark Circle, Suite 306, Charleston, SC 29407-4699. 457 pp. plus appendices.

SAFMC. 1998b. Final Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region. Including a Final Environmental Impact Statement /Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment /Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Circle, Suite 306, Charleston, SC 29407-4699. 136pp.

Stickney, R., B. Costa-Pierce, D. Baltz, M. Drawbridge, C. Grimes, S. Phillips, and D.L. Swann. 2006. Toward sustainable open ocean aquaculture in the United States. Fisheries 31: 607-610

U.S. Department of Agriculture. 2006. Census of Aquaculture (2005). 2002 Census of Agriculture. Volume 3, Special Studies. Part 2. AC-02-SP-2

Appendix D. Text of 50 CFR 635.21 (a)(3), (c)(5)(i) and (c)(5)(ii)

50 CFR 635.21(a) All Atlantic HMS fishing gears.

(3) All vessels that have pelagic longline gear on board and that have been issued, or are required to have, a limited access swordfish, shark, or tuna longline category permit for use in the Atlantic Ocean including the Caribbean Sea and the Gulf of Mexico must possess inside the wheelhouse the document provided by NMFS entitled, "Careful Release Protocols for Sea Turtle Release with Minimal Injury," and all vessels with pelagic or bottom longline gear on board must post inside the wheelhouse the sea turtle handling and release guidelines provided by NMFS.

50 CFR 635.21(c)(5) The operator of a vessel required to be permitted under this part and that has pelagic longline gear on board must undertake the following sea turtle bycatch mitigation measures:

(i) Possession and use of required mitigation gear. Required sea turtle bycatch mitigation gear, which NMFS has approved under paragraph (c)(5)(iv) of this section as meeting the minimum design standards specified in paragraphs (c)(5)(i)(A) through (c)(5)(i)(L) of this section, must be carried on board, and must be used to disengage any hooked or entangled sea turtles in accordance with the handling requirements specified in paragraph (c)(5)(ii) of this section.

(A) Long-handled line clipper or cutter. Line cutters are intended to cut high test monofilament line as close as possible to the hook, and assist in removing line from entangled sea turtles to minimize any remaining gear upon release. NMFS has established minimum design standards for the line cutters. The LaForce line cutter and the Arceneaux line clipper are models that meet these minimum design standards, and may be purchased or fabricated from readily available and low-cost materials. One long-handled line clipper or cutter and a set of replacement blades are required to be onboard. The minimum design standards for line cutters are as follows:

(1) A protected and secured cutting blade. The cutting blade(s) must be capable of cutting 2.0-2.1 mm (0.078 in. - 0.083 in.) monofilament line (400-lb test) or polypropylene multistrand material, known as braided or tarred mainline, and must be maintained in working order. The cutting blade must be curved, recessed, contained in a holder, or otherwise designed to facilitate its safe use so that direct contact between the cutting surface and the sea turtle or the user is prevented. The cutting instrument must be securely attached to an extended reach handle and be easily replaceable. One extra set of replacement blades meeting these standards must also be carried on board to replace all cutting surfaces on the line cutter or clipper.

(2) An extended reach handle. The line cutter blade must be securely fastened to an extended reach handle or pole with a

minimum length equal to, or greater than, 150 percent of the freeboard, or a minimum of 6 feet (1.83 m), whichever is greater. It is recommended, but not required, that the handle break down into sections. There is no restriction on the type of material used to construct this handle as long as it is sturdy and facilitates the secure attachment of the cutting blade.

(B) Long-handled dehooker for ingested hooks. A long-handled dehooking device is intended to remove ingested hooks from sea turtles that cannot be boated. It should also be used to engage a loose hook when a turtle is entangled but not hooked, and line is being removed. The design must shield the barb of the hook and prevent it from re-engaging during the removal process. One long-handled device to remove ingested hooks is required onboard. The minimum design standards are as follows:

(1) Hook removal device. The hook removal device must be constructed of 5/16-inch (7.94 mm) 316 L stainless steel and have a dehooking end no larger than 1 7/8-inches (4.76 cm) outside diameter. The device must securely engage and control the leader while shielding the barb to prevent the hook from re-engaging during removal. It may not have any unprotected terminal points (including blunt ones), as these could cause injury to the esophagus during hook removal. The device must be of a size appropriate to secure the range of hook sizes and styles used in the pelagic longline fishery targeting swordfish and tuna.

(2) Extended reach handle. The dehooking end must be securely fastened to an extended reach handle or pole with a minimum length equal to or greater than 150 percent of the freeboard, or a minimum of 6 ft (1.83 m), whichever is greater. It is recommended, but not required, that the handle break down into sections. The handle must be sturdy and strong enough to facilitate the secure attachment of the hook removal device.

(C) Long-handled dehooker for external hooks. A long-handled dehooker is required for use on externally-hooked sea turtles that cannot be boated. The long-handled dehooker for ingested hooks described in paragraph (c)(5)(i)(B) of this section would meet this requirement. The minimum design standards are as follows:

(1) Construction. A long-handled dehooker must be constructed of 5/16-inch (7.94 mm) 316 L stainless steel rod. A 5-inch (12.7-cm) tube T-handle of 1-inch (2.54 cm) outside diameter is recommended, but not required. The design should be such that a fish hook can be rotated out, without pulling it out at an angle. The dehooking end must be blunt with all edges rounded. The device must be of a size appropriate to secure the range of hook sizes and styles used in the pelagic longline fishery targeting swordfish and tuna.

(2) Extended reach handle. The handle must be a minimum length equal to the freeboard of the vessel or 6 ft (1.83 m), whichever is greater.

(D) Long-handled device to pull an "inverted V". This tool is used to pull a "V" in the fishing line when implementing the "inverted V" dehooking technique, as described in the document entitled "Careful Release Protocols for Sea Turtle Release With Minimal Injury," required under paragraph (a)(3) of this section, for disentangling and dehooking entangled sea turtles. One long-handled device to pull an "inverted V" is required onboard. If a 6-ft (1.83 m) J-style dehooker is used to comply with paragraph (c)(5)(i)(C) of this section, it will also satisfy this requirement.

Minimum design standards are as follows:

(1) Hook end. This device, such as a standard boat hook or gaff, must be constructed of stainless steel or aluminum. A sharp point, such as on a gaff hook, is to be used only for holding the monofilament fishing line and should never contact the sea turtle.

(2) Extended reach handle. The handle must have a minimum length equal to the freeboard of the vessel, or 6 ft (1.83 m), whichever is greater. The handle must be sturdy and strong enough to facilitate the secure attachment of the gaff hook.

(E) Dipnet. One dipnet is required onboard. Dipnets are to be used to facilitate safe handling of sea turtles by allowing them to be brought onboard for fishing gear removal, without causing further injury to the animal. Turtles must not be brought onboard without the use of a dipnet.

The minimum design standards for dipnets are as follows:

(1) Size of dipnet. The dipnet must have a sturdy net hoop of at least 31 inches (78.74 cm) inside diameter and a bag depth of at least 38 inches (96.52 cm) to accommodate turtles below 3 ft (0.914 m) carapace length. The bag mesh openings may not exceed 3 inches (7.62 cm) 3 inches (7.62 cm). There must be no sharp edges or burrs on the hoop, or where it is attached to the handle.

(2) Extended reach handle. The dipnet hoop must be securely fastened to an extended reach handle or pole with a minimum length equal to, or greater than, 150 percent of the freeboard, or at least 6 ft (1.83 m), whichever is greater. The handle must be made of a rigid material strong enough to facilitate the sturdy attachment of the net hoop and able to support a minimum of 100 lbs (34.1 kg) without breaking or significant bending or distortion. It is recommended, but not required, that the extended reach handle break down into sections.

(F) Tire. A minimum of one tire is required for supporting a turtle in an upright orientation while it is onboard, although an assortment of sizes is recommended to accommodate a range of turtle sizes. The required tire must be a standard passenger vehicle tire, and must be free of exposed steel belts.

(G) Short-handled dehooker for ingested hooks. One short-handled device for removing ingested hooks is required onboard. This dehooker is designed to remove ingested hooks from boated sea turtles. It can also be used on external hooks or hooks in the front of the mouth. Minimum design standards are as follows:

(1) Hook removal device. The hook removal device must be constructed of 1/4-inch (6.35 mm) 316 L stainless steel, and must allow the hook to be secured and the barb shielded without re-engaging during the removal process. It must be no larger than 1 5/16 inch (3.33 cm) outside diameter. It may not have any unprotected terminal points (including blunt ones), as this could cause injury to the esophagus during hook removal. A sliding PVC bite block must be used to protect the beak and facilitate hook removal if the turtle bites down on the dehooking device. The bite block should be constructed of a 3/4 -inch (1.91 cm) inside diameter high impact plastic cylinder (e.g., Schedule 80 PVC) that is 10 inches (25.4 cm) long to allow for 5 inches (12.7 cm) of slide along the shaft. The device must be of a size appropriate to secure the range of hook sizes and styles used in the pelagic longline fishery targeting swordfish and tuna.

(2) Handle length. The handle should be approximately 16 - 24 inches (40.64 cm - 60.69 cm) in length, with approximately a 5-inch (12.7 cm) long tube T-handle of approximately 1 inch (2.54 cm) in diameter.

(H) Short-handled dehooker for external hooks. One short-handled dehooker for external hooks is required onboard. The short-handled dehooker for ingested hooks required to comply with paragraph (c)(5)(i)(G) of this section will also satisfy this requirement. Minimum design standards are as follows:

(1) Hook removal device. The dehooker must be constructed of 5/16-inch (7.94 cm) 316 L stainless steel, and the design must be such that a hook can be rotated out without pulling it out at an angle. The dehooking end must be blunt, and all edges rounded. The device must be of a size appropriate to secure the range of hook sizes and styles used in the pelagic longline fishery targeting swordfish and tuna.

(2) Handle length. The handle should be approximately 16 - 24 inches (40.64 cm - 60.69 cm) long with approximately a 5-inch (12.7 cm) long tube T-handle of approximately 1 inch (2.54 cm) in diameter.

(I) Long-nose or needle-nose pliers. One pair of long-nose or needle-nose pliers is required on board. Required long-nose or needle-nose pliers can be used to remove deeply embedded hooks from the turtle's flesh that must be twisted during removal. They can also hold PVC splice couplings, when used as mouth openers, in place. Minimum design standards are as follows:

(1) General. They must be approximately 12 inches (30.48 cm) in length, and should be constructed of stainless steel material.

(2) [Reserved]

(J) Bolt cutters. One pair of bolt cutters is required on board. Required bolt cutters may be used to cut hooks to facilitate their removal. They should be used to cut off the eye or barb of a hook, so that it can safely be pushed through a sea turtle without causing further injury. They should also be used to cut off as much of the hook as possible, when the remainder of the hook cannot be removed. Minimum design standards are as follows:

(1) General. They must be approximately 17 inches (43.18 cm) in total length, with 4-inch (10.16 cm) long blades that are 2 1/4 inches (5.72 cm) wide, when closed, and with 13-inch (33.02 cm) long handles. Required bolt cutters must be able to cut hard metals, such as stainless or carbon steel hooks, up to 1/4-inch (6.35 mm) diameter.

(2) [Reserved]

(K) Monofilament line cutters. One pair of monofilament line cutters is required on board. Required monofilament line cutters must be used to remove fishing line as close to the eye of the hook as possible, if the hook is swallowed or cannot be removed. Minimum design standards are as follows:

(1) General. Monofilament line cutters must be approximately 7 1/2 inches (19.05 cm) in length. The blades must be 1 in (4.45 cm) in length and 5/8 in (1.59 cm) wide, when closed, and are recommended to be coated with Teflon (a trademark owned by E.I. DuPont de Nemours and Company Corp.).

(2) [Reserved]

(L) Mouth openers/mouth gags. Required mouth openers and mouth gags are used to open sea turtle mouths, and to keep them open when removing ingested hooks from boated turtles. They must allow access to the hook or line without causing further injury to the turtle. Design standards are included in the item descriptions. At least two of the seven different types of mouth openers/gags described below are required:

(1) A block of hard wood. Placed in the corner of the jaw, a block of hard wood may be used to gag open a turtle's mouth. A smooth block of hard wood of a type that does not splinter (e.g. maple) with rounded edges should be sanded smooth, if necessary, and soaked in water to soften the wood. The dimensions should be approximately 11 inches (27.94 cm) 1 inch (2.54 cm) 1 inch (2.54 cm). A long-handled, wire shoe brush with a wooden handle, and with the wires removed, is an inexpensive, effective and practical mouth-opening device that meets these requirements.

(2) A set of three canine mouth gags. Canine mouth gags are highly recommended to hold a turtle's mouth open, because the gag locks into an open position to allow for hands-free operation after it is in place. A set of canine mouth gags must include one of each

of the following sizes: small (5 inches)(12.7 cm), medium (6 inches) (15.24 cm), and large (7 inches)(17.78 cm). They must be constructed of stainless steel. A 1 -inch (4.45 cm) piece of vinyl tubing (3/4-inch (1.91 cm) outside diameter and 5/8-inch (1.59 cm) inside diameter) must be placed over the ends to protect the turtle's beak.

(3) A set of two sturdy dog chew bones. Placed in the corner of a turtle's jaw, canine chew bones are used to gag open a sea turtle's mouth. Required canine chews must be constructed of durable nylon, zylene resin, or thermoplastic polymer, and strong enough to withstand biting without splintering. To accommodate a variety of turtle beak sizes, a set must include one large (5 1/2 - 8 inches(13.97 cm - 20.32 cm) in length), and one small (3 1/2 - 4 1/2 inches (8.89 cm - 11.43 cm) in length) canine chew bones.

(4) A set of two rope loops covered with hose. A set of two rope loops covered with a piece of hose can be used as a mouth opener, and to keep a turtle's mouth open during hook and/or line removal. A required set consists of two 3-foot (0.91 m) lengths of poly braid rope (3/8-inch (9.52 mm) diameter suggested), each covered with an 8-inch (20.32 cm) section of 1/2 inch (1.27 cm) or 3/4 inch (1.91 cm) light-duty garden hose, and each tied into a loop. The upper loop of rope covered with hose is secured on the upper beak to give control with one hand, and the second piece of rope covered with hose is secured on the lower beak to give control with the user's foot.

(5) A hank of rope. Placed in the corner of a turtle's jaw, a hank of rope can be used to gag open a sea turtle's mouth. A 6-foot (1.83 m) lanyard of approximately 3/16-inch (4.76 mm) braided nylon rope may be folded to create a hank, or looped bundle, of rope. Any size soft-braided nylon rope is allowed, however it must create a hank of approximately 2 - 4 inches (5.08 cm - 10.16 cm) in thickness.

(6) A set of four PVC splice couplings. PVC splice couplings can be positioned inside a turtle's mouth to allow access to the back of the mouth for hook and line removal. They are to be held in place with the needle-nose pliers. To ensure proper fit and access, a required set must consist of the following Schedule 40 PVC splice coupling sizes: 1 inch (2.54 cm), 1 1/4 inch (3.18 cm), 1 1/2 inch (3.81 cm), and 2 inches (5.08 cm).

(7) A large avian oral speculum. A large avian oral speculum provides the ability to hold a turtle's mouth open and to control the head with one hand, while removing a hook with the other hand. The avian oral speculum must be 9-inches (22.86 cm) long, and constructed of 3/16-inch (4.76 mm) wire diameter surgical stainless steel (Type 304). It must be covered with 8 inches (20.32

cm) of clear vinyl tubing (5/16-inch (7.9 mm) outside diameter, 3/16-inch (4.76 mm) inside diameter).

(ii) Handling and release requirements.

(A) Sea turtle bycatch mitigation gear, as required by paragraphs (c)(5)(i)(A)-(D) of this section, must be used to disengage any hooked or entangled sea turtles that cannot be brought on board. Sea turtle bycatch mitigation gear, as required by paragraphs (c)(5)(i)(E)-(L) of this section, must be used to facilitate access, safe handling, disentanglement, and hook removal or hook cutting of sea turtles that can be brought on board, where feasible. Sea turtles must be handled, and bycatch mitigation gear must be used, in accordance with the careful release protocols and handling/release guidelines specified in paragraph (a)(3) of this section, and in accordance with the onboard handling and resuscitation requirements specified in Sec. 223.206(d)(1) of this title.

(B) Boated turtles. When practicable, active and comatose sea turtles must be brought on board, with a minimum of injury, using a dipnet as required by paragraph (c)(5)(i)(E) of this section. All turtles less than 3 ft (.91 m) carapace length should be boated, if sea conditions permit.

(1) A boated turtle should be placed on a standard automobile tire, or cushioned surface, in an upright orientation to immobilize it and facilitate gear removal. Then, it should be determined if the hook can be removed without causing further injury. All externally embedded hooks should be removed, unless hook removal would result in further injury to the turtle. No attempt to remove a hook should be made if it has been swallowed and the insertion point is not visible, or if it is determined that removal would result in further injury. If a hook cannot be removed, as much line as possible should be removed from the turtle using monofilament cutters as required by paragraph (c)(5)(i) of this section, and the hook should be cut as close as possible to the insertion point before releasing the turtle, using bolt cutters as required by paragraph (c)(5)(i) of this section. If a hook can be removed, an effective technique may be to cut off either the barb, or the eye, of the hook using bolt cutters, and then to slide the hook out. When the hook is visible in the front of the mouth, a mouth-opener, as required by paragraph (c)(5)(i) of this section, may facilitate opening the turtle's mouth and a gag may facilitate keeping the mouth open. Short-handled dehookers for ingested hooks, long-nose pliers, or needle-nose pliers, as required by paragraph (c)(5)(i) of this section, should be used to remove visible hooks from the mouth that have not been swallowed on boated turtles, as appropriate. As much gear as possible must be removed from the turtle without causing further injury prior to its release. Refer to the careful release protocols and handling/release guidelines required in paragraph (a)(3) of this section, and the handling and resuscitation

requirements specified in Sec. 223.206(d)(1) of this title, for additional information.

(2) [Reserved]

(C) Non-boated turtles. If a sea turtle is too large, or hooked in a manner that precludes safe boating without causing further damage or injury to the turtle, sea turtle bycatch mitigation gear required by paragraphs (c)(5)(i)(A)-(D) of this section must be used to disentangle sea turtles from fishing gear and disengage any hooks, or to clip the line and remove as much line as possible from a hook that cannot be removed, prior to releasing the turtle, in accordance with the protocols specified in paragraph (a)(3) of this section.

(1) Non-boated turtles should be brought close to the boat and provided with time to calm down. Then, it must be determined whether or not the hook can be removed without causing further injury. All externally embedded hooks must be removed, unless hook removal would result in further injury to the turtle. No attempt should be made to remove a hook if it has been swallowed, or if it is determined that removal would result in further injury. If the hook cannot be removed and/or if the animal is entangled, as much line as possible must be removed prior to release, using a line cutter as required by paragraph (c)(5)(i) of this section. If the hook can be removed, it must be removed using a long-handled dehooker as required by paragraph (c)(5)(i) of this section. Without causing further injury, as much gear as possible must be removed from the turtle prior to its release. Refer to the careful release protocols and handling/release guidelines required in paragraph (a)(3) of this section, and the handling and resuscitation requirements specified in Sec. 223.206(d)(1) for additional information.

(2) [Reserved]

Sea Turtle Handling/Release Guidelines: Quick Reference for the Snapper-Grouper Fishery



Guidelines for all turtles

- Scan as far as possible to sight turtles in advance and reduce likelihood of jerking turtles out of the water.
- Longline Vessels: Do not get ahead of the line while picking up gear. This reduces the chance of fouling or running over gear and turtle.

Upon sighting a turtle:

- Slow vessel and line reel speed
- Adjust direction of the vessel to move toward turtle
- Minimize tension on the line with the turtle

Holding the line with the turtle on it, continue to move toward the turtle at a slow speed. **STOP VESSEL** and **PUT IN NEUTRAL** once turtle is brought alongside.

- Slowly retrieve line with turtle, keeping a gentle, consistent tension on the line. Avoid tugging or yanking line quickly. **DO NOT USE GAFFS OR SHARP OBJECTS** in direct contact with the turtle to retrieve it; a gaff may be used only to control the line during line removal.
- Ensure that enough slack is left in the line to keep turtle near the vessel, yet in water, until it can be determined whether or not it is possible to release turtle in the water, or safely bring it aboard.
- If turtle can be safely brought aboard and vessel is equipped with “cut-out doors,” use this cut-out area to bring turtles aboard to minimize the distance from the water.
- Resuscitate comatose boated turtles as needed, holding them for up to 24 hours (keep moist and in the shade) if necessary.
- More information on releasing sea turtles is available in the *Careful Release Protocols for Sea Turtle Release with Minimal Injury* and on the web at: <http://sero.nmfs.noaa.gov/>.

Guidelines for turtles not boated

- Control turtle by maintaining pressure on line, or preferably, with a type of turtle tether, and bring the turtle as close to the vessel as possible. **DO NOT** lift turtles clear of the water.
- If entangled and not hooked, use dehooking tools to secure unattached hooks. Use clippers to cut the line. **DO NOT** leave line attached.
- If hooked and entangled, remove the hook first. Then, after the hook is removed, proceed to remove all line.
- All externally embedded hooks should be removed. If hook removal is not possible, cut the line at the eye of the hook (or as close as possible).
- Internal hooks should be removed only if an internal dehooker is being used. Do not attempt to remove hook if the hook has been swallowed beyond where the insertion point of the barb is visible, or when it appears that the hook removal will cause further injury. Remove as much of the line and/or hook as possible.

Guidelines for boated turtles

- If possible, bring turtle on board using a suitable dip net or other approved lifting device. Support turtle on a cushioned surface, such as a tire, while onboard.

DO NOT LIFT THE TURTLE OUT OF THE WATER USING THE LINE, GAFF, OR OTHER SHARP OBJECTS

- Remove all externally embedded hooks.
- Internal hooks should be removed when the insertion point of the barb is clearly visible and only if an approved internal dehooker is being used. Do not remove the hooks that have been swallowed when the insertion point is not visible, or when it appears hook removal will cause further damage (e.g., in the brain case or glottis). Remove as much of the line and/or hook as possible.

Stop!

To release turtle (1) STOP VESSEL and place in neutral; (2) Ease turtle gently into the water, head first, through cut-out door if so equipped; and (3) Observe that turtle is safely away from the vessel before engaging the propeller and continuing operations.

See <http://sero.nmfs.noaa.gov/> for additional copies of placard. Revised 9/2006



Sawfish Handling and Release Guidelines

For the Snapper-Grouper Fishery

Use extreme caution when handling and releasing sawfish as the saw can thrash violently from side to side.

Hook-and-Line Gear:

- ◆ **It is illegal to remove the fish's saw.**
- ◆ Keep the sawfish, especially the gills, in the water at all times.
- ◆ Use line-cutting poles, bolt cutters, long-handled dehookers and boat hooks to aid in removing gear from the sawfish.
- ◆ If the sawfish is hooked, and not entangled, cut the line as close to the hook as possible.
- ◆ If the sawfish is hooked and line is tangled around the saw, remove all line with boat hook or line cutting pole, then cut the line as close to the hook as possible.
- ◆ If hooked internally, DO NOT attempt to remove the hook, use line cutting pole or boat hook to remove as much line as possible.

Reporting Guidelines:

- ◆ If participating in the Supplementary Discard Data Program, remember to document any interactions with sawfish. DO NOT attempt to weigh the animal.
- ◆ If not participating in this program, we encourage you to voluntarily report your encounter(s) to Shelley.Norton@noaa.gov.
- ◆ When voluntarily reporting sawfish interactions, please provide any information available regarding:
 - ◆ Location (Lat./Long.)
 - ◆ Water Depth
 - ◆ Estimated Length
 - ◆ Condition Upon Release
 - ◆ Bottom Type (i.e., sandy bottom, reef)
 - ◆ Date/Time of Capture

Things to Remember:

It is illegal to remove the saw or injure the sawfish in any way.

Keep as much of the sawfish in the water as possible, especially the gills.

With a little extra effort and the proper use of required tools, endangered smalltooth sawfish can be returned to the water with little or no damage.

Smalltooth sawfish are listed as endangered under the Endangered Species Act, which makes it illegal to harm them in any way. Any sawfish caught while fishing must be released as quickly as possible. More information can be found at <http://www.nmfs.noaa.gov/pr/species/fish/smalltoothsawfish.htm>

