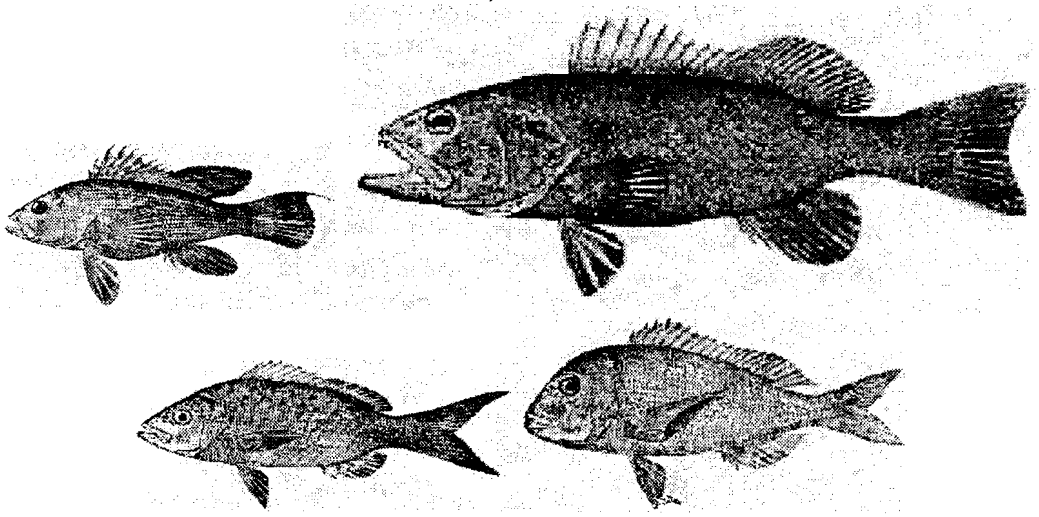
FINAL
AMENDMENT 8
TO THE
FISHERY MANAGEMENT PLAN
FOR THE
SNAPPER GROUPER FISHERY
OF THE
SOUTH ATLANTIC REGION

INCLUDING A FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT, INITIAL REGULATORY FLEXIBILITY ANALYSIS REGULATORY IMPACT REVIEW, AND SOCIAL IMPACT ASSESSMENT



JULY 1997

South Atlantic Fishery Management Council
1 Southpark Circle, Charleston, South Carolina 29407-4699
(803) 571-4366 / FAX (803) 769-4520
Email: safmc@noaa.gov

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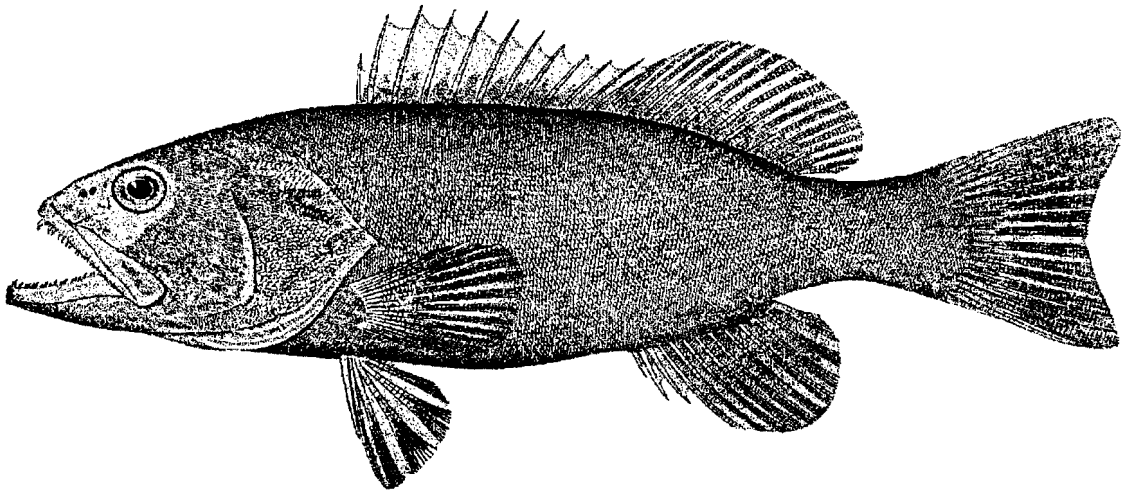

prepared by the
South Atlantic Fishery Management Council

JULY 1997

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AMENDMENT 8 COVER SHEET

This integrated document contains all elements of the Plan Amendment, Final Supplemental Environmental Impact Statement (FSEIS), Initial Regulatory Flexibility Analysis (IRFA), Regulatory Impact Review (RIR), and Social Impact Assessment (SIA). Separate Tables of Contents are provided to assist readers and the NMFS/NOAA/DOC reviewers in referencing corresponding sections of the Amendment. Introductory information and/or background for the FSEIS, IRFA, RIR, and SIA are included within the separate table of contents for each of these sections.

Responsible Agencies

South Atlantic Fishery Management Council
Contact: Robert K. Mahood
1 Southpark Circle, Suite 306
Charleston, South Carolina 29407-4699
(803) 571-4366; FAX (803) 769-4520
Email: safmc@noaa.gov

National Marine Fisheries Service
Contact: Andrew J. Kemmerer
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, Florida 33702
(813) 570-5301; FAX (813) 570-5300

Name of Action:

(X) Administrative ( ) Legislative

SUMMARY

The Council is proposing to: Limit permit holders to owners of boats/vessels that can: (a) demonstrate any landings of species in the snapper grouper management unit in 1993, 1994, 1995 or 1996 (as of 8/20/96); and (b) had a valid snapper grouper permit any time during the period from 2/11/96 through 2/11/97. Vessels landing at least 1,000 pounds of species in the snapper grouper management unit in any of these years receive a transferable permit. All other vessels receive a non-transferable permit and are limited to a 225 pound trip limit; Redefine overfishing and optimum yield; Allow use of one bait net up to 50 feet long by 10 feet high with a stretched mesh size of 1.5" or smaller. Allow one net per boat. Also, allow the possession and use of cast nets for catching bait; and Species within the snapper grouper management unit (whether whole or fillets) caught in Bahamian waters in accordance with Bahamian law may be possessed aboard a vessel in the South Atlantic EEZ and landed in the U.S. provided the vessel is in transit from the Bahamas and valid Bahamian fishing and cruising permits are onboard.

Public hearings originally scheduled to be held between October 15 and October 24, 1996 from Manteo, North Carolina along the coast to Marathon, Florida were post-poned. Public hearings were re-scheduled and held on January 6, 1997 at the Ramada Inn in Pooler, Georgia; on January 7, 1997 at the Comfort Inn Oceanfront in Jacksonville Beach, Florida; on January 8, 1997 at the Holiday Inn in Cocoa Beach, Florida; on January 9, 1997 at the Sheraton Hotel in West Palm Beach, Florida; on January 10, 1997 at the Banana Bay Resort in Marathon, Florida (rescheduled as shown below); on January 13, 1997 at the Town and Country Inn in Charleston, South Carolina; on January 14, 1997 at the Holiday Inn in Kill Devil Hills, North Carolina; on January 15, 1997 at the Sheraton Atlantic Beach Resort in Atlantic Beach, North Carolina; on January 16, 1997 at the Holiday Inn in Wilmington, North Carolina; and on January 17, 1997 at the Myrtle Beach Martinique Resort in Myrtle Beach, South Carolina. The Marathon, Florida public hearing was held on January 24, 1997.

A public comment period was held during the February 1997 Council meeting in St. Augustine, Florida. Seventeen individuals commented on Amendment 8 prior to the Council taking final action.

Also at the February 1997 meeting the Council separated the measures taken to public hearings into Amendments 8 and 9. The above items were included in Amendment 8. Council members clarified their position on several items related to transfer of catch history and permits at the April 1997 Council meeting in Tybee Island, Georgia.

The Council also clarified their position on several items related to catch history and permits at the June 1997 Council meeting in Key West, Florida.

FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

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

( ) Draft (**X**) Final

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SUMMARY

The following problems exist in the snapper grouper fishery. Problems 1, 3, 4, and 6-12 are addressed by the Final Supplemental Environmental Impact Statement and are shown in bold text:

1. **Excessive fishing mortality.**
2. Lack of biological, statistical, social, and economic information.
3. **Intense competition exists among users.**
4. **Habitat degradation.**
5. Inconsistent State and Federal regulations.
6. **Excess capacity.**
7. **Inefficiency.**
8. **Low conservation and compliance incentives.**
9. **Potential conflicts among participants.**
10. **High regulatory costs.**
11. **Low marketing incentives.**
12. Localized depletion.

The following objectives are included in the snapper grouper fishery management plan as amended through Amendment 8. The Final Supplemental Environmental Impact Statement addresses Objectives 1 and 3-12 which are shown in bold text:

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.

To address the problems and objectives stated above, the Council is proposing to: Limit permit holders to owners of boats/vessels that can: (a) demonstrate any landings of species in the snapper grouper management unit in 1993, 1994, 1995 or 1996 (as of 8/20/96); and (b) had a valid snapper grouper permit any time during the period from 2/11/96 through 2/11/97. Vessels landing at least 1,000 pounds of species in the snapper grouper management unit in any of these years receive a transferable permit. All other vessels receive a non-transferable permit and are limited to a 225 pound trip limit; Redefine overfishing and optimum yield; Allow use of one bait net up to 50 feet long by 10 feet high with a stretched mesh size of 1.5" or smaller. Allow one net per boat. Also, allow the possession and use of cast nets for catching bait; and Species within the snapper grouper management unit (whether whole or fillets) caught in Bahamian waters in accordance with Bahamian law may be possessed aboard a vessel in the South Atlantic EEZ and landed in the U.S. provided the vessel is in transit from the Bahamas and valid Bahamian fishing and cruising permits are onboard.

DSEIS to NMFS on: December 6, 1996 **DSEIS to EPA on: December 30, 1996**
Comments on DSEIS requested by: February 24, 1997

One comment on the DSEIS was received from EPA (Appendix G). Comments received on items in Amendment 8 have been compiled into two documents: (1) Public comments from the Magnuson Act/NEPA scoping process, and (2) Informal review comments from the Magnuson-Stevens Act public hearing process including NEPA input. Copies of these two documents are available from the Council office. The Council addressed the comments received in finalizing Amendment 8.

FSEIS to NMFS on: July 10, 1997 **FSEIS to EPA on: November 7, 1997**

Comments on FSEIS requested by: December 29, 1997

REGULATORY IMPACT REVIEW

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

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INTRODUCTION

The Regulatory Impact Review (RIR) is part of the process of developing and reviewing fishery management plans, amendments and seasonal adjustments, and is prepared by the Regional Fishery Management Councils with assistance from the National Marine Fisheries Service (NMFS), as necessary. The regulatory impact review provides a comprehensive review of the level and incidence of economic impact associated with the proposed regulatory actions. The purpose of the analysis is to ensure that the regulatory agency or council systematically considers all available alternatives so that public welfare can be enhanced in the most efficient and cost effective way.

The National Marine Fisheries Service requires a 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 the regulatory agency systematically and comprehensively considers all available alternatives so public welfare can be enhanced in the most efficient and cost effective way.

The RIR also serves as the basis for determining whether any proposed regulations are a "significant regulatory action" under certain criteria provided in Executive Order 12866 and whether the proposed regulations will have a significant economic impact on a substantial number

of small entities in compliance with the Regulatory Flexibility Act of 1980 (RFA) as amended by Public Law 104-121. The purpose of the Regulatory Flexibility Act is to relieve small businesses, small organizations, and small governmental entities from burdensome regulations and record–keeping requirements, to the extent possible.

This RIR analyzes the probable impacts on the fishery and habitat of the proposed plan amendment to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (FMP).

PROBLEMS AND OBJECTIVES

The Fishery Management Plan for the Snapper Grouper Fishery (SAFMC, 1983) contains a detailed description of the snapper grouper fishery. The problems and issues in the fishery are outlined in the various amendments. Those relevant to this amendment are presented in Section 1.4. Similar problems and issues were first identified for the wreckfish sector. These are expanded to apply to other species in the snapper grouper fishery.

The problems specified in the Snapper Grouper Fishery Management Plan are listed in the Final Supplemental Environmental Impact Statement and explained in the Purpose and Need Section.

METHODOLOGY AND FRAMEWORK FOR ANALYSIS

The basic approach adopted in this RIR is an assessment of management measures from the standpoint of determining the resulting changes in costs and benefits to society. The net effects should be stated in terms of producer and consumer surpluses for the harvesting, processing/dealer sectors and for consumers. Ideally, the expected present values of net yield streams over time associated with the different alternatives should be compared in evaluating the impacts. However, lack of data precludes this type of analysis. The approach taken in analyzing alternative management approaches is to describe and/or quantify the changes in short-term net benefits. A qualitative discussion of the long-term impacts is also included.

An economic survey was conducted in 1994 to collect data on snapper grouper permitees in the South Atlantic region by the South Carolina Department of Natural Resources under a MARFIN grant. Snapper grouper permit holders with home ports in North Carolina, South Carolina, Georgia and east coast of Florida were surveyed through in-person interviews. Data were collected on vessel characteristics, fixed and variable costs, revenues and incremental costs associated with switching to and from the fishery. A project report has already been submitted. The NMFS is doing a detailed analysis of the data. Some results from this analysis are incorporated into the RIR and IRFA analyses.

Because of the nature of the snapper grouper fishery in the Florida Keys, a separate economic survey was conducted in 1994 for Monroe County in conjunction with the MARFIN grant and the NMFS. The data from this survey has not been analyzed and is not available at this time for inclusion in the discussions under the RIR and IRFA sections.

Summary of Expected Changes in Net Benefits (Summary of Regulatory Impact Review)

The Council's preferred options are presented in the following table in bold.

Table 1. Summary of expected changes in net benefits.

Proposed Actions and Other Possible Options	POSITIVE IMPACTS	NEGATIVE IMPACTS	NET IMPACTS
Proposed Action 1: Initial eligibility is limited to owners of boats/vessels that can: (a) demonstrate any landings of species in the snapper grouper management unit in 1993, 1994, 1995 and 1996 (as of 8/20/96; and (b) had a valid snapper grouper permit any time during the period from 2/11/96 through 2/11/97). Vessels landing at least 1,000 pounds of species in the snapper grouper management unit in any of these years receive a transferable permit. All other vessels receive a non-transferable permit and are limited to a 225 pound trip limit.	Promote stability and facilitate long-term planning. Promote orderly utilization of the resource. Decrease incentive for overcapitalization. Prevent continual dissipation of returns from fishing through open access. Provide a flexible management system.	Decrease in number of commercial vessels. Minimal impact in terms of total catch. Estimated reduction of $1.0 million in gross revenue in the first year.	Increased net benefits in the long term.
Other Possible Options:			
Option 1: No Action	None.	Excess capacity and overcapitalization. Dissipation of any economic rent created by other regulations.	Reduced net benefits in the long term.
Option 2: Limit permit holders to those that can demonstrate landings of at least 1,000 pounds of snapper grouper species in two of the three years - 1993, 1994, and 1995, and have held a valid snapper grouper permit for 1993 , 1994 and 1995.	Promote stability and facilitate long-term planning. Promote orderly utilization of the resource. Decrease incentive for overcapitalization. Prevent continual dissipation of returns from fishing through open access. Provide a flexible management system.	Reduction in number of commercial vessels. Decrease in annual revenue. Could cause significant hardship to commercial fishermen.	Increased net benefits in the long term.
Option 3: Limit permit holders to those that held valid snapper grouper permits for 1993, 1994 and 1995.	Maintain gross revenue in the short-term.	Excess capacity and overcapitalization. Dissipation of any economic rent created by regulations.	Reduced net benefits in the long term.

Proposed Actions and Other Possible Options	POSITIVE IMPACTS	NEGATIVE IMPACTS	NET IMPACTS
Option 4: Limit permit holders to those that can demonstrate landings of species in the snapper grouper management unit as of July 30, 1991 (control date for the snapper grouper fishery).	Unknown.	Unknown.	Would likely reduce net benefits in the long term.
Option 5: Limit permit holders to those that can demonstrate landings of species in the snapper grouper management unit as of a date after February 1, 1992 (implementation of snapper grouper logbook program with 25% of snapper grouper permit holders selected for reporting during the 1992 fishing year) and that held valid snapper grouper permits for 1993, 1994 and 1995.	Maintain gross revenue in the short-term.	Excess capacity and overcapitalization. Dissipation of any economic rent created by regulations.	Would likely reduce net benefits in the long term.
Option 6: Limit permit holders to those that can demonstrate landings of species in the snapper grouper management unit as of January 1, 1993 (100% logbook reporting implemented) and that held valid snapper grouper permits for 1993, 1994 and 1995.	Maintain gross revenue in the short-term.	Excess capacity and overcapitalization. Dissipation of any economic rent created by regulations.	Would likely reduce net benefits in the long term.
Option 7: Limit permit holders to those that can demonstrate landings of species in the snapper grouper management unit as of January 1, 1994 and that held valid snapper grouper permits for 1994 and 1995.	Maintain gross revenue in the short-term.	Excess capacity and overcapitalization. Dissipation of any economic rent created by regulations.	Would likely reduce net benefits in the long term.

Proposed Actions and Other Possible Options	POSITIVE IMPACTS	NEGATIVE IMPACTS	NET IMPACTS
Option 8: Limit permit holders to those that can demonstrate landings of 1,500 - 5,000 pounds of species in the snapper grouper management annually (as of July 30, 1991; February 1, 1992, January 1, 1993; January 1, 1994; or January 1, 1995 - council to specify).	Could stabilize the fishery depending on the poundage chosen.	Could eliminate some vessels from the fishery depending on the poundage chosen.	Could increase net benefits in the long-term depending on the poundage chosen.
Action 2: Redefine overfishing as 20% SPR and optimum yield as 40% SPR.	Should stabilize the fishery and improve status of fish stocks. Provides some flexibility for managing the fishery.	None.	Increased net benefits in the long-term.
Other Possible Options:			
Option 1: No Action	None.	Could make management of the fishery less efficient.	Reduced net benefits in the long term.
Option 2: Specify a threshold level in the range of 5% to 30% spawning Potential Ratio (SPR) and target level in the range of 30% to 50% SPR.	Should stabilize the fishery and improve the status of the fish stocks.	None.	Increased net benefits in the long-term.
Option 3: Establish species specific definitions of overfishing - target, overfished, and threshold.	Unknown.	The multiple species nature of the fishery does nor make it practicable to implement different SPR levels.	Unknown.
Action 3: Allow use of one bait net up to 50 feet long by 10 feet high with a stretched mesh size of 1.5" or smaller. Allow one net per boat. Also allow possession and use of cast nets for catching bait.	Should aid fishermen's activity and promote better understanding between fishermen and management.	None.	Improved fishing efficiency.
Other possible Option:			
Option 1: No Action	None.	Could create enforcement problems and also affect fishermen's activities.	Reduced fishing efficiency and effectiveness of regulations.

Proposed Actions and Other Possible Options	POSITIVE IMPACTS	NEGATIVE IMPACTS	NET IMPACTS
Action 4: Species within the snapper grouper management unit (whether whole or fillets) caught in Bahamian waters in accordance with Bahamian law may be possessed aboard a vessel in the South Atlantic EEZ and landed in the U.S. provided the vessel is in transit from the Bahamas and valid Bahamian fishing and cruising permits are onboard.	Allows fishermen to transit SA EEZ legally with fish caught under Bahamian law. Could increase revenue of for hire vessels making recreational fishing trips to the Bahamas.	None.	Enhances fishing experience for those fishing legally in the Bahamas. Possible increase in revenue for the for hire sector.
Other Possible Option:			
Option 1: No Action	None.	Prevents recreational fishermen from transiting SA EEZ with fish caught legally in the Bahamas.	Prevents fishermen from transiting SA EEZ with fish caught legally in the Bahamas.

SOCIAL IMPACT ASSESSMENT

This integrated document contains all elements of the Plan Amendment, Final Supplemental Environmental Impact Statement (FSEIS), Initial Regulatory Flexibility Analysis (IRFA), Regulatory Impact Review (RIR), and Social Impact Assessment (SIA). A table of contents for the SIA is provided separately to aid reviewers in referencing corresponding sections of the Amendment.

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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 (MSFCMA). 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 (CEQ,, 1986) *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 (Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, 1994).

Under the MSFCMA, fishery management plans (FMPs) must "...achieve and maintain, on a continuing basis, the optimum yield from each fishery" [MSFCMA 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 [MSFCMA section 303 (b) (6)]. Recent amendments to the MSFCMA require 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 [MSFCMA section 303 (a) (9)]. Most recently, with the addition of National Standard 8, FMPs must now consider the impacts upon fishing communities to assure their sustained participation and minimize adverse economic impacts upon those communities [MSFCMA section 301 (a) (8)]. Consideration of social impacts is a growing concern as fisheries experience increased participation and/or declines in stocks. With an increasing need for management action, the consequences of such

changes need to be examined in order to mitigate the negative impacts experienced by the populations concerned.

PROBLEMS AND METHODS

Social impacts are generally the consequences to human populations that follow from some type of public or private action. Those consequences may include alterations to "the ways in which people live, work or play, relate to one another, organize to meet their needs and generally cope as members of a society...." (Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, 1994:1). In addition, cultural impacts which may involve changes in values and beliefs which affect people's way of identifying themselves within their occupation, communities, and society in general are included under this interpretation. Social impact analyses help determine the consequences of policy action in advance by comparing the status quo with the projected impacts. Therefore, it is extremely important that as much information as possible concerning a fishery and its participants be gathered for an assessment. Although public hearings and scoping meetings do provide input from those concerned with a particular action, they do not constitute a full overview of the fishery.

Without access to relevant information for conducting social impact analyses it is important to identify any foreseeable adverse effects on the human environment. With quantitative data often lacking, qualitative data can be used to provide a rough estimate of some impacts. In addition, when there is a body of empirical findings available from the social science literature, it needs to be summarized and referenced in the analysis.

In attempting to assess the social impacts of the proposed amendment it must be noted that data used for this analysis did not represent a comprehensive overview of the fishery therefore the analyses do not include all social impacts. What information was available pertains primarily to the commercial harvesting sector of the snapper grouper fishery. Thus social impacts on non-commercial harvesters, the processing sector, the consumer, fishing communities, and society as a whole are not fully addressed due to data limitations. The fishery impact statement (social impact assessment) consists of the description of the commercial fishery and the social impacts under each action item and options. There is presently no information or sufficient guidelines to define or determine impacts upon fishing communities.

Social Impact Summary

Table 2. Summary of social impacts.

Action	Social Impacts
Action 1. Limit snapper grouper permit holders.	There is some support for limited entry among snapper grouper fishermen as indicated in recent surveys and public hearing opinion polls. There is also resistance to certain limited entry alternatives that varies according to region. The council addressed many of the concerns that surfaced during the public hearings and settled on a preferred option that is supported by more fishermen from various geographic regions than the previous preferred alternative.
Action 2. Redefine overfishing as 20% SPR and optimum yield as 40% SPR.	The social impacts from defining overfishing and optimum yield stem from the associated actions and timeframe the Council uses to reach those goals. Using a high SPR with a short time frame may provide quick recovery of stocks, but may have negative short term impacts on fishermen. Using a low SPR with an extended time frame may lessen the social impacts on fishermen, but may delay stock recovery.
Action	Social Impacts
Action 3. Specify allowable net gear.	By allowing bait nets and cast nets onboard this action will provide for those fishermen who rely on fishing for bait just prior to snapper grouper fishing. It will save these fishermen added time and expense.
Action 4. Allow possession of species within the snapper grouper complex caught in Bahamian waters	This action will have few if any social impacts other than to clarify inconsistencies recreational fishermen must encounter when moving between sovereignties. It may create an incentive for some to circumvent the intent of the regulation and land fish illegally caught in the U.S.

Social Impact Assessment Data Needs

The recent socio-demographic survey and economic survey were snapshots of the commercial fishery. To provide better assessments socio-economic data need to be collected on a continuous basis for both the commercial and recreational sectors, including the for-hire sector. Collecting social and economic information in logbooks would be one manner of providing this information on a continuing basis. In addition, information on fishing communities in the South Atlantic is virtually non-existent. The following list of data needs is provided as a guideline:

1. Demographic information may include but 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; association with vessels & firms (role & status).
2. Social Structure information may include but 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. Emic culture information may include but 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 not necessarily limited to: identifying communities, dependence upon fishery resources (this includes recreational use), identifying businesses related to that dependence, number of employees within these businesses.

This list of data needs is not exhaustive or all inclusive. The upcoming issues within the snapper grouper fishery will undoubtedly focus upon allocation and the need for reliable and valid information concerning the social environment will become necessary for managing this fishery.

1.0 PURPOSE AND NEED

1.1 Issues/Problems

The Fishery Management Plan for the Snapper Grouper Fishery (SAFMC, 1983) contains a detailed description of the snapper grouper fishery. The problems and issues in the fishery are outlined in the various amendments. Those relevant to this amendment, together with other problems that could be addressed under a controlled access program are presented in this section. Similar problems and issues were first identified for the wreckfish sector of the snapper grouper fishery. Amendment 8 expands them to apply to all species in the snapper grouper fishery.

The current definition of overfishing refers to 30% Spawning Stock Biomass Per Recruit (SSBR). Amendment 8 proposes a change to 20% Spawning Potential Ratio (SPR). SPR is defined as 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. SSBR is defined as 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. Action 2 describes the Council's proposed changes in detail. The current wording of problems and some of the stock assessment results refer to SSBR, SSR and SPR. It is the Council's intent that overfishing be defined in terms of SPR. Future assessments will be conducted to yield estimates of SPR. Amendment 8 has been revised to refer to SPR in all cases except when assessment results and/or specific wording is taken directly from documents.

Problems in the snapper grouper fishery as modified by Amendment 4 (SAFMC, 1991b) are shown below. In addition, revisions as proposed in Amendment 8 are also shown.

1. Excessive fishing mortality is jeopardizing the biological integrity of the snapper grouper resource of the South Atlantic. First, thirteen species in the complex are in a documented state of overfishing, i.e., spawning stock ratio (SSR) is less than 30%. This group consists of black sea bass, gray snapper, vermilion snapper, red snapper, red porgy, gray triggerfish, gag, scamp, red grouper, speckled hind, snowy grouper, warsaw grouper, and greater amberjack. Second, fourteen species are thought to be overfished even though the SSRs are unknown. This group consists of golden tilefish, yellowedge grouper, misty grouper, Nassau grouper, black grouper, yellowmouth grouper, yellowfin grouper, schoolmaster snapper, queen snapper, blackfin snapper, cubera snapper, dog snapper, mahogany snapper, and silk snapper. Third, the jewfish resource is thought to be severely overfished throughout the Gulf of Mexico and South Atlantic even though SSR is unknown. Fourth, the rapid increase in number of vessels, effort, and catch in the newly developed wreckfish fishery threatens the wreckfish resource with overfishing even though SSR is unknown. Fifth, additional species may be overfished or likely to experience overfishing in the near future.

Proposed Revision: Excessive fishing mortality is jeopardizing the biological integrity of the snapper grouper resource of the South Atlantic.

The rest of the material describes the status of particular species which is best discussed under Section 3.4 Status of the Stocks.

2. Adequate management has been hindered by lack of current and accurate biological, statistical, social, and economic information. Data necessary to document growth and/or recruitment overfishing, and to calculate SSRs are very limited. Since the universe of participants is unknown, scientists are unable to estimate catch, effort, and other important information with the desired accuracy. The present system of fishery dependent and fishery independent data collection provides limited information for assessment purposes and practically no economic or social data.

Proposed Revision: Adequate management has been hindered by lack of current and accurate biological, statistical, social, and economic information.

Progress has been made in determining the status of additional species. However, data to calculate stock status remains limited and in many cases the status of particular stocks are unknown or disputed between fishermen and scientists.

The permitting system defines the universe of commercial participants, and social and economic survey results are available for portions of the commercial fishery. Information for the recreational fishery remains very limited.

3. Intense competition exists among recreational, part-time, and full-time commercial users of the snapper grouper resources; and between commercial users employing different gears (hook and line, traps, entanglement nets, longlines, and powerheads/bang sticks). [Note: Entanglement nets are no longer allowed in the snapper grouper fishery.]

4. Habitat degradation caused by some types of fishing gear and poor water quality have adversely affected fish stocks and associated habitat.

5. The existence of inconsistent State and Federal regulations makes it difficult to coordinate, implement and enforce management measures and may lead to overfishing. Inconsistent management measures create public confusion and hinders voluntary compliance.

The following problems added in Amendment 5 (SAFMC, 1991a) for wreckfish are expanded in this amendment to apply to the entire snapper grouper fishery:

6. Excess Capacity: The 1991 stock assessment report concluded that nine of the 19 species have Spawning Stock Ratio (SSR) values of less than 0.30, the criterion value designating overfishing. Another four species have values from 0.34 to 0.30, very close to the criterion level, while 16 of the 19 species have SSR values of 0.38 or less. The 1992 stock assessment report concluded that SSR for eight of the 19 species increased, while SSR decreased for nine and remained the same for two. The size and capacity of the fleet have increased significantly in recent years and the exact number of vessels exploiting the fishery is not known with certainty. This is partly because a number of vessels in other fisheries obtain reef fish permits to enable them to land incidental catches of snapper and grouper species.

Despite bag and trip limits, and other regulatory measures, some of the stocks are still overfished or near the overfished stage. Any gains from current regulatory measures under the open access situation are likely to attract new entrants to the fishery and provide incentive for those already in the fishery to increase harvest capacity even when gains in production are marginal or when economies of scale are not necessarily realized.

Proposed Revision: Excess Capacity: The size and capacity of the fleet have increased significantly in recent years. Despite bag and trip limits, and other regulatory measures, some of the stocks are still overfished or near the overfished stage. Any gains from current regulatory measures under open access are likely to attract new entrants to the fishery and provide incentive for those already in the fishery to increase harvest capacity even when gains in production are marginal or when economies of scale are not necessarily realized.

7. Inefficiency: Past and present measures to control harvest (TAC, gear restrictions, trip limits, size limit and bag limits), and future measures that would likely be implemented under continued open access, would increase fishing costs and decrease potential consumer and producer benefits from the fishery. This inefficiency could be minimized if access to the fishery is controlled.

8. Low Conservation and Compliance Incentives: Under open access there is little incentive on the part of fishermen to promote conservation and to voluntarily comply with regulations. This is because the benefits from doing so may accrue to other fishermen or to new entrants. A controlled access management system would provide a mechanism for those who participate in conservation measures to share in the resulting benefits.

9. Potential Conflicts among Participants: As the number of vessels continues to increase over time, competitive fishing conditions may eventually lead to gear and area conflicts as a large number of vessels compete for the available resources on the same fishing grounds. (At the other extreme, stocks may decline to the point where marginal fishermen may not find it economically viable to fish. This situation could lead to a decline in fishing effort.)

10. High Regulatory Costs: The progression of regulatory measures already implemented in the snapper grouper fishery has resulted in increasing management and enforcement costs. However, the full benefit from these measures has not been realized due to the open access nature of the fishery. More management measures under open access would further increase these costs to the point where management costs could outweigh the benefits.

11. Low Marketing Incentives: Short–run oversupply and lack of product continuity continues to create price fluctuation and uncertainty in the marketplace for these species. The likelihood of additional harvest restrictions under open access increases uncertainty and instability which discourages long–term planning and investment by dealers.

12. Localized Depletion: Localized depletion where a species' abundance in an area is reduced by high fishing effort can cause conflict among fishermen.

1.2 Management Objectives for Amendment 8

The objectives are spelled out in the Fishery Management Plan and its amendments. It should be noted that various actions implemented under the FMP and its amendments established the management structure for stabilizing yield at maximum sustainable yield (MSY), for recovery of overfished stocks, and for maintaining population levels sufficient to ensure adequate recruitment. The existing management program does not provide a means for reducing excess capacity nor provide incentives for fishermen to comply with regulations. A controlled access management system would correct some of these inadequacies. However, a controlled access system by itself does not resolve all management problems, it provides a means for addressing problems other management measures cannot solve. Thus, controlled access should be considered a supplement to other management measures. Also, no matter which controlled access approach is used, there are always winners and losers due to overcapacity already existing in the fishery. The management goal is to select a system that will provide the most benefit to society and at the same time ensure optimum use of the resource in the long–run while minimizing impacts on fishermen.

Objectives of the Snapper Grouper Fishery Management Plan as modified by Amendment 4 (SAFMC, 1991b) are shown below. In addition, revisions as proposed in Amendment 8 are also shown.

1. Prevent overfishing in all species by maintaining the spawning stock ratio (SSR) at or above target levels.

Proposed Revision: Prevent overfishing in all species by maintaining the spawning potential ratio (SPR) at or above target levels.

This reflects the change from spawning stock ratio to spawning potential ratio as discussed under Action 2.

2. Collect necessary data to develop, monitor, and assess biological, economic, and social impacts of management measures designed to prevent overfishing, obtain desired SSR levels, and address the other stated problems.

Proposed Revision: Collect necessary data to develop, monitor, and assess biological, economic, and social impacts of management measures designed to prevent overfishing, obtain desired SPR levels, and address the other stated problems.

This reflects the change from spawning stock ratio to spawning potential ratio as discussed under Action 2.

3. Promote orderly utilization of the resource.

4. Provide for a flexible management system that minimizes regulatory delays while retaining substantial Council and public involvement in management decisions, and rapidly adapts to changes in resource abundance, new scientific information, and changes in fishing patterns among user groups.

5. Minimize habitat damage due to direct and indirect effects of recreational and commercial fishing activities.

Proposed Revision: Minimize habitat damage due to direct and indirect effects of recreational and commercial fishing activities as well as other non-fishery impacts.

Reflects greater responsibility under recent Magnuson-Stevens Act amendment.

6. Promote public comprehension of, voluntary compliance with, and enforcement of the management measures.

The following objectives added in Amendment 5 (SAFMC, 1991a) are expanded to apply to the entire snapper grouper fishery:

7. Mechanism to Vest Participants: A controlled access system provides a means whereby participants have a stake in conserving the resource. This ensures that participants consider the long–run benefits of conserving the resource because they know it is in their best interest. Unlike open access, controlled access would ensure that those who conserve the resource share in the long–run benefits. This gives fishermen incentive to protect the resource and expose those who are violating regulations. As a result, voluntary compliance would increase and enforcement costs would likely decrease.

8. Promote Stability and Facilitate Long–run Planning: Participants in the fishery will have access to the resource based on certain criteria to be determined by the Council after reviewing public comments. This would give participants the flexibility to employ the most profitable way to fish and also fish when it is most profitable in terms of market conditions. Such a system will promote stability in the fishery by providing a regular supply of fish throughout the fishing year, and maintain stable prices. Both fishermen and fish dealers will have the incentive to engage in long–run planning and investment activities.

9. Create Market–Driven Harvest Pace and Increase Product Continuity: A system that ensures participants can harvest their allocations (whether in terms of individual quotas, effort units, trip limits, etc.) anytime during the fishing year would ensure that fishermen conduct their fishing activities to supply the market according to its structure and demand situation. There would be no incentive on the part of fishermen to flood the market with fish. This could result in product continuity, improved product quality, and better prices.

10. Minimize Gear and Area Conflicts among Fishermen: Presently, allowable gear provision (implemented under snapper Grouper Amendment 6) controls the types of gear in the fishery. Controlled access and effort unit controls would limit the number of allowable gear in the fishery.

11. Decrease Incentives For Overcapitalization: If some form of vested interest is provided to fishermen, their objective would be to maximize profits subject to certain conditions. In order to maximize profits they would explore the least cost method for harvesting in the fishery. This means they would employ fishing effort only to the point where the difference between the anticipated total revenue and total cost is greatest. This practice would reduce incentives for overcapitalization.

12. Prevent Continual Dissipation of Returns from Fishing through Open Access: It is a well known fact that under open access any measure(s) that generate "pure profits" will provide an opportunity for those already in the fishery to dissipate those profits and also attract new entrants into the fishery. This can only be prevented if measures are taken to prevent those already in the fishery from increasing their effort without any restriction and also to create a barrier against unlimited entry into the fishery. A controlled access system will reduce the incentive for present participants to violate the regulations, and also prevent unlimited entry into the fishery.

13. Evaluate and minimize localized depletion. High fishing mortality rates have resulted in localized depletion of some species in certain areas. Certain species are overfished throughout their range; however, there are particular areas where the overfishing rate is more severe than in the rest of the range. There may also be some cases where the stock as a whole is not overfished, but the numbers in a localized area have been significantly reduced.

Proposed Revision - Add the following new objective:

14. Minimize bycatch.

Reflects greater responsibility under recent Magnuson-Stevens Act amendment which added the following national standard: "(9) Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch."

1.3 History of Management

1.3.1 Snapper Grouper Fishery Management Plan and Amendments.

The **Fishery Management Plan** (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC, 1983) was prepared by the South Atlantic Fishery Management Council and implemented by the Secretary of Commerce on August 31, 1983 [48 Federal Register 39463]. The FMP was prepared to prevent growth overfishing in thirteen species in the snapper grouper complex and to establish a procedure for preventing overfishing in other species. The FMP established a 12" total length minimum size for red snapper, yellowtail snapper, red grouper and Nassau grouper; an 8" total minimum size for black sea bass; and a 4" trawl mesh size to achieve a 12" minimum size for vermilion snapper. Additional harvest and gear limitations were also included in the original plan.

Amendment 1 (SAFMC, 1988) was implemented by the Secretary effective January 12, 1989 [54 Federal Register 1720] to address the problems of habitat damage and growth overfishing in the trawl fishery. The amendment prohibited use of trawl gear to harvest fish in the directed snapper grouper fishery south of Cape Hatteras, North Carolina (35° 15' N Latitude) and north of Cape Canaveral, Florida (Vehicle Assembly Building, 28° 35.1' N Latitude). A vessel with trawl gear and more than 200 pounds of fish in the snapper grouper fishery (as listed in Section 646.2 of the regulations) on board was defined as a directed fishery. The amendment also established a rebuttable presumption that a vessel with fish in the snapper grouper fishery (as listed in Section 646.2 of the regulations) on board harvested its catch of such fish in the Exclusive Economic Zone (EEZ).

Amendment 2 (SAFMC, 1990b) prohibited the harvest or possession of jewfish in or from the EEZ in the South Atlantic due to its overfished status and defined overfishing for jewfish and other snapper grouper species according to the National Marine Fisheries Service

(NMFS) 602 guidelines requirement that definitions of overfishing be included for each fishery management plan. The harvest or possession of jewfish was prohibited by emergency rule. The amendment was approved on October 10, 1990 and final regulations were effective October 30, 1990 [55 Federal Register 46213].

Amendment 3 (SAFMC, 1990a) established a management program for the recently developed wreckfish fishery. The Council was concerned that the rapid increase in effort and catch threatened the wreckfish resource with overfishing and that the concentration of additional vessels in the relatively small area where the resource is located could also create problems with vessel safety because of overcrowding. Actions included: (1) adding wreckfish to the management unit; (2) defining optimum yield; (3) defining overfishing for wreckfish; (4) requiring an annual permit to fish for, land or sell wreckfish; (5) collecting data necessary for effective management; (6) establishing a control date of March 28, 1990 after which there would be no guarantee of inclusion in a limited entry program should one be developed (this was later limited to the area bounded by 33° and 33° N. latitude based on public hearing testimony); (7) establishing a fishing year beginning April 16; (8) establishing a process whereby annual total allowable catch (annual quotas) would be specified, with the initial quota set at 2 million pounds; (9) establishing a 10,000 pound trip limit; and (10) establishing a spawning season closure from January 15 through April 15. Actions (7), (9) and (10) were based on public testimony. An emergency rule effective August 3, 1990 [55 Federal Register 32257] added wreckfish to the management unit, established a fishing year for wreckfish commencing April 16, 1990, established a commercial quota of 2 million pounds and established a catch limit of 10,000 pounds per trip. The Secretary of Commerce closed the fishery for wreckfish in the EEZ effective August 8, 1990 when the 2 million pound TAC was reached [55 Federal Register 32635]. The Council requested an extension of the emergency rule which was approved [55 Federal Register 40181]. Amendment 3 was approved on November 9, 1990 and final regulations were effective January 31, 1991 [56 Federal Register 2443].

Amendment 4 (SAFMC, 1991b) was prepared to reduce fishing mortality on overfished species, to establish compatible regulations, where possible, between state and federal agencies, to identify the universe of fishermen, and to gather the data necessary for management. Amendment 4 prohibits: (1) use of fish traps in South Atlantic federal waters with the exception of black sea bass traps when used north of Cape Canaveral, Florida; (2) use of entanglement nets, which includes gill and trammel nets; (3) use of longline gear inside 50 fathoms (300 feet) in the snapper grouper fishery in South Atlantic federal waters; (4) use of bottom longlines for wreckfish; and (5) use of powerheads and bangsticks in all designated special management zones (SMZs) off the South Carolina coast. In addition, fishermen who fish for other species with gear prohibited in the snapper grouper fishery may not have bycatch of snapper and grouper species in excess of the allowed bag limit. No bycatch would be allowed for those species that have no bag limit or that are prohibited.

The amendment established the following minimum sizes: 8" total length for lane snapper and black sea bass; 10" total length for vermilion snapper (recreational fishery only); 12" total length for red porgy, vermilion snapper (commercial fishery only), gray, yellowtail, mutton, schoolmaster, queen, blackfin, cubera, dog, mahogany and silk snappers; 20" total length for red snapper, gag, and red, black, scamp, yellowfin, and yellowmouth groupers; 28" fork length for greater amberjack (recreational fishery only); 36" fork length or 28" core length for greater amberjack (commercial fishery only); and no retention of Nassau grouper. Amendment 4 also requires that all snappers and groupers possessed in South Atlantic federal waters must have head and fins intact through landing.

Bag limits established under Amendment 4 for the recreational fishery are: a bag limit of 10 vermilion snapper per person per day; a bag limit of three greater amberjack per person per day; a snapper aggregate bag limit of 10 fish per person per day, excluding vermilion snapper and allowing no more than two red snappers; and a grouper aggregate bag limit of five per person per day, excluding Nassau grouper and jewfish for which no retention is allowed. Charter and head boats are allowed to have up to a two–day possession limit as long as there are two licensed operators on board and passengers have receipts for trips in excess of 12 hours. Excursion boats would be allowed to have up to a three–day possession limit on multi–day trips. Fish harvested under the bag limit may be sold in conformance with state laws if they meet the commercial minimum sizes. The commercial harvest and/or landing of greater amberjack in excess of the three–fish bag limit is prohibited in April south of Cape Canaveral, Florida. The commercial harvest and/or landing of mutton snapper in excess of the snapper aggregate bag limit is prohibited during May and June.

To exceed bag limits in the snapper grouper fishery, an owner or operator of a vessel that fishes in South Atlantic federal waters is required to obtain an annual vessel permit. For individuals to qualify for a permit they must have at least 50 percent of their earned income, or $20,000 in gross sales, derived from commercial, charter, or headboat fishing. For a corporation to be eligible for a permit, the corporation or shareholder or officer of the corporation or the vessel operator would be required to have at least $20,000 in gross sales derived from commercial fishing. For partnerships, the general partner or operator of the vessel is required to meet the same qualifications as a corporation. A permit, gear, and vessel and trap identifications are required to fish with black sea bass traps. Amendment 4 also addresses enforcement concerns that surfaced with wreckfish trip limit. Amendment 4 was approved on August 26, 1991 by the Secretary of Commerce and all regulations were effective on January 1, 1992 except the bottom longline prohibition for wreckfish was implemented on October 25, 1991 [56 Federal Register 56016].

Bottom longline gear was being used to a limited extent in the wreckfish fishery and fishermen indicated that gear loss, habitat damage and lost gear continuing to fish were problems. The Council subsequently requested and was granted **emergency regulations** [56 Federal Register 18742] that prohibited the use of bottom longline gear in the wreckfish fishery effective April 19, 1991 and were granted an **extension** on July 19,1991 [56 Federal Register 33210].

A **control date** of July 30, 1991 for possible future limited entry was established for the entire snapper grouper fishery excluding wreckfish [56 Federal Register 36052].

Amendment 5 (SAFMC, 1991a) established Individual Transferable Quota (ITQ) management program for the wreckfish fishery. The Council submitted the amendment to the Secretary of Commerce on September 12, 1991. Amendment 5 was implemented with an effective date of April 6, 1992, except that the sections dealing with permits and fees, falsifying information, and percentage shares was effective March 5, 1992 [57 Federal Register 7886]. The amendment included the following: (1) a limited entry program for the wreckfish sector of the snapper grouper fishery consisting of transferable percentage shares of the annual total allowable catch (TAC) of wreckfish and individual transferable quotas (ITQs) based on a person's share of each TAC; (2) required dealer permits to receive wreckfish; (3) removed the 10,000 pound (4,536 kilogram) trip limit for wreckfish; (4) required that wreckfish be off loaded from fishing vessels only between 8:00 a.m. and 5:00 p.m.; (5) reduced the occasions when 24–hour advance notice must be made to NMFS Law Enforcement for off–loading of wreckfish; and (6) specified the procedure for initial distribution of percentage shares of the wreckfish TAC. At its February

1996 meeting, the Council approved staying with the 2 million pound TAC for fishing year 1996/97.

Implementation of Amendment 4 resulted in a prohibition on black sea bass pot fishermen making multi–gear trips and retaining other species which resulted in large, unintended economic losses. The Council subsequently requested **emergency regulations** on July 8, 1992 to modify the definition of black sea bass pot, allow multi–gear trips, and allow retention of incidentally caught fish. These regulations became effective on August 31, 1992 [57 Federal Register 39365] and were extended on November 30, 1992 [57 Federal Register 56522]. On December 11, 1992 the Council submitted a **regulatory amendment** implementing the above changes on a permanent basis. An interim final rule and request for comments was published on March 2, 1993 with an effective date of March 1, 1993 [58 Federal Register 11979]. The final rule was published on July 6, 1993 [58 Federal Register 36155] with an effective date of July 6, 1993.

The Council submitted a **regulatory amendment** requesting implementation of eight special management zones off South Carolina on August 12, 1992. The proposed rule was published in the federal register on March 15, 1993 [58 Federal Register 13732]. The final rule was published on July 2, 1993 [58 Federal Register 35895] with the effective date of July 31, 1993.

Amendment 6 (SAFMC, 1993b) was submitted to the Secretary of Commerce in December 1993. The amendment was developed to rebuild the snowy grouper, golden tilefish, speckled hind, warsaw grouper, misty grouper, and yellowedge grouper resources and proposed to phase–in quotas over a three year period beginning January 1994. Commercial trip limits, recreational bag limits, and an experimental closed area were also proposed to manage and rebuild these economically and ecologically important resources. Data will be collected to evaluate shifts in fishing effort (effort shifts) among fisheries and for future evaluation of an "Individual Transferable Quota" (ITQ) type of management approach. Amendment 6 was approved on May 5, 1994 with the exception of the 100 percent logbook coverage and the anchoring prohibition within the Oculina Bank. Commercial trip limits for snowy grouper and golden tilefish became effective June 6, 1994, and the remaining of the regulations became effective June 27, 1994 [59 Federal Register 27242].

Amendment 7 (SAFMC, 1994a) was submitted to the Secretary of Commerce on June 16, 1994. It establishes a 12" fork length size limit for hogfish; increases the mutton snapper size limit from 12" to 16" total length; requires dealer, charter and headboat federal permits; allows sale under specified conditions; specifies allowable gear and makes allowance for experimental gear; makes allowance for multi–gear trips in North Carolina; adds localized overfishing to the list of problems and objectives; adjusts the bag limit and crew specification for charter and headboats; modifies the management unit for scup to apply south of Cape Hatteras, North Carolina; modifies the framework procedure to increase the timeliness of action by the Council. The final rule was published on December 23, 1994 [59 Federal Register 66270] and the regulations became effective January 23, 1995 except for application and possession of dealer, charter and headboat federal permits which became effective December 23, 1994 and March 1, 1995 respectively.

At the request of the State of Florida, the Council submitted **Regulatory Amendment 6** (SAFMC, 1994b) on October 21, 1994 to the Secretary of Commerce for bag limits on hogfish and cubera snapper, and a size limit on gray triggerfish. It established a daily recreational bag limit of five hogfish per person; limits the harvest and possession to two per day; of cubera snapper to 30" total length or larger and established a minimum size limit for gray triggerfish of

12" total length. These measures apply only in the EEZ off the Atlantic coast of Florida. The proposed rule was published on February 15, 1995 [60 Federal Register 8622]. The final rule was published on April 20, 1995 [60 Federal Register 19683 with effective date of May 22, 1995].

In a letter dated February 6, 1997, the Council requested establishment of **a control date for the black sea bass pot fishery** effective upon publication in the federal register. The advanced notice of proposed rulemaking was published in the federal register on April 23, 1997 [62 Federal Register 19732]. April 23, 1997 is the control date for the black sea bass pot fishery.

1.3.2 Development of Amendment 8

The Council received requests from the public to consider additional regulations for (1) greater amberjack in Monroe County, Florida, (2) yellowtail snapper, and (3) multi-day bag limits. Additional options were taken to scoping concerning (4) prohibiting possession of fish traps in the South Atlantic EEZ to enhance enforcement; (5) specifying the time when commercial permits are available; and (6) limiting access based on the number of permitted fishermen that have complied with all reporting requirements. Actions 4 through 6 were taken to public hearing during development of Amendments 6 and 7 but the Council did not propose taking action in either of those amendments.

During three scoping meetings (June 21, 1994, Marathon, Florida; August 24,1994, Charleston, South Carolina; and October 25, 1994, Wrightsville Beach, North Carolina), a number of suggestions for additional action surfaced and are included in this amendment. Scoping meeting minutes, letters and comments from the Snapper Grouper Advisory Panel were distributed to all council members on January 13, 1995. This material, the most recent assessment results, and public hearings formed the basis for Amendment 8.

Public hearings originally scheduled to be held between October 15 and October 24, 1996 from Manteo, North Carolina along the coast to Marathon, Florida were post-poned. Public hearings were re-scheduled and held on January 6, 1997 at the Ramada Inn in Pooler, Georgia; on January 7, 1997 at the Comfort Inn Oceanfront in Jacksonville Beach, Florida; on January 8, 1997 at the Holiday Inn in Cocoa Beach, Florida; on January 9, 1997 at the Sheraton Hotel in West Palm Beach, Florida; on January 10, 1997 at the Banana Bay Resort in Marathon, Florida (rescheduled as shown below); on January 13, 1997 at the Town and Country Inn in Charleston, South Carolina; on January 14, 1997 at the Holiday Inn in Kill Devil Hills, North Carolina; on January 15, 1997 at the Sheraton Atlantic Beach Resort in Atlantic Beach, North Carolina; on January 16, 1997 at the Holiday Inn in Wilmington, North Carolina; and on January 17, 1997 at the Myrtle Beach Martinique Resort in Myrtle Beach, South Carolina. The Marathon, Florida public hearing was held on January 24, 1997.

A public comment period was held during the February 1997 Council meeting in St. Augustine, Florida. Seventeen individuals commented on Amendment 8 prior to the Council taking final action.

Also at the February 1997 meeting the Council separated the measures taken to public hearings into Amendments 8 and 9. The above items were included in Amendment 8. Council members clarified their position on several items related to transfer of catch history and permits at the April 1997 Council meeting in Tybee Island, Georgia.
The Council also clarified their position on several items related to catch history and permits at the June 1997 Council meeting in Key West, Florida.

1.4 Issues/Problems Requiring Plan Amendment

The snapper grouper fishery is overcapitalized, that is, there are many more vessels permitted in the fishery than are necessary to harvest the available yield. The harvest capacity of the fleet has increased significantly through use of electronics and greater availability of detailed bathymetric charts. In addition, many species remain overfished despite management action by the Council. The open access nature of the snapper grouper fishery contributes to overcapitalization and continued overfishing.

The problem of excessive fishing mortality is addressed by redefining overfishing and OY with a higher target level (Action 2). Aiming for 40% static SPR will reduce the likelihood of overfishing even in years of natural stock fluctuations. Actions 3 and 4 address problems that have arisen from existing snapper grouper regulations and are aimed at promoting orderly utilization of the snapper grouper resource.

The Council has approved a multi-level approach to achieve their OY goal of 40% static SPR:

Level 1 (Amendment 8). Limit Number of Vessels & Control Effort

Step 1. Limit the number of vessels (by limiting the number of permits). There were 2,800 permitted vessels in 1996. In 1995 the total number of vessels was 2,766. Limiting permit holders to those that landed snapper grouper species in 1993, 1994, 1995, or 1996 (as of 8/20/96) and held snapper grouper permits any time during the period 2/11/96 through 2/11/97 would qualify up to 1,523 vessels (1,075 transferable permits and 448 non-transferable permits; see Table 18). This still represents more vessels than is necessary to harvest available yield but it does ensure continued long-term participation in the snapper grouper fishery to these individuals. This is very important in that it changes their planning from short-term to long-term; voluntary compliance would increase. This addresses a number of the economic and social problems in the fishery, and in fact caps participation.

Establishing permits to participate in the snapper grouper fishery subject to limitations changes the way in which people think about the snapper grouper resource. It will then be in their best interest (i.e., make economic sense) to plan for the long-term. They will bear the burden of management regulations (e.g., size limits, quotas, etc.) and the benefits would not be reduced by new entrants to the fishery. Step 2 (below) further increases benefits in this area.

Step 2. Control effort. The additional requirement of some level of landings between 1993 and 1996 will further reduce the number of qualifying vessels. The addition of trip limits for non-transferable permits would provide a slight reduction in fishing mortality in the short-term thereby contributing to solving some of the biological problems of overfishing. Any reduction in fishing mortality would be slight in the beginning but would be expected to increase over time as the number of permitted vessels decreases. The increase in voluntary compliance would also provide additional biological benefits.

Level 1 actions primarily address economic and social problems and form the basis of Amendment 8. There are some biological benefits but additional measures are necessary to achieve the Council's short-term goal of 20% transitional SPR and eventually the long-term goal of 40% static SPR. Level 2 actions form the basis of Amendment 9 which the Council approved for additional public hearings during June/July 1997.

Level 2 (Amendment 9). Reduce Fishing Mortality (F) to Achieve 40% Static SPR

Approach 1. Fully implement measures to reach 40% static SPR. Management measures to be used would include size limits, bag limits, quotas and trip limits. Size limits to achieve 40% static SPR are shown on the next page.

Species	Current Regulations	Necessary Regulations to reach 40% Static SPR	% Reduction in F to reach 40% Static SPR
Gag	20" TL /bag	30-31" TL	67%
Red porgy	12" TL	16" TL	75%
Vermilion	10" TL rec./bag 12" TL com.		
NMFS		14-15" TL	66%
MARMAP		14-15" TL	72%
Black sea bass	8" TL	11" TL	56%

Approach 2. Step-in measures to reach 40% static SPR. Initially, the objective is to rebuild where necessary above 20% transitional SPR which delineates the overfished level and then to the long-term goal of 40% static SPR. Management measures to be used include size limits, bag limits, quotas and trip limits. Examples are shown below.

Species	Current Regulations	Necessary Size Regulations to reach 40% static SPR	% Reduction in F to reach		Proposed Regulations
			40% SPR	20% SPR	(% Reduction in terms of weight)
Gag	20" TL /bag	30-31" TL	67%	31%	24" TL (Rec & Com) no harvest Jan.-Mar. (20% combined)
Red porgy	12" TL	16" TL	75%	43%	13" TL (Rec & Com) Bag = 2 (37%R/12%C; 20% Combined)
Vermilion	10" TL Rec/bag 12" TL Com				12" TL (Rec) (__%)
NMFS		16" TL	66%	20%	
MARMAP		16" TL	72%	3%	
Black sea bass	8"	11-12" TL	56%	-	10" TL (Rec & Com) Bag = 20 (15%R/12%C; 13% Combined)

Future assessments would indicate progress towards the short-term goal of 20% transitional SPR and the long-term goal of 40% static SPR. Additional regulations would be implemented, if it became necessary, through the framework procedure.

The Council will determine which approach is appropriate within Amendment 9 after additional public hearings scheduled during June 1997.

1.5 Measures to Restore and Maintain Long-term Health of the Snapper Grouper Resource

Closed areas are included as a discussion item which may be evaluated in developing a long-term approach to restoring and maintaining the health of the snapper grouper resource. Closed areas are not being proposed in Amendment 8. Results from the experimental closed area off Florida will be used to evaluate this concept as a possible future mechanism.

The percentage reductions in fishing mortality necessary to achieve a 40% static SPR are shown above. For gag, red porgy and vermilion snapper the percentage reductions to achieve 40% static SPR all exceed 60%; for black sea bass the reduction is 56%. Recognizing the severe impact such reductions would have on fishermen, the long-term solution may require use of area closures to achieve some of the necessary reduction in fishing mortality. While recognizing the high level of controversy associated with area closures, the Council felt it was important to advise the public that area closures may be necessary in the long-term. Should the Council ultimately decide to pursue closed areas, a separate amendment would be developed and taken to public hearings.

1.6 Proposed Measures

The Council is proposing to: Limit permit holders to owners of boats/vessels that can: (a) demonstrate any landings of species in the snapper grouper management unit in 1993, 1994, 1995 or 1996 (as of 8/20/96); and (b) had a valid snapper grouper permit any time during the period from 2/11/96 through 2/11/97. Vessels landing at least 1,000 pounds of species in the snapper grouper management unit in any of these years receive a transferable permit. All other vessels receive a non-transferable permit and are limited to a 225 pound trip limit.; Redefine overfishing and optimum yield; Allow use of one bait net up to 50 feet long by 10 feet high with a stretched mesh size of 1.5" or smaller. Allow one net per boat. Also, allow the possession and use of cast nets for catching bait; and Species within the snapper grouper management unit (whether whole or fillets) caught in Bahamian waters in accordance with Bahamian law may be possessed aboard a vessel in the South Atlantic EEZ and landed in the U.S. provided the vessel is in transit from the Bahamas and valid Bahamian fishing and cruising permits are onboard.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

National Environmental Policy Act (NEPA) regulations indicate that Section 2.0 should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public. The Council's documents must also conform to Magnuson-Stevens Act and "Other Applicable Law" requirements. National Environmental Policy Act regulations are one of the "other applicable laws" referenced. The Council decided to blend Magnuson Act and "other applicable law" (including NEPA) requirements in one consolidated, non-duplicative, and non-repetitive document. The bulk of the evaluation of alternatives and discussion about the effects on the environment is in Section 4.0 Environmental Consequences. Section 2.0 Alternatives presents a summary of Section 4.0. The Council concluded this meets NEPA regulatory requirements.

Management measures (proposed actions) address the management objectives and issues discussed in Section 1. Each management measure has a number of alternatives that have been considered by the Council.

The Council is proposing to:

Limit permit holders to owners of boats/vessels that can: (a) demonstrate any landings of species in the snapper grouper management unit in 1993, 1994, 1995 or 1996 (as of 8/20/96); and (b) had a valid snapper grouper permit any time during the period from 2/11/96 through 2/11/97. Vessels landing at least 1,000 pounds of species in the snapper grouper management unit in any of these years receive a transferable permit. All other vessels receive a non-transferable permit and are limited to a 225 pound trip limit.; Redefine overfishing and optimum yield; Allow use of one bait net up to 50 feet long by 10 feet high with a stretched mesh size of 1.5" or smaller. Allow one net per boat. Also, allow the possession and use of cast nets for catching bait; and Species within the snapper grouper management unit (whether whole or fillets) caught in Bahamian waters in accordance with Bahamian law may be possessed aboard a vessel in the South Atlantic EEZ and landed in the U.S. provided the vessel is in transit from the Bahamas and valid Bahamian fishing and cruising permits are onboard.

The following problems have been identified in the snapper grouper fishery. The summary title is used in the impact table to identify which problems are addressed by which proposed management measure.

Biological

• Excessive fishing mortality.	Overfishing
• Localized depletion.	Overfishing
• Habitat degradation.	Habitat
• Lack of biological, statistical, social, and economic information.	Data

Socio-Economic

• Intense competition exists among users.	Competition
• Excess capacity.	Capacity
• Inefficiency.	Efficiency
• Potential conflicts among participants.	Conflicts
• High regulatory costs.	Costs
• Low marketing incentives.	Marketing
• Inconsistent State and Federal regulations.	Regulations
• Low conservation and compliance incentives.	Enforcement

The following table summarizes how the alternatives address the problems and issues identified by the Council. Management alternatives are in the rows and issues and problems are in the columns.

Table 3. Summary of Environmental Consequences (Effects of Alternatives on the Issues/Problems).

Measures to Limit Entry and Effort:

Alternatives	Issues/Problems	
	Biological: Overfishing, Data	**SocioEconomic: Competition, Capacity, Efficiency, Conflicts, Costs, Marketing, Regulations & Enforcement**
Proposed Action 1: Initial eligibility is limited to owners of boats/vessels that can: (a) demonstrate any landings of species in the snapper grouper management unit in 1993, 1994, 1995 and 1996 (as of 8/20/96; and (b) had a valid snapper grouper permit any time during the period from 2/11/96 through 2/11/97). Vessels landing at least 1,000 pounds of species in the snapper grouper management unit in any of these years receive a transferable permit. All other vessels receive a non-transferable permit and are limited to a 225 pound trip limit.	Limiting permit holders will provide a cap on the number of participants and prevent future increases in fishing mortality. Limiting permits holders will also define the universe of the commercial fishery providing better data on landings, participants and gear.	Decrease in number of vessels, minimal impact in terms of total catch. Enhance regulations and reduce overcapitalization. May enhance enforceability by increasing voluntary compliance. Provides a more well defined universe of commercial participants within the fishery.

Table 3 (cont.). Summary of Environmental Consequences.

		Issues/Problems
Alternatives	**Biological: Overfishing, Data**	**SocioEconomic: Competition, Capacity, Efficiency, Conflicts, Costs, Marketing, Regulations & Enforcement**
Option 1: No Action	Will not enhance existing regulations implemented to reduce fishing mortality on overfished stocks or further define the universe of the commercial fishery.	Excess capacity and overcapitalization. Dissipation of any economic rent created by regulations. Potential for unconstrained expansion of effort still exists.
Options 2-8: Limit permit holders to those that: •demonstrated landings of 1,000 pounds in 2 of 3 years (1993-95) and held valid permits for 1993 - 1995 • held valid permits for 1993 - 1995 • demonstrate landings as of: - July 30, 1991 - February 1, 1992 and that held valid permits for 1993 - 1995 • January 1, 1993 and that held valid permits for 1993 - 1995 • January 1, 1994 and that held valid permits for 1994 - 1995 • demonstrate landings of 1,500-5,000 pounds annually (as of July 30, 1991; February 1, 1992; January 1, 1993; January 1, 1994 or January 1, 1995 - Council to specify)	Limiting permits holders will provide a cap on fishing mortality on overfished stocks and define the universe of the commercial fishery providing better data on landings, participants and gear. Reduction in fishing mortality and number of participants dependent on qualifying criteria selected.	Decrease in number of vessels with large to minimal impact in terms of total catch depending on criteria chosen. Enhance regulations and reduce overcapitalization. May enhance enforceability by increasing voluntary compliance. Provides a more well defined universe of commercial participants within the fishery. May have adverse impacts depending on criteria selected.

Table 3 (cont.). Summary of Environmental Consequences.

Alternatives	Issues/Problems	
	Biological: Overfishing	**SocioEconomic: Capacity, Efficiency**
Proposed Action 2: Redefine overfishing as 20% SPR and optimum yield as 40% SPR	Maintain biological integrity of the species in the management unit.	Social impacts depend upon time frame chosen to implement both overfishing and optimum yield.
Option 1: No Action	May not maintain biological integrity of the species in the management unit.	Dissipation of economic rents and overcapitalization.
Options 2-3: • threshold level 5% to 30% SPR and target level 30% to 50% SPR • threshold, overfished, and target levels, by species	If a threshold level is selected lower than the proposed then it may not prevent overfishing and allow recruitment failure. Setting the target lower than 40% may not protect the long-term biological integrity of the species.	Dissipation of economic rents and overcapitalization depending on the level chosen. Social impacts depend upon the level and time frame chosen to implement both overfishing and optimum yield.
Proposed Action 3: Specify allowable net gear	None. Unless gear is used over hard/live bottom.	Should aid fishermen's activity and promote better understanding. Increases efficiency for fishermen.
Option 1: No Action	None.	Could effect fishermen's ability to catch live bait.
Proposed Action 4: Allow possession of species within the snapper grouper complex caught in the Bahamas	None.	Enhances fishing experience for those fishing legally in the Bahamas.
Option 1: No Action	None.	Prevents recreational fishermen from transiting South Atlantic EEZ with fish caught legally in the Bahamas.

3.0 AFFECTED ENVIRONMENT

The affected environment including a description of the snapper grouper fisheries in the South Atlantic Region are presented in detail in the original FMP (SAFMC, 1983). A description of Council concerns and recommendations on protecting snapper grouper habitat are also included in Amendment 1 (SAFMC, 1988) and updated in subsequent amendments.

3.1 Optimum Yield

Optimum yield (OY) is any harvest level for a species which maintains, or is expected to maintain, over time, a survival rate of biomass into the stock of spawning age fish to achieve at least 30% spawning stock biomass per recruit (SSBR; equivalent to SSR) population level, relative to the SSBR that would occur with no fishing (SAFMC, 1990b). **(Note: Action 2 proposes to change this definition).**

3.2 Definition of Overfishing

Overfishing for all species other than jewfish is defined as follows (SAFMC 1990b):

(i) A snapper grouper stock or stock complex is overfished when it is below the level of 30% of the spawning stock biomass per recruit which would occur in the absence of fishing.

(ii) When a snapper grouper stock or stock complex is overfished, overfishing is defined as harvesting at a rate that is not consistent with a program that has been established to rebuild the stock or stock complex to the 30% spawning stock biomass per recruit level. (Note: For jewfish 40% was used.)

(iii) When a snapper grouper stock or stock complex is not overfished, overfishing is defined as a harvesting rate that if continued, would lead to a state of the stock or stock complex that would not at least allow a harvest of OY on a continuing basis.

The timeframe for recovery of snappers (excluding red snapper), greater amberjack, black sea bass, and red porgy is not to exceed 10 years. For red snapper and the groupers, the timeframe is not to exceed 15 years. Year 1 was the 1991 fishing year. The recovery time period may be modified by framework (regulatory amendment) procedure. These timeframes were established in Amendment 4 and are based on life history characteristics (growth rate, mortality rate, longevity, etc.). Longer lived, slower growing species are more susceptible to overfishing and will rebuild more slowly, hence the 15 year recovery period. Shorter-lived, faster growing species will recover more quickly and was the basis for choosing 10 years. **(Note: Action 2 proposes to change this definition).**

3.3 Description of Fishing Activities

3.3.1 Commercial Fishery

General Characteristics of Snapper Grouper Fishermen

Economic and socio-demographic surveys were recently completed with two different samples of snapper grouper fishermen in the South Atlantic. Interviews conducted for the economic survey took place during the summer of 1994, while those for the socio-demographic survey (which excludes the Florida Keys) were conducted during 1996. At the present time, complete analyses are preliminary for both. The following summary has been constructed using either or both the economic survey final report (Rhodes, Waltz, and Wiggers, 1996) and the final report for the socio-demographic survey (Rhodes, Backman, and Hawkins, 1997).

Table 4. General Characteristics of Survey Participants for 1995/6. Source: Rhodes, Waltz, and Wiggers, 1996; Rhodes, Backman, and Hawkins (1997).

Variable	Socio-Demographic Survey	Economics Survey
Age (in years)	43	45
Years as a Commercial Fisherman (in years)	15	19
Years as a Snapper Grouper Fisherman (in years)	13	14
Education (Percent)		
Some high school	18%	20%
High school graduate or more	82%	79%
Region (Percent)		
Florida	53%	35%
Georgia/Carolinas	47%	65%
Gear Type (Percent)		
Bandit Reel	42%	35%
Rod & Reel	29%	35%
Traps	1%	15%
Longline	6%	14%
Spear	4%	-
Other	18%	-
Have Other Employment (Percent)	32%	52%
Percent of Income from S/G Fishing (Percent)		
25% or less	48%	50%
50% or more	25%	21%

A target population of snapper grouper fishermen was identified from the NMFS permits file and then a stratified random sample was selected for interviewing in both surveys. A total of 162 interviews were completed for the economic survey, while 232 interviews with active/inactive snapper grouper fishermen were completed for the socio-demographic survey. Further discussion of the sampling frame and response rate is found in Rhodes, Waltz, and Wiggers (1996) and Rhodes, Backman, and Hawkins (1997).

Table 4 summarizes certain characteristics of each sample based on questions included in both surveys. It is not known whether the differences between these samples are statistically significant. The average age for each sample is similar with respondents in the economic survey being slightly older on average. This difference in average age may account for the longer tenure as commercial fishermen for those included in the economic sample, also. Years as a snapper grouper fisherman was the same for respondents in both the socio-demographic and economic survey. Respondents were not asked their marital status or number of dependents on the economic survey, however 73% of active snapper grouper fishermen in the socio-demographic survey were married and 45% had children. For the most part, the samples were similar with regard to education, gear types, and percent of income from snapper grouper fishing. The dissimilarity regarding outside employment may be related to the larger number of respondents in the economic survey from the Georgia/Carolina region, since a larger percentage from that area reported having employment other than commercial fishing. The majority (54%)

of those who responded that they did have some type of employment outside of commercial fishing on the economic survey indicated that employment was either charter fishing or other fishing/boating industry related activity. In response to a slightly different question on the socio-demographic survey, respondents were asked whether they had employment other than fishing; some may have interpreted the question to include charter fishing as 22% indicated some type of income from charter fishing. Therefore, the lower percentage may be an indication that some included charter fishing as a part of their general fishing occupation. In both surveys, approximately half indicated that 25% or less of their income comes from snapper grouper fishing. Slightly over 20% in both surveys said that 50% or more of their income comes from snapper grouper fishing.

Because the socio-demographic survey did not include as many questions about vessel characteristics as did the economic survey, Table 5 includes information from the economic survey only. When examining vessel characteristics by region, vessels in the GA/C area were larger, more powerful, had a larger fuel capacity, and had a larger fish hold capacity. This is most likely related to the distance to fishing grounds and subsequent environmental conditions fishermen must endure farther north. Fishermen from St. Augustine north travel greater distances to fish and often withstand heavier seas than fishermen to the south. Therefore, they need larger vessels that can travel the longer distance to fishing grounds and withstand the harsher environmental conditions. The associated trip and fixed costs are also naturally higher with a larger vessel.

Table 5. Vessel and economic characteristics by region.* Source: Rhodes, Waltz, and Wiggers (1996).

Variable	All Areas	GA/C	S/CFL
Average Vessel Length (ft.)	34	38	31
Average Vessel Horsepower (hp)	343	352	325
Average Vessel Fuel Capacity (gal)	469	553	313
Average Vessel Fish Hold Capacity (lb.)	3,585	4,143	2,557
Average Vessel Trip Costs ($)	527	973	357
Average Vessel Fixed Costs ($)	17,007	19,566	12,228

* GA/C - St. Augustine, FL and north; S/CFL - South of St. Augustine to Dade/Monroe County Line.

Characteristics by Gear Type

Fishermen exhibit differences based upon a number of characteristics. Gear type is certainly one which will differentiate snapper grouper fishermen on both demographic and other fishery related variables. Table 6 furnishes averages for a number of characteristics subdivided by gear type based upon questions included in the economic survey. Trap fishermen in this sample have a higher average age and average tenure as commercial fishermen than those using other types of gear. In addition, they tend to have been in their current position longer. Rod-and-reel fishermen and trap fishermen are more likely to be owner/operators. While rod-and-reel fishermen are more likely to have a high school education or more, and most likely to have outside employment.

Table 6. Demographic and vessel characteristics by gear type for snapper grouper fishermen. Source: Rhodes, Waltz, and Wiggers (1996).

Variable	Bandit Gear	Rod & Reel	Traps	Bottom Longline
Personal Characteristics				
Age (yrs.)	46	43	48	43
Years as a fisherman	18	15	27	20
Years in current position	13	13	18	14
High school education or more	74%	86%	76%	83%
Owner/Operator	67%	88%	88%	52%
Have outside employment	46%	68%	40%	39%
Vessel Characteristics				
Vessel Length (ft.)	36	33	38	41
Fuel Capacity (gal.)	393	321	422	1074
Horsepower (hp)	271	387	357	395
Fish Box Capacity (lb.)	4372	1740	2744	7122

When examining vessel characteristics bottom longline vessels are larger on average with greater fuel and fish box capacity. Those characteristics are likely an indication of the need for a vessel to withstand the harsher environmental conditions endured when fishing deep shelf species farther offshore, in addition to the prohibition of bottom longlines within 50 fathoms north of St. Lucie Inlet. Black sea bass trap vessels also have a higher average length and are more powerful than rod-and-reel or bandit vessels. Black sea bass pots are the only type of fish traps allowed in the South Atlantic. The fishery occurs north of Florida where fishermen must travel farther to reach deep waters, therefore needing larger vessels as discussed previously.

Table 7 shows active snapper grouper fishermen in the socio-demographic survey to have demographic characteristics similar to those in the economic survey when the sample is stratified by gear type. The one characteristic that is not similar is the percentage having outside employment. Fishermen in the socio-demographic sample, on average, are less likely to have outside employment. However, as mentioned earlier, that difference may be an artifact of the different manner in which the question was worded on each survey. Fishermen included in the socio-demographic survey may have included charter fishing as part of their general commercial fishing occupation and did not make a distinction. Whereas, on the economic survey fishermen were more likely to make a distinction between their commercial snapper grouper fishing and their charter fishing.

Table 7. Demographic characteristics by gear type for active snapper grouper fishermen in social survey. Source: Rhodes, Backman, and Hawkins (1997).

Variable	Bandit Gear	Rod & Reel	Traps	Bottom Longline
Personal Characteristics				
Age in years	45	43	50	44
Years as a fisherman	17	12	24	20
Years in current position	15	12	18	17
Have outside employment (%)	21%	37%	15%	17%

In Table 8 revenue and trip costs by gear type are provided from the economic survey and again bottom longline vessels have the highest trip costs. They also have the highest average gross and net revenue per trip. These average revenues and costs again reflect the larger vessel used in the fishery and the associated cost and returns needed for fishing offshore.

Table 8. Revenue and trip costs by gear type for snapper grouper fishermen. Source: Rhodes, Waltz, and Wiggers (1996).

Reported Averages	Bandit Gear	Rod & Reel	Traps	Bottom Longline
Gross Revenue Per Trip	$1,880	$846	$1,306	$3,583
Trip Costs	$557	$557	$362	$1,303
Net Revenue Per Trip	$1,323	$1,323	$944	$2,280
Captain's Share of Net	$357	$357	$438	$490
Boat's Share of Net	$390	$390	$320	$816
Crew Share of Net	$360	$360	$235	$753

High Volume and Low Volume Active Snapper Grouper Fishermen

The sample of active snapper grouper fishermen in the socio-demographic survey was also stratified by the category high volume/low volume. A fisherman was classified high volume if more than 14,250 pounds of snapper grouper were landed and classified low volume if less than 14,250 pounds were landed. Fishermen were also grouped according to region fished by combining Georgia and the Carolinas. This corresponds to a similar classification used in the economic survey as outlined in notes to Table 5. As shown in Table 9, low volume fishermen are generally older. Fishermen from Florida were more likely to have a longer tenure as a commercial fishermen and have been snapper grouper fishing longer with low volume fishermen from Florida having the highest average tenure for both.

Table 9. Demographic characteristics of active snapper grouper fishermen by high volume/low volume and region. Source: Rhodes, Backman, and Hawkins (1997).

Variable (Mean)	High Volume GA, SC & NC	High Volume FL	Low Volume GA, SC & NC	Low Volume FL
Age (yrs.)	44	44	50	48
Years as a commercial fisherman (yrs.)	16	17	13	18
Years as a snapper grouper fisherman (yrs.)	13	16	10	14

Low volume fishermen have smaller vessels in general, while fishermen from Georgia and the Carolinas fish farther offshore on average no matter what their volume classification (Table 10). High volume fishermen from Georgia and the Carolinas reported higher average landings than high volume fishermen from Florida, while low volume fishermen from Florida reported a higher average landings than low volume fishermen from Georgia and the Carolinas.

Table 10. Average characteristics of fishing operations for active snapper grouper fishermen by high volume/low volume and region. Source: Rhodes, Backman and Hawkins 1997.

Variable (Mean)	High Volume GA, SC & NC	High Volume FL	Low Volume GA, SC & NC	Low Volu FL
Boat length (ft.)	34	32	31	29
Miles fished off shore (mi.)	42	26	32	23
Pounds of snapper grouper landed in 1994 (lb.)	31,608	20,584	610	720

When comparing perceptions of future fishing, high volume fishermen are more likely to respond that they intend to continue fishing than low volume fishermen (Table 11). Low volume fishermen from Georgia and the Carolinas are the least likely to perceive that they will stay with snapper grouper or commercial fishing in general.

Table 11. Average perceptions of fishing future for active snapper grouper fishermen by high volume/low volume and region. Source: Rhodes, Backman, and Hawkins (1997).

Variable*	High Volume GA, SC & NC	High Volume FL	Low Volume GA, SC & NC	Low Volume FL
Intend to stay with snapper grouper fishing for next 2/3 years	1.9	2.0	3.1	3.0
Intend to leave snapper grouper fishing in next 2/3 years	3.8	3.7	2.7	3.1
Intend to leave commercial fishing in next 2/3 years	4.0	3.9	2.8	3.6

* Scale: 1 = strongly agree; 5 = strongly disagree

General Characteristics of Active and Inactive Snapper Grouper Fishermen

As part of the sampling frame for the socio-demographic survey, fishermen who had not fished for snapper grouper species in 1995 or had quit commercial fishing altogether, but still had a snapper grouper permit were also included. A total of 27 inactive fishermen completed surveys included in the results. The following tables compare snapper grouper fishermen from the socio-demographic survey stratified by whether they were active or inactive snapper grouper fishermen.

In general the two groups are very much alike with regard to general demographic characteristics (Table 12). Inactive fishermen have a higher average age and are less likely to be an owner captain, but have an average tenure as a fisherman and education level comparable to those who are active. There was a larger percentage of inactive fishermen from the Georgia/Carolinas, as there was active fishermen from Florida. When stratified by gear type, the two samples were similar with percentages in each category very much the same, except for traps. One likely reason for the higher percentage of trap fishermen in the inactive category is the prohibition on trap fishing implemented in the early 1990s by the South Atlantic Council.

Active and Inactive Snapper Grouper Fishermen's Perceptions of Fishing

While active and inactive fishermen may be similar regarding their demographic characteristics, they have some rather marked differences in other areas. Fishermen were asked to score their perceptions regarding quality of life as a commercial fishermen on a scale of one (1) to ten (10), with ten being the best life possible. When comparing their perceptions in Table 13, a greater percentage of inactive fishermen see their present quality of life as being worse as a commercial fisherman than do active fishermen. This perception is likely related to their reasons for not actively participating in snapper grouper fishing. More active fishermen, on the other hand, see their life as a commercial fisherman as being better five years ago. Future perceptions of being a commercial fisherman five years from now seem poor for inactive fishermen as they have a larger percentage (68%) who score their future perception of fishing with five (5) or below. Again, their perception of their current status and future for commercial fishing seem to indicate their inactive status and perception of the future are linked.

Inactive status in the snapper grouper fishery may indicate a possibility of leaving commercial fishing altogether. A larger percentage of inactive fishermen (46%) than active fishermen (11%) indicate they may leave commercial fishing altogether as shown in Table 14.

Table 12. A comparison of general characteristics for active and inactive snapper grouper fishermen. Source: Rhodes, Backman and Hawkins 1997.

Variable	Active S/G Fishermen	Inactive S/G Fishermen
Age (in years)	43	49
Years as a Commercial Fisherman (in years)	15	15
Years as a Snapper Grouper Fisherman (in years)	13	10
Education (Percent)		
Some high school	18%	15%
High school graduate or more	82%	85%
Position on Boat		
Owner and Captain	82%	69%
Region (Percent)		
Florida	53%	33%
Georgia/Carolinas	47%	67%
Gear Type (Percent)		
Bandit Reel	42%	33%
Rod & Reel	29%	26%
Traps	1%	22%
Longline	6%	8%
Spear	4%	-
Other	12%	11%

Table 13. Perceptions of quality of life by inactive and active snapper grouper fishermen. Source: Rhodes, Backman, and Hawkins (1997).

Quality of Life Scale Item Score	Inactive (Percent)	Active (Percent)
Life as a commercial fisherman		
1-3	33	14
4-5	29	42
6-7	9	18
8-10	29	26
Five years ago		
1-3	12	11
4-5	36	22
6-7	16	25
8-10	36	42
Five years from now		
1-3	46	28
4-5	23	26
6-7	4	16
8-10	27	30

Another indication of intent to leave fishing is reflected by the larger percentage of inactive fishermen (33%) to active fishermen (19%) who indicate they agree or strongly agree that people important to them want them to stop fishing. In addition, a much larger percentage of inactive fishermen (58%) than active fishermen (42%) see the future of fishing as being risky or hopeless. Although, a large percentage of active fishermen alsoseem to have a rather dim view of the future of commercial fishing.

Table 14. Perceptions of commercial fishing future by inactive and active snapper grouper fishermen. Source: Rhodes, Backman, and Hawkins (1997).

Variable	Inactive (Percent)	Active (Percent)
Likelihood to leave commercial fishing altogether		
Very likely	33	6
Likely	13	5
Not sure	13	18
Not likely	12	35
Unlikely	29	36
People Important to me want me to stop fishing		
Strongly agree	11	6
Agree	22	13
Neither agree/disagree	7	33
Disagree	22	29
Strongly agree	37	19
Future for commercial fishing		
Good	15	18
Unstable	27	33
Risky	42	34
Hopeless	16	8

Preferred Management Option

Fishermen were asked to choose their preferred management option on the socio-demographic survey from the options presented in Table 15. Of those who had a preference, the largest percentage of respondents chose license limitation. The next highest percentage choice was co-management, with ITQs and limited closure both being chosen about 8% of the time. However, thirty percent (30%) of respondents did not have a preferred choice or decided that some other management option was their preferred. Further analysis may provide more insight into which snapper grouper fishermen prefer license limitation. At this time, we can only say there seems to be some support for license limitation among this sample of fishermen.

Table 15. Preferred management option of active/inactive commercial snapper grouper fishermen. Source: Rhodes, Backman, and Hawkins (1997).

Variable	Active		Inactive	
	Percent	n	Percent	n
License Limitation	39%	77	12%	3
Co-Management	17%	40	44%	11
Individual Transferable Quota	7%	14	0%	0
Limited Closure	11%	21	12%	3
Not Sure of Best	13%	25	24%	6
Other	12%	24	8%	2

Fishermen from the Keys were also given an opportunity to select their preferred type of management as indicated in Table 16. Respondents in the economic survey were given the opportunity to choose more than one management option, therefore the sum may be greater than the number of samples (n) provided in the table. Keys fishermen differed markedly from those snapper grouper fishermen in the socio-demographic survey in their preferred management option. Limiting the number of boats was near the bottom while use of seasonal closures was the preferred management alternative.

Table 16. Management preference for Keys fishermen. Source: Waters (1996).

Type of Management	Upper Keys n = 21	Middle Keys n = 24	Lower Keys n = 57	Total n = 102
Limit number of boats	3	2	7	10
Limit number of fishing days	2	0	3	5
Limit boat size	2	3	1	6
Limit size/amount of gear	5	4	9	18
Limit catch per trip	1	5	7	13
Use of seasonal closures	7	7	27	41
Favor other limitations	8	8	18	34

3.3.2 Recreational Fishery

The recreational fishery is not addressed in Amendment 8 except to respecify Optimum Yield and overfishing (see Action 2), and to allow fish to be brought back from the Bahamas in whole or fillet form (see Action 4). Amendment 9 contains updated information and management measures for the recreational fishery.

3.4 Status of the Stocks

Amendment 8 proposes to change the overfishing definition level to 20% transitional SPR (see the discussion under Action 2 for an explanation of SPR and overfishing). This new level is used to determine whether a species is overfished. Based on the new level of 20% transitional SPR the following species are currently overfished: (1) gag at 13%, (2) red porgy at 13%, (3) vermilion at 16-19%, (4) red snapper at 13%, (5) speckled hind at 12%, (6) snowy grouper at 15%, (7) warsaw grouper at 6%, and (8) white grunt at 19%.

Thirteen species are thought to be overfished even though the SPRs are unknown. This group consists of yellowedge grouper, misty grouper, Nassau grouper, black grouper, yellowmouth grouper, yellowfin grouper, schoolmaster snapper, queen snapper, blackfin snapper, cubera snapper, dog snapper, mahogany snapper, and silk snapper. The jewfish resource is thought to be severely overfished throughout the Gulf of Mexico and South Atlantic even though SPR is unknown. Finally, additional species may be overfished or likely to experience overfishing in the near future.

More specific information on south Florida is contained in Appendix F. Seventeen of the species listed in Table 5 of Appendix F are overfished. The authors conclude:

Using a new approach, we provide a multi-species reef fish retrospective assessment for the Florida Keys. Fishing effort and mortality, although highly variable, are generally very intense. Current levels of exploitation appear to have "overfished" some stocks and altered community structure and dynamics. Continuing increased fishing effort, particularly by recreational anglers, and possible habitat degradation by larger human populations, suggest further potential for overfishing and ecosystem changes. Without some form of effective intervention, reef fish stocks are likely to continue to decline. To achieve long-term goals of protecting biodiversity and maintaining sustainable fisheries, we proscribe a combination of traditional management measures coupled with permanent area closures. Fishery-independent data used here provide a baseline for assessing future changes. Efforts are underway to monitor changes and assess the effectiveness of marine reserves and management of the Florida Keys National Marine Sanctuary.

3.5 Status of Snapper Grouper Habitat

The Council has adopted a general habitat policy and developed policy statements to address concerns and present recommendations on ocean dumping, dredging and dredge disposal, plastic pollution, oil and gas exploration, development and transportation, and submerged aquatic vegetation. The text of the policy statements are included in Section 8.3.

Section 8.2, Description of the Habitat Comprising the Management Unit, is a compilation of Habitat information contained in the original FMP (SAFMC, 1983), Amendment 1 (SAFMC, 1988), and Amendment 6 (SAFMC, 1993b). The sections have been combined and updated to reflect modification to the Council habitat policy and policy statements, more accurately reflect information on and the status of essential snapper grouper habitat. The policies presented were developed to provide guidance for resource managers in the protection and restoration of the environmental quality and habitat quantity in the South Atlantic region.

Essential snapper grouper habitat as defined in the reauthorized Magnuson-Stevens Fishery Conservation and Management Act is that which includes "water and substrate necessary to fish for spawning, breeding or growth to viability." The Council's definition of habitat mirrors the intent by stating that essential habitat is "the physical, chemical and biological parameters that are necessary for continued productivity of the species that is being managed." The objectives of the Council's

policy will be accomplished through a short-term goal and recommendation of no net loss or significant environmental degradation of existing habitat. The Council's long-term objective is to promote net-gain of fisheries habitat through 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.

Essential snapper grouper habitat includes, but is not limited to, coral and coral reefs, live/hard bottom habitat, inshore tidal marsh, submerged aquatic vegetation, mangroves, and sargassum habitat. Therefore essential habitat for species in the snapper grouper management unit extends from inshore to offshore including pelagic sargassum habitat.

The available information on distribution of these habitat types in the South Atlantic region is presented in various fishery management plans including the associated environmental impact statements or environmental assessments: the distribution of coral, coral reefs and live/hardbottom habitat (GMFMC and SAFMC, 1982; SAFMC and GMFMC, 1994; and SAFMC, 1995); the distribution of submerged aquatic vegetation (SAFMC, 1995); and distribution of wetland habitat (SAFMC, 1993a).

3.6 The Effects of The Proposed Measures on Snapper Grouper Habitat

The proposed actions, and their alternatives, are not expected to have any adverse effect on the ocean and coastal habitats. In fact, the measures will protect essential ocean and coastal habitats by reducing the negative impact of the fishery on the environment.

Management measures adopted in the original management plan through Amendment 7 combined have significantly reduced the impact of the fishery on essential habitat. The Council has reduced the impact of the fishery and protected essential habitat by prohibiting use of poisons and explosives, prohibiting use of fish traps and entanglement nets in the EEZ, defining allowable gear, 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, Florida and prohibiting bottom longline use south of St. Lucie, Inlet, and only for species other than wreckfish, and prohibiting the 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.

The additional management measures proposed in Amendment 8 of specifying allowable net gear will protect habitat by making existing regulations more enforceable. In addition, controlling access will limit any remaining adverse impacts by snapper grouper fishermen.

Measures adopted in the coral plan and shrimp plan have also protected essential snapper grouper habitat including the designation of the Oculina Bank Habitat Area of Particular Concern and the rock shrimp closed area (see Section 8.2 of this document and the FMP document (SAFMC 1983) for additional information).

3.7 Habitat Responsibilities as Defined in the Magnuson-Stevens Fishery Conservation and Management Act

The following wording is taken directly from the Magnuson-Stevens Fishery Conservation and Management Act, Public Law 104-208 and reflects the new Secretary of Commerce and Fishery Management Council authority and responsibilities for the protection of essential fishery habitat. A new section is added as follows:

Section 305 (b) Fish Habitat.—(1)(A) The Secretary shall, within 6 months of the date of enactment of the Sustainable Fisheries Act, establish by regulation guidelines to assist the Councils in the description and identification of essential fish habitat in fishery management plans (including adverse impacts on such habitat) and in the consideration of actions to ensure the conservation and enhancement of such habitat. The Secretary shall set forth a schedule for the amendment of fishery management plans to include the identification of essential fish habitat and for the review and updating of such identifications based on new scientific evidence or other relevant information.

(B) The Secretary, in consultation with participants in the fishery, shall provide each Council with recommendations and information regarding each fishery under that Council's authority to assist it in the identification of essential fish habitat, the adverse impacts on that habitat, and the actions that should be considered to ensure the conservation and enhancement of that habitat.

(C) The Secretary shall review programs administered by the Department of Commerce and ensure that any relevant programs further the conservation and enhancement of essential fish habitat.

(D) The Secretary shall coordinate with and provide information to other Federal agencies to further the conservation and enhancement of essential fish habitat.

(2) Each Federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat identified under this Act.

(3) Each Council—

(A) may comment on and make recommendations to the Secretary and any Federal or State agency concerning any activity authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by any Federal or State agency that, in the view of the Council, may affect the habitat, including essential fish habitat, of a fishery resource under its authority; and

(B) shall comment on and make recommendations to the Secretary and any Federal or State agency concerning any such activity that, in the view of the Council, is likely to substantially affect the habitat, including essential fish habitat, of an anadromous fishery resource under its authority.

(4) (A) If the Secretary receives information from a Council or Federal or State agency or determines from other sources that an action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by any State or Federal agency would adversely affect any essential fish habitat identified under this Act, the Secretary shall recommend to such agency measures that can be taken by such agency to conserve such habitat.

(B) Within 30 days after receiving a recommendation under subparagraph (A), a Federal agency shall provide a detailed response in writing to any Council commenting under paragraph (3) and the Secretary regarding the matter. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on such habitat. In the case of a response that is inconsistent with the recommendations of the Secretary, the Federal agency shall explain its reasons for not following the recommendations.'

A proposed rule was published by NMFS on April 23, 1997 specifying regional fishery management council guidelines for the description and identification of: (a) essential fishery habitat (EFH) in fishery management plans, (b) adverse impacts on EFH, and (c) actions to conserve and enhance EFH. In order to address the new essential fish habitat mandates in the Magnuson-Stevens Act, the South Atlantic Council will develop a habitat plan which will serve as a source document describing EFH, develop a comprehensive amendment which will amend each of the existing fishery management plans (identifying and describing EFH and addressing impacts of fishing gear and/or fishing practices on EFH), and establish a monitoring program for each fishery management plan to determine new impacts from fishing gear and/or fishing practices in an effort to minimize to the maximum extent practicable the adverse impacts on EFH.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1. Introduction

This section presents management measures and alternatives considered by the Council and the environmental consequences of management. The final supplemental environmental impact statement (FSEIS), regulatory impact review (RIR), and social impact assessment (SIA) are incorporated into the discussion under each of the proposed action items.

Each action is followed by four sub-headings: Biological Impacts, Economic Impacts, Social Impacts, and Conclusion. These are self explanatory with the first three presenting the impacts of each measure considered. The Council's rationale for taking or rejecting the actions/options are presented under the heading "Conclusion". The Council's preferred action is listed below the Action number and options considered by the Council are indicated under the heading "Other Possible Options".

4.2. Management Options

4.2.1 Limited Entry Options

As stated under "Problems and Issues," there is excess capacity in the snapper grouper fishery and the potential exists for even more vessels to enter the fishery. This will likely result in further overexploitation and could lead to reduction in net benefits from the fishery. Table 17 shows the number of permits issued to vessels in the fishery for the stated years. The figures in the column "Permitted Vessels" represent the number of permits valid at some point in time during those years. The figures under the column "Permits issued for Vessels Including those with change in Ownership" represent the number of permits issued, including those reissued to the same vessels due to a change in ownership. The figures in the column "Permits Reissued for Vessels / Different Owners" represent the number of permits reissued to the same vessels due to a change in ownership. The figures in the column "Permits Issued for Vessels" represent the number of permits issued to vessels, excluding those reissued to the same vessels due to a change in ownership (Source: Ed Burgess, NMFS SERO, Memorandum dated May 2, 1996). Final figures for 1996 have been incorporated.

Table 17. Number of Snapper Grouper Permits Issued to Vessels. (Source: Snapper Grouper Permit File – Ed Burgess, NMFS SERO, Memorandum dated May 2, 1996; email dated June 4, 1997).

Year	Permitted Vessels	Permits Issued for Vessels Including those with change in Ownership	Permits Reissued for Vessels / Different Owners	Permits Issued for Vessels
1992*	1,922	1,967	45	1,922
1993	2,726	2,179	26	2,153
1994	2,883	2,163	30	2,133
1995	2,766	2,080	23	2,057
1996+	2,800	1,989	84	1,905

*Permits were first required in 1992.
+As of June 4, 1997 (email from Ed Burgess to Peter Eldridge).

The number of permitted vessels for 1996 was 2,800 as of June 4, 1997, a slight increase over 1995 but just below the 1994 level. It should be noted that as of April 26, 1996, 163 vessels had obtained permits that had not previously obtained snapper grouper permits prior to 1996. Most of the permit holders in 1995 and as of December 1996 held permits in other fisheries as follows (Source: Nelson Johnson, NMFS Beaufort Laboratory, pers. comm.):

	1995	1996
•Mackerel fishery (coastal pelagics)	2,141	1,809
•Shark fishery	1,205	1,018
•Gulf reef fish fishery	762	571
•Lobster fishery	652	430
•Swordfish fishery	492	464
•Charter boats	249	269

A number of factors could account for the high number of permits in the fishery. (In 1995, the number of permits decreased by 117 from 1994.) However, the key issue is that the fishery cannot sustain the current high level of effort. Management measures are needed to effectively limit entry into the fishery and to control effort already in the fishery to ensure the long–term sustainability of the resource.

Action 1 would limit the number of participants in the snapper grouper fishery. This is expected to result in a minimal reduction in fishing mortality in the short-term, however, over the long-term Action 1 would cap potential future increases in fishing mortality. Amendment 9 contains actions that would target reductions in fishing mortality on certain species once the universe of commercial fishermen is established through Amendment 8.

4.2.1.1 ACTION 1. Initial eligibility is limited to owners of boats/vessels that can: (a) demonstrate any landings of species in the snapper grouper management unit in 1993, 1994, 1995 or 1996 (as of 8/20/96); and (b) had a valid snapper grouper permit any time during the period from 2/11/96 through 2/11/97. Vessels landing at least 1,000 pounds of species in the snapper grouper management unit in any of these years receive a transferable permit. All other vessels receive a non-transferable permit and are limited to a 225 pound trip limit.

I. INITIAL ELIGIBILITY - limited to owners of boats/vessels that can:

1. Demonstrate any landings of species in the snapper grouper management unit in 1993, 1994, 1995 or 1996 (as of 8/20/96); and

2. Had a valid snapper grouper permit any time during the period from 2/11/96 through 2/11/97.

II. TYPES OF PERMITS

1. **TRANSFERABLE PERMIT** - vessels landing at least 1,000 pounds in any of the years specified above receive a transferable permit.

2. **NON-TRANSFERABLE PERMIT** - all other vessels receive a non-transferable permit and are limited to a 225 pound trip limit.

3. The possession of snapper grouper species in the management unit in excess of the bag limit for species with a bag limit aboard a vessel without a permit is prohibited.

III. VERIFICATION OF LANDINGS

1. To be eligible, snapper grouper species (including all species) in the management unit must have been harvested within the South Atlantic Council's area of jurisdiction including landings from state waters inshore of the South Atlantic Council's area of jurisdiction. Landings in the Gulf of Mexico [except statistical areas 1 & 2] and north of North Carolina are not to be included.

Landings will be determined through logbooks received by NMFS as of August 20, 1996. Catches in Monroe County are in some instances difficult to separate into Gulf and South Atlantic Council area's of jurisdiction due in part to the way in which fishermen were requested to report landings in the Gulf reeffish and South Atlantic snapper grouper logbooks. Every effort will be made to ensure all catches from the South Atlantic Council's area of jurisdiction are properly assigned. The appeals process also provides an opportunity for fishermen to ensure their catches were properly credited.

2. Only landings that were recorded during the period when the fisherman had a valid federal permit will be counted. Landings will be verified through logbooks received by NMFS as of August 20, 1996. State trip ticket data may be considered in support of landings claims provided that such information was received by the state on or before September 20, 1996.

3. Only landings that were harvested, landed, and sold in compliance with all state and federal regulations may be used to determine eligibility.

4. The council will allow purchased catch history from 1993, 1994, 1995 or 1996 (as of 8/20/96) to be used to meet the poundage requirement for a transferable permit.

5. All weights in Action 1 refer to whole weight.

IV. TRANSFER OF CATCH HISTORY

1. If a vessel with documented landings of snapper grouper during the 1993 through 1996 (as of 8/20/96) qualifying period has had a change of ownership, the owner at the time of the landings retains credit for such landings for the purpose of the limited access permit, unless there was a written agreement that credit for such landings was transferred to the new owner of the vessel.

2. Transferred catch histories will only be recognized in total (partial transfers will not be recognized), and upon sale of the permitted vessel.

If a vessel and the vessel's catch history have been sold, the individual(s) with documentation supporting their ownership of such vessel and catch history will be considered the owner and such landings will be included in qualifying under Action 1 provided the new owner had a permit any time during the period from 2/11/96 through 2/11/97.

V. APPEALS

An Application Oversight Board will be established to assist the NMFS Regional Administrator (RA; Dr. Andrew Kemmerer) in handling disputes over eligibility for limited access permits. The board will ensure the criteria for a limited access permit were applied to an owner's application in a proper manner--the board will not evaluate "hardship" applications. The board will be made up of the state directors (or designees) from each state in the South Atlantic Council's area of jurisdiction. Each member will provide his/her individual recommendation on each appeal to the NMFS Regional Administrator for final administrative decision. NOAA General Counsel will have an advisory role to board members, and NMFS and Council staff will provide assistance.

VI. PERMIT APPLICATION/ISSUANCE

1. Applications for permits must be made within 90 days after publication of the final rule in the federal register.
2. Permits are to be implemented 150 days after implementation of the final rule.
3. The initial assignment of permits will be to vessel owners.

VII. TRANSFER OF PERMITS

1. **Transferable permits** may be transferred as follows:

a. To immediate family members, or to a replacement vessel (including a new vessel), or to an individual who has a written contract entered into and dated as of 8/20/96 which includes provision for a permit transfer with purchase of a vessel. Those individuals intending to qualify under the written contract provision must notify the NMFS Regional Administrator (Dr. Andrew Kemmerer) of the existence of this contract and provide a copy of the contract for evaluation purposes within the 150 day implementation period. The vessel's catch history must also be transferred (Such catch history may be used in the future to qualify for ITQ's should the

Council determine such a management regime is appropriate and should Congress allow use of such management.); and

b. To new entrants in the snapper grouper fishery but two existing snapper grouper transferable permits must be purchased and exchanged for one new permit. The vessel's catch histories must also be transferred. (Such catch history may be used in the future to qualify for ITQ's should the Council determine such a management regime is appropriate and should Congress allow use of such management.) An additional vessel, other than a replacement vessel, is considered a new entrant.

2. The Council's intent is that the two for one permit requirement would apply until the optimum level of vessels in the fishery is reached. Once data become available to determine this level and the fishery reaches such level, the Snapper Grouper FMP will be amended to drop the 2 for 1 provision.

3. NMFS will set up a program to track transfer and fees to cover the administrative costs of processing transfers will be charged.

4. **Non-transferable permits.** An owner may transfer a permit to a replacement vessel owned by him or her provided the replacement vessel is equal to or less than the size (length and gross tonnage) of the replaced vessel. A replacement vessel could include a new vessel or a vessel to replace a lost or damaged vessel.

VIII. PERMIT RENEWAL

A permit that is not renewed or that is revoked will not be reissued. A permit will be considered to be not renewed when an application for renewal is not received by the Regional Administrator within 60 days of the permit's expiration date.

IX. INCREASING ENFORCEABILITY

Because the benefits obtained from controlled access depend, in large measure, on regulatory compliance by fishermen, the Council maintains that gross violations (such as failure to report; fishing black sea bass pots without escape vents or escape panels with degradable fasteners, identification numbers; violations of minimum size limits, trip limits and quotas; fishing within closed areas or during times when a fishery is closed; retaining prohibited species and unauthorized sale of fish) warrant strict penalties such as permit sanctions. It is not the Council's intent that strict penalties such as permit sanctions be applied if logbook reports are late once or twice. However, it is the Council's intent that repeated lateness warrants strict penalties. It is also the Council's intent that fishermen not be allowed to supply missing logbook reports at the time of permit renewal.

Biological Impacts

There would be no reduction in fishing mortality initially. It is anticipated more vessels than are necessary to harvest the available yield will qualify, however, the proposed action would ensure continued long-term participation to the qualified individuals and will cap effort by capping the number of permits. To the extent compliance with existing regulations increased, there would be a reduction in fishing mortality. In addition, limiting permit holders would prevent future increases in the number of entrants into the snapper grouper fishery thereby limiting potential future increases in fishing mortality.

Economic Impacts

Table 18 shows the potential number of vessels that would qualify for snapper grouper permits under this action based on having landed snapper grouper species from 1993 through 1996 (as of 8/20/96) and having held valid snapper grouper permits any time during the period from February 11, 1996 through February 11, 1997. These figures are being used to gauge the likely impact of the proposed action. The exact number that would qualify will not be know until fishermen apply once Amendment 8 is approved.

A total of 1,523 vessels would qualify for permits. Of this number, 1,075 vessels would qualify for transferable permits based on having landed 1,000 pounds or more of snapper grouper species in any one year between 1993 and 1996. Also, 448 vessels would qualify for non-transferable permits having landed less than 1,000 pounds of snapper grouper species in any one year between 1993 and 1996. It should be noted that some fishermen, particularly in Florida claimed during public hearings that they had landed snapper grouper species caught in state waters adjacent to the South Atlantic EEZ that were not reported to the logbook program because of confusion over reporting requirements. Thus, it is likely that if those fishermen can submit required official documentation to verify such claims for eligibility, they would be able to qualify. This could increase the actual number of vessels that would qualify above the number quoted above.

Table 18. Number of vessels (not permits) with landings of species in the snapper grouper management unit that may qualify for limited entry permits in the South Atlantic Snapper Grouper Fishery. Data are included from all South Atlantic waters and Gulf Reeffish Areas 1 & 2, as reported to the South Atlantic and Gulf programs as of August 20, 1996. (Source: Nelson Johnson, NMFS Beaufort Laboratory, May 6, 1997.)

HOME PORT STATE	# OF TRANSFERABLE PERMITS	# OF NON-TRANSFERABLE PERMITS	# OF VESSELS WITH LANDINGS BUT WITHOUT PERMITS	# OF VESSELS WITHOUT LANDINGS BUT WITH PERMITS
NORTH CAROLINA	168	51	90	137
SOUTH CAROLINA	67	13	22	24
GEORGIA	10	3	5	6
FLORIDA	803	367	361	906
VIRGINIA	13	5	5	22
OTHERS	14	9	30	133
TOTAL	**1,075**	**448**	**513**	**1,228**

Based on the average number of vessels that held valid permits for those four years, 74% of permit holders would qualify for snapper grouper permits under this action. The number of vessels that held valid permits over the four years is based on the number of yearly permits issued to vessels (column 5 on Table 17). Fifty-two percent would receive transferable permits and 22% would receive non-transferable permits.

A total of 1,228 vessels held valid snapper grouper permits during the period February 11, 1996 through February 11, 1997 but reported no landings of snapper grouper species from 1993 to 1996 (Table 18). These vessels apparently do not fish for snapper grouper species. They carry snapper grouper permits to enable them to land snapper grouper species as bycatch, but have not reported any landings since 1993. This category could include Florida fishermen who had landings but did not report through the logbook program.

Also, 513 vessels reported landings of snapper grouper species between 1993 and 1996, but did not have a valid snapper grouper permit during the period from February 11, 1996 through February 11, 1997. They probably held snapper grouper permits at other time periods but not during the one year window. Window permits refers to the period from 2/11/96 through 2/11/97. Table 19 shows the number of trips made by the 513 vessels from 1993 to 1996 and the total poundage reported.

Assuming an average exvessel price of $1.50 per pound (1995 Snapper Grouper Commercial Logbook Repoort) for snapper grouper species and that the landings pattern of the 513 vessels continues for 1997, this action would reduce annual gross revenue by approximately $1.0 million in the first year. The average exvessel price is calculated from total value and total pounds of snapper grouper species landed in 1995 (1995 Snapper Grouper Commercial Logbook Report). However, it is likely that some of these vessels no longer participate in the snapper grouper fishery. Also, there are some vessels of net registered tonnage greater than five tons that have gone through re-documentation because of Coast Guard requirements. Such vessels would be permitted under new vessel identification numbers, while the old vessel identification numbers would show up under the non-permitted vessels category during the one year window. Thus, the actual number of vessels that reported landings of snapper grouper species between 1993 and 1996, but had no permit during the one year window, could be much less than 513 vessels. To the extent this is the case, first year impacts could be less than the $1.0 million estimated.

Table 19. Pounds and number of trips for vessels without traceable window permits with landings of species in the snapper grouper management unit. Data are included from all South Atlantic waters and Gulf Reeffish Areas 1 & 2, as reported to the South Atlantic and Gulf programs as of August 20, 1996. All weights are in whole pounds. (Source: Nelson Johnson, NMFS Beaufort Laboratory, May 6, 1997.) [Note: Window permits refers to the period from 2/11/96 through 2/11/97.]

STATE OF LANDING	1993		1994		1995		1996	
	# POUNDS	# TRIPS	# POUNDS	# TRIPS	# POUNDS	# TRIPS	# POUNDS	# TRIPS
NORTH CAROLINA	418,122	883	359,691	871	93,981	223	3,025	8
SOUTH CAROLINA	114,682	202	58,130	128	11,571	39		
GREOGIA	26,960	27	12,798	20	5,194	6		
FLORIDA	810,747	3,196	465,884	1,994	204,200	724	48,883	83
VIRGINIA	10,251	31	18,111	40	2,720	4	3	1
NEWJERSEY			8,716	2				
LOUISIANA	7,932	1						
TOTAL	1,388,694	4,340	923,330	3,055	317,666	996	51,911	92

Table 20 shows the landings of the 448 vessels that would qualify for non-transferable permits by trip category. The data includes trips that landed one to 225 pounds of snapper grouper species per trip and those that landed more than 225 pounds but less than 1,000 pounds per trip. In 1993, 28 trips landed over 225 pounds per trip. Their total landings were 9,196 pounds. With the 225 pound trip limit, total landings would have been constrained to 6,300 pounds. This means that total landings would have been reduced by 2,896 pounds. Similarly, total landings would have been reduced by 5,173 pounds in 1994, 8,210 pounds in 1995, and 4,280 pounds in 1996. Over the four year period, average annual landings would have been reduced by 5,140 pounds. Assuming the landings pattern of these vessels remains the same, the trip limit of 225 pounds would result in a reduction of 5,140 pounds in the first year. This is equivalent to $7,710 based on an average exvessel price of $1.50 per pound.

Realistically this action does not reduce effort in the fishery, but it does put a cap on the number of vessels. Table 21 shows that of the three categories of vessels (transferable permit vessels, non-transferable permit vessels, and vessels with landings but no permits during window) that landed snapper grouper species between 1993 and 1996, transferable permit vessels accounted for 84% - 97% (average of 92%) of the total annual landings and 72% - 91% (average of 83%) of the annual number of trips. Non-transferable permit vessels accounted for 1% or less of the total annual landings and 3% - 9% (average of 5.4%) of the annual number of trips. Vessels that made landings during the period but did not have a valid permit during the window accounted for 7.3% of the total annual landings and 11.5% of the average annual number of trips.

This first step in capping effort is very important for the biological measures proposed in Amendment 9 to be effective. Once the universe of permit holders is known, the impact of actions proposed in Amendment 9 could be assessed with some degree of accuracy since the problem of new entrants due to gains from implementation of management measures no longer exist. This is not to say that those in the fishery cannot increase effort to capture such gains, but they would be restricted by the proposed actions in Amendment 9. Also, by capping the number of participants in the fishery, fishermen would see a stake in it for them, since new entrants could not move in and dissipate any economic rents accrued through their sacrifices. It should be noted the fishery would not be closed to new entrants since provisions spelled out in this action would allow for exit and entry. However, such provisions would prevent further expansion of the fishery.

Table 20. Vessels (not permits) with landings of species in the snapper grouper management unit that may qualify for non-transferable limited entry permits in the South Atlantic Snapper Grouper Fishery by state and size of trip categories. Data are included from all South Atlantic waters and Gulf Reeffish Areas 1 & 2, as reported to the South Artlantic and Gulf programs as of August 20, 1996. All weights are in whole pounds. (Source: Nelson Johnson, NMFS Beaufort Laboratory, May 6, 1997.)

State	Lbs. per Trip	1993		1994		1995		1996	
		# Pounds	# Trips	# Pounds	# Trips	# Pounds	# Trips	# Pounds	# Trips
NORTH CAROLINA	1-225	1889	19	4781	74	3882	53	3917	61
	>225			3728	10	2012	7	1808	4
SOUTH CAROLINA	1-225	587	5	170	1	1827	25	895	9
	>225	594	1	666	1	2422	6	591	2
GEORGIA	1-225			203	1	88	3	35	2
	>225	234	1						
FLORIDA	1-225	22697	476	31520	644	50183	1113	35352	720
	>225	8368	26	8204	22	16843	47	9261	27
VIRGINIA	1-225			32	1	150	1		
	>225					883	2		
MARYLAND	>225							270	1
NEW JERSEY	>225					255	1		
Total For South Atlantic	1-225	25173	500	36706	721	56130	1195	40199	792
	>225	9196	28	12598	33	22415	63	11930	34

Table 21. Total pounds and trips by transferable, non-transferable, and non-qualifying vessels. (Source: Nelson Johnson, NMFS Beaufort Laboratory, May 6, 1997.)

CATEGORY	1993		1994		1995		1996	
	# Pounds	# Trips	# Pounds	# Trips	# Pounds	# Trips	# Pounds	# Trips
TRANSFERABLE PERMITS	7,443,713	12,789	8,783,358	16,431	9,415,636	17,404	3,851,952	8,798
% OF TOTAL	84%	72%	90%	81%	96%	89%	97%	91%
NON TRANSFERABLE PERMITS	34,369	528	49,304	754	78,545	1,258	52,129	826
% OF TOTAL	0.4%	3%	0.5%	3.7%	0.8%	6%	1%	9%
NO PERMIT (DURING WINDOW)	1,388,694	4,340	923,330	3,055	317,666	996	51,911	92
% OF TOTAL	15.6%	25%	9.5%	15%	3.2%	5%	1%	1%
SNG MANAGEMENT SPECIES	8,866,776	17,657	9,755,992	20,240	9,811,847	19,658	3,955,992	9,716

Social Impacts

License limitation has some support within the commercial fishing industry, but varies within the South Atlantic region. The Snapper Grouper Advisory Panel has endorsed a particular license limitation program, but would like to initially minimize the effects of excluding participants from the fishery. Over time, with added management measures, the Advisory Panel felt that the number of permits would be reduced.

Further support for license limitation is implied in responses to questions on the socio-demographic survey recently completed with a sample of active snapper grouper fishermen in the South Atlantic, excluding the Florida Keys. Questions were included concerning fishermen's preference given several management options: individual transferable quotas, co-management, license limitation, limited closure and not sure or other. Approximately 35% of respondents chose license limitation as their preferred management option. The next highest percentage choice was co-management with 19%. However, 29% of respondents chose either not sure or other, which suggests many fishermen may have doubts about any of the management options listed on the survey. The results suggest that of those management measures presented, license limitation has the most support among fishermen included in this survey.

Fishermen from the Florida Keys have a different preference when given a choice of management options. The economic survey that was completed with Keys fishermen asked them to choose their preferred management option among several choices from limiting the number of boats, fishing days, boat size, size/amount of gear, catch per trip, or seasonal closures. Their most preferred option among the choices was seasonal closure with limiting the number of vessels toward the lower end of the scale.

The varied support for license limitation is also reflected in the opinion poll that was conducted during the public hearing phase. On a scale from 5 (strongly agree) to 1 (strongly disagree) license limitation and controlling effort both had mean scores that ranged from 3.1 to 1.2. The geographic differences were again apparent as preference for license limitation and controlling effort received their lowest ratings in the Keys. However, the no action alternative received the same variable rating with approximately the same range. This suggests that these alternatives may not have been preferred, but some other alternative may have been as these ratings were for the original license limitation alternative that went out to public hearing. The

present alternative has been modified to take into account public hearing comments and address the social and economic concerns expressed by fishermen, especially in the Florida Keys where the effects of the original alternative would have been substantial. Therefore, public support for this license limitation action has likely increased.

This particular action would exclude those who possess snapper grouper permits and either have not been active in the fishery or can not demonstrate landings during the past four years. Prior to excluding this group for non-use, it is important to understand why individuals possess snapper grouper permits, yet do not land any of these species.

Recent meetings held at the request of the commercial fishing sector shed some light on this situation. Representatives from the commercial sector reported that snapper grouper permits are sometimes held by fishermen as a type of "insurance" against future difficulties in other fisheries. Many fishermen take a multi-species, multi-fishery approach to their trade, switching from one fishery or species to another when necessary. For example, 98% of South Atlantic snapper grouper fishermen also hold permits for coastal pelagics (mackerels). They may fish a seasonal round that includes a broad range of species such as: pelagics, crab, lobster, and snapper grouper. The decision-making process to fish a particular species is complex, but certainly a number of factors must be weighed, including availability, price, and the ability to make the necessary gear or vessel changes. While a fisherman may not have landed snapper grouper for three years, they may become dependent upon that fishery during the fourth as other fisheries become less lucrative for whatever reason. Fishermen in the Florida Keys have indicated they have not had to switch to snapper grouper recently and have been able to make a living off other fisheries like stone crab and spiny lobster. However, they have in the past come to rely on snapper grouper in years when stone crabbing or lobstering were not profitable. This scenario is supported in the comparison of inactive and active snapper grouper fishermen from the socio-demographic survey where 48% of inactive fishermen indicated they left snapper grouper fishing to go into another type of fishing. Another 20% said regulations forced them out. License limitation in snapper grouper will likely constrain the choices these individuals will have if they desire to switch effort again.

Some fishermen who have not participated in the snapper grouper fishery are likely considering alternative employment strategies. The comparison of active and inactive snapper grouper fishermen indicates that inactive fishermen are more likely to consider leaving commercial fishing altogether. When asked their likelihood of leaving commercial fishing, 46% said likely or very likely. With fewer choices within commercial fishing because of the increased use of license limitation, these individuals will likely seek alternative employment outside of fishing in the near future.

Another aspect of this action will be to separate the fishery into high volume fishermen and low volume fishermen. When compared in the socio-demographic survey, low volume fishermen tend to be older and have fished longer. They also demonstrate more of a likelihood to leave fishing in the future. Public testimony in the Keys provided evidence of a large group of older fishermen who are low volume fishermen that would have been affected by the previous preferred alternative. With non-transferable permits, except in the case of vessel replacement, this sector of the fishery would be reduced over time. However, it may not impact overall landings as over 90% of the harvest occurs within the high volume category.

By allowing transferability of high volume permits, effort in the snapper grouper fishery will be reduced over time as new entrants to the fishery must purchase two permits and exchange them for one. Permits will also be allowed to transfer to immediate family members or replacement vessels. Difficulty may arise for present permit holders as they will be unable to

transfer permits in the interim. Several situations have arisen where individuals have provided anecdotal evidence of business decisions they are in the process of making which will significantly affect their fishing future and/or household and family income. Because catch history can be transferred with vessels, but permit history cannot, individuals who purchase vessels in the interim and do not have a permit will not be able to participate in the fishery.

Limiting the number of permits will provide some stability within the fishery as any opportunity for expansion will be limited to a specific number of permit holders. This does not mean that within that population of permit holders harvest rates can not increase. However this action in conjunction with other measures can provide for an orderly transition of effort in and out of the fishery, while maintaining a desired harvesting rate that should help stocks rebound.

Conclusion

The Council recognizes this option would allow more vessels than are necessary to harvest the available yield but it does give fishermen a stake in the fishery. This is very important in that it changes their planning from short-term to long-term and voluntary compliance will increase. This addresses a number of the economic and social problems in the fishery.

Having a stake in the fishery changes the way people think about the snapper grouper resource. It will be in their best interest (i.e., make economic sense) to plan for the long-term because the costs of management they would bear would not be dissipated by new entrants to the fishery.

The present alternative was modified to take into account public hearing comments and address the social and economic concerns expressed by fishermen, especially in the Florida Keys where effects of the original alternative would have been substantial. Therefore, public support for this license limitation action has likely increased.

The Council considered more restrictive options (tougher criteria) but adopted the preferred action in part to "grandfather" active fishermen into the system thereby minimizing resistance and social impacts to this management approach. Over time, attrition, retirement of the non-transferable permits, and the 2-for-1 transfer will reduce the number of permit holders. The Council concluded this option best reduces overcapitalization and excess capacity and prevents further possible increases in fishing effort.

Other Possible Options for Action 1:

Option 1. No Action. Do not limit the number of participants in the snapper grouper fishery.

Biological Impacts

Fishing mortality would continue to increase as the number of vessels and efficiency increased. There would be less incentives for voluntary compliance.

Economic Impacts

A total of 2,800 vessels held current snapper grouper permits as of June 4, 1997. This number reached a high of 2,883 in 1994 and then declined to 2,726 in 1995 (Table 17). Based on biological data on the status of snapper grouper species, it is evident that the snapper grouper resource cannot sustain the current level of effort in the fishery. The number of vessels currently holding valid snapper grouper permits are in excess of the number of vessels that the fishery can sustain in the long term. The no action option would continue overcapitalization and excess capacity in the fishery. In addition, any gains from current regulations under open access would likely attract new entrants to the fishery and provide incentive for those already in the fishery to increase their harvest capacity. This option would lead to stock depletion and reduction in net benefits in the long-term.

Social Impacts

The no action alternative would continue to allow unfettered expansion in the snapper grouper fishery. Although the number of permits is no measure of actual effort, it does provide a potential reserve of increased effort as anyone with a permit may fish and land species within the management unit as long as they abide by current regulations. As discussed earlier, fishermen will often switch to other species as opportunities within one fishery diminish. By taking no action, the Council would impede its ability to control such shifts in effort. Certainly, other management measures may impact one's ability to shift effort into the snapper grouper fishery, thereby making such effort shifts more difficult. But, without some type of limit on the number of permits, the fishery remains overcapitalized with excess capacity. The potential for long-term negative impacts remains unresolved.

Conclusion

Under this option, overcapitalization and excess capacity will continue to plague the fishery. In addition, any gains from current regulatory measures under open access would likely attract new entrants to the fishery and provide incentives for those already in the fishery to increase harvest capacity. The Council rejected this option because it would not prevent future increases in fishing mortality which would result in overfishing and reduced benefits.

Option 2. Limit permit holders to those that can demonstrate landings of at least 1,000 pounds of snapper grouper species in two of the three years - 1993, 1994, and 1995, and have held a valid snapper grouper permit for 1993, 1994 and 1995.

A. Initial Eligibility. To be eligible for a permit, snapper grouper species in the management unit must have been harvested within the South Atlantic Council's area of jurisdiction. Landings will be verified through logbooks received by NMFS as of August 20, 1996. Catches in Monroe County are in some instances difficult to separate into Gulf and South

Atlantic Council area's of jurisdiction due in part to the way in which fishermen were requested to report landings in the Gulf reeffish and South Atlantic snapper grouper logbooks. Every effort will be made to ensure all catches from the South Atlantic Council's area of jurisdiction are properly assigned. The appeals process also provides an opportunity for fishermen to ensure their catches were properly credited.

If a vessel and/or the vessel's catch history have been sold, the individual(s) with documentation supporting their ownership of such vessel and/or catch history will be considered the owner and such landings will be included in qualifying under Action 1 and Action 2.

Initial eligibility is limited to owners of boats/vessels that meet the following two criteria:

(1) Can demonstrate landings of at least 1,000 pounds of snapper grouper species in two of the three years - 1993, 1994, and 1995.

(2) Have held a valid snapper grouper permit for 1993, 1994 and 1995.

B. Appeals. An Application Oversight Committee will be established upon approval of Amendment 8 to assist the NMFS Regional Administrator in handling disputes over eligibility for permits. A similar appeals process addresses endorsements under Action 2. The charge of the Committee is to make sure the criteria pertaining to eligibility or initial allocation were applied to an individual's application in a correct manner; the Committee will not evaluate "hardship" applications. The Committee is to be made up of one state director (or his designee) from each state in the South Atlantic Council's area of jurisdiction and the NMFS Regional Administrator, or his designee. NOAA General Counsel will have a non-voting advisory role on the Committee. One NMFS staff and one Council staff are to provide assistance.

C. Permits. Applications for permits must be made within 30 days after publication of the final rule in the Federal Register. Permits are to be implemented 90 days after implementation of the final rule. It is the Council's intent that the permit year be the 12 month period following issuance of the permits. Permits will be issued to the vessel owners or individuals (Council to decide). The possession of snapper grouper species in the management unit in excess of the bag limit for species with a bag limit aboard a vessel without a permit is prohibited.

D. Transferability.

(1) To immediate family members: Permits (and permits with endorsements as specified under Action 2) can be transferred to immediate family members but can only be used in the category for which they were originally issued. The vessel's catch history must also be transferred.

(2) To new entrants in the snapper grouper fishery: To receive a new permit (or a permit with an endorsement as specified under Action 2), two existing snapper grouper permits (or permits with endorsements) must be purchased and exchanged for one new permit (or permit with an endorsement). The vessel's catch histories must also be transferred.

E. Renewals. To qualify for permit renewal:

(1) A permit holder must land 1,000 pounds of species in the snapper grouper management unit (and if applicable, the poundage requirement for his/her endorsement) in one of the three years preceding the application for renewal of permit.

(2) A permit will expire automatically if not renewed 60 days after the date that it was up for renewal.

F. Assignment of Initial Permits. The initial assignment of permits will be to vessel owners OR to individuals. The Council will specify which after public hearings and informal review.

G. Tracking/Monitoring Permit Transfers. Tracking transfers of permits (and permits with endorsements as specified under Action 2) will be done by requiring the buyer and seller to sign and date the appropriate lines on the reverse side of the permits that transfer. Fees to cover the administrative costs of processing transfers will be charged.

H. Increasing Enforceability. Because the benefits obtained from controlled access depend, in large measure, on regulatory compliance by fishermen, the Council maintains that gross violations (such as failure to report; fishing black sea bass pots without escape vents or escape panels with degradable fasteners, identification numbers; violations of minimum size limits, trip limits and quotas; fishing within closed areas or during times when a fishery is closed; retaining prohibited species and unauthorized sale of fish) warrant strict penalties such as permit sanctions. The Council's intent is that fishermen submit logbooks by the 10th of the month following the month of activity. It is not the Council's intent that strict penalties such as permit sanctions be applied if the logbook reports are late once or twice. However, it is the Council's intent that repeated lateness warrant strict penalties. It is also the Council's intent that fishermen not be allowed to supply missing logbook reports at the time of permit renewal.

Biological Impacts

There would be no reduction in fishing mortality initially. It is anticipated more vessels than are necessary to harvest the available yield would qualify, however, the proposed action would ensure long-term participation to the qualified individuals. To the extent compliance with existing regulations increased, there would be a reduction in fishing mortality. In addition, limiting permit holders would prevent future increases in the number of entrants into the snapper grouper fishery thereby limiting potential future increases in fishing mortality.

Economic Impacts

In 1993, 674 vessels reported landings of 1,000 pounds and over of snapper grouper species. In 1994 and 1995, 756 and 725 vessels respectively, reported landings of 1,000 pounds and over of snapper grouper species (Table 22). However, 636 vessels reported landings of 1,000 pounds and over in two of the three years (1993-1995). A total of 430 vessels were registered in Florida, 130 vessels registered in North Carolina, 57 vessels registered in South Carolina, 8 vessels each registered in Georgia and Virginia, and one vessel each registered in New Jersey and unknown. Based on the average number of vessels that held valid permits for those three years (2,792), only 23% of the permitted vessels would qualify under this option. However, these vessels accounted for 98% of the total landings over the three years (Table 23).

Table 22. Reported Landings of species in the Snapper Grouper Management Unit as of August 20, 1996 for two levels of landings. (Source: Nelson Johnson, NMFS Beaufort Lab).

Year	1,000 or Greater		5,000 or Greater		Total Annual Pounds
	# Vessels	# Pounds	# Vessels	# Pounds	
1993	674	7,810,352	337	6,944,399	7,951,027
1994	756	8,731,167	370	7,775,829	8,875,925
1995	725	8,746,856	355	7,844,653	8,916,642

Table 23. Reported Landings of Snapper Grouper Species in the Management Unit as of August 20, 1996 and percentage of total landings. (Source: Nelson Johnson, NMFS Beaufort Lab).

Year	≥ 1,000 Pounds		% of Total Annual Landings	Total Annual Pounds	Total # Vessels Reporting
	# Vessels	# Pounds			
1993	674	7,810,352	98%	7,951,027	1,043
1994	756	8,731,167	98%	8,875,925	1,162
1995	725	8,746,856	98%	8,916,642	1,191

It should be noted that 960 vessels (35%) of the permitted vessels reported "no fishing" throughout 1993. Also, 1,305 vessels (45%), and 1,420 vessels (51%) of the permitted vessels reported "no fishing" throughout 1994 and 1995 respectively. Thus, over the three-year period, an average of 1,563 permitted vessels reported fishing activity, 42% of which would qualify in terms of having reported landings of 1,000 pounds and over in two of the three years. It is conceivable that a snapper grouper fisherman, even if involved in other fisheries would have to land at least a 1,000 pounds of snapper grouper species annually (average exvessel value of about $1,500) for this fishery to contribute significantly to his total income. Otherwise, he cannot be considered as dependent on this fishery for his livelihood or for contributing to his income.

Social Impacts

This option would have been less restrictive in that individuals who may have left snapper grouper fishing recently, would still be eligible for a permit, although the landings criteria is more strict. However, this option would have excluded individuals who may have recently entered snapper grouper fishing as they should have possessed a permit for all three years.

Conclusion

The Council considered this option too severe and adopted the preferred action in part to "grandfather" active fishermen into the system thereby minimizing resistance to this management approach.

Option 3. Limit permit holders to those that held valid snapper grouper permits for 1993, 1994 and 1995.

Biological Impacts

Potential reductions in fishing mortality would be less than the proposed action.

Economic Impacts

The number of vessels that held valid snapper grouper permits are shown in Table 17. Based on these figures, 2,726 vessels, 2,883 vessels, and 2,766 vessels, respectively, held valid snapper grouper permits in 1993, 1994 and 1995. This option would not reduce the number of vessels in the fishery. Overcapitalization and excess capacity would likely continue in the fishery. If this current level of fishing effort continues with no other restrictions, some of the species of economic importance would become overfished. This would result in reduced net benefits from the fishery in the long-term.

Social Impacts

Limiting the number of permits to those who have held valid permits for the past three years would do little to reduce effort. This option would place a cap on effort, however, since only 28% of permit holders now harvest 98% of snapper grouper, there would remain a tremendous potential for increased effort within the fishery.

Conclusion

The Council rejected this option because it would cap the number of vessels, but still leave a potential for high levels of effort within the fishery.

Option 4. Limit permit holders to those that can demonstrate landings of species in the snapper grouper management unit as of July 30, 1991 (control date for the snapper grouper fishery).

Biological Impacts

Potential reductions in fishing mortality may be greater than the proposed action if the number of qualifying permit holders could be determined.

Economic Impacts

It would be problematic to identify all permit holders that landed species in the snapper grouper management unit as of July 30, 1991 because the logbook system was initiated in 1992. The National Marine Fisheries Service implemented 25 percent logbook coverage for 1992 and then due to problems of adequate sample size and coverage, 100 percent reporting was required beginning January 1993. For vessels that landed in Florida, this information could be obtained from the Florida trip ticket system. However, it is not clear how this information could be obtained for vessels that landed in the other three states. There is no official data to determine whether this option would lead to a decrease in the number of permitted vessels. Thus, there is no way of knowing what the impact would be on the fishery.

Social Impacts

The snapper grouper fishery may have undergone significant change since 1991 with regard to the current permit holders. Using July 30, 1991 as the control date to limit entry into the snapper grouper fishery may be viewed as too extreme. Without knowing exactly how the fishery has changed regarding those currently fishing for snapper grouper, it would be difficult to speculate on the impacts of using such a control date.

Conclusion

The Council rejected this option because it would be difficult if not impossible to determine the permit holders which would qualify and because it would not "grandfather" active fishermen into the system thereby causing significant adverse social impacts.

Option 5. Limit permit holders to those that can demonstrate landings of species in the snapper grouper management unit as of a date after February 1, 1992 (implementation of Snapper Grouper Logbook Program with 25% of snapper grouper permit holders selected for reporting during the 1992 fishing year) and that held valid snapper grouper permits for 1993, 1994 and 1995.

Biological Impacts

This option would not reduce effort in the fishery.

Economic Impacts

Since February 1992, the logbook program has been used for documenting landings of snapper grouper species by permitted fishermen. In 1992 there were 1,922 vessels with valid snapper grouper permits and 25% of those vessels were selected for logbook reporting. Prior to 1993, all permitted snapper grouper vessels were not required to report their landings through the logbook system. Thus, it would be difficult to verify landings for years preceding 1993. In 1993 there were 2,726 vessels with valid snapper grouper permits and a total of 1,130 (42%) reported landings of snapper grouper species for at least one or more months in that year. In 1994 there were 2,883 vessels with valid snapper grouper permits and 1,231 (43%) reported landings of snapper grouper species for at least one or more months in that year. In 1995 there were 2,766 vessels with valid snapper grouper permits and 1,358 (49%) reported snapper grouper landings for at least one or more months in that year (Snapper Grouper Logbook File). This option would not reduce effort in the fishery and would lead to stock depletion and reduction in net benefits from the fishery in the long-term.

Social Impacts

Because only 25% of snapper grouper fishermen were required to use logbooks in 1992, selecting permit holders based upon landings by that qualifying date may present some difficulty. Fishermen may wish to have the logbook data used to verify landings. The logbook program was not initiated until after February 1, 1992, therefore, landings would be verified through other means. NMFS has required 100% logbook reporting since January 1, 1993. Using a date after full reporting of logbooks has some advantages over other dates.

Conclusion

The Council rejected this option because it would be difficult to determine those that would qualify by using a date prior to implementation of 100% logbook reporting.

Option 6. Limit permit holders to those that can demonstrate landings of species in the snapper grouper management unit as of January 1, 1993 (100% logbook reporting implemented) and that held valid snapper grouper permits for 1993, 1994 and 1995.

Biological Impacts

Potential reductions in fishing mortality could be less than the proposed action.

Economic Impacts

As of 1993, all permit holders were required to submit logbook reports. In 1993 there were 2,726 vessels with valid snapper grouper permits and a total of 1,043 (38%) reported landings of snapper grouper species for at least one or more months in that year. In 1994 there were 2,883 vessels with valid snapper grouper permits and 1,162 (40%) reported landings of snapper grouper species for at least one or more months in that year. In 1995 there were 2,766 vessels with valid snapper grouper permits and 1,191 (43%) reported snapper grouper landings for at least one or more months in that year (Snapper Grouper Logbook File). This option would not reduce effort in the fishery. Virtually all the vessels currently with valid snapper grouper permits would be able to stay in the fishery. Overcapitalization and excess capacity would continue leading to reduction in net benefits.

Social Impacts

One complaint that fishermen have about using logbooks as verification of landings is that some reports have been late or lost in the mail. Their concern is that the record of landings portrayed by logbooks may not be accurate enough. NMFS has indicated that, for the most part, the logbook program is working and that late or lost reports are identified and corrected within a reasonable timeframe.

Conclusion

The Council rejected this option because it would cap the number of vessels, but still leave a potential for high levels of effort within the fishery.

Option 7. Limit permit holders to those that can demonstrate landings of species in the snapper grouper management unit as of January 1, 1994 and that held valid snapper grouper permits for 1994 and 1995.

Biological Impacts

Potential reductions in fishing mortality would be less than the proposed action.

Economic Impacts

In 1994 there were 2,883 vessels with valid snapper grouper permits and 1,162 (40%) reported landings of snapper grouper species for at least one or more months in that year. In 1995 there were 2,766 vessels with valid snapper grouper permits and 1,191 (43%) reported snapper grouper landings for at least one or more months in that year (Snapper Grouper Logbook File). This option would not likely reduce effort in the fishery. Overcapitalization and excess capacity would continue leading to reduction in net benefits.

Social Impacts

Under this option fishermen who are the most current participants in the fishery would likely qualify. In the previous discussion under Action 1 it was pointed out that some fishermen may not have landed snapper grouper in recent years, but would like to have the option of fishing for snapper grouper if needed. This type of "insurance" seems to be favored where fishermen fish several species and fisheries. Unfortunately, no one knows when a particular fisherman will need to switch to another species or fishery, in essence cashing in on the "insurance" policy. Other management measures in this amendment, other fishery management plan amendments, measures implemented by other agencies, as well as environmental phenomenon may all have the undesired effect of forcing effort switches.

By allowing excess effort to remain in the fishery, management will continually have to speculate as to how often and how much effort will shift and under what circumstances. Effort shifts can be moderated through other management measures which may provide barriers to others entering the fishery. Quotas, gear restrictions, trip limits and other types of management may preclude others from switching. However, there is still the potential for excess capacity and that potential increases the probability of negative social impacts occurring in the future. Those impacts come in the form of conflicts over gear, availability of fish and localized depletion, not to mention a perception of mismanagement

Conclusion

The Council rejected this option because it would not reduce the number of permits and consequently leave the potential for increased effort within the fishery, and because it does not address the overfishing and overcapitalization problems.

Option 8. Limit permit holders to those that can demonstrate landings of 1,500 - 5,000 pounds of species in the snapper grouper management unit annually (as of July 30, 1991; February 1, 1992; January 1, 1993; January 1, 1994; or January 1, 1995 - council to specify).

Biological Impacts

Potential reductions in fishing mortality could be greater than the proposed action.

Economic Impacts

Table 24 shows the number of vessels that landed various poundage's of snapper grouper species for the entire South Atlantic region. A total of 2,095 vessels (80% of the vessels that reported) made landings of 2,500 pounds or less of snapper grouper species. Of these vessels, 1420 vessels (54%) reported no fishing (did not land any snapper grouper species) during 1995. Also, 1,742 vessels (67%) reported landing 500 pounds or less; 1,887 vessels (72%) reported landing 1,000 pounds or less; and 2,039 vessels (78%) reported landing 2,000 pounds or less of snapper grouper species during 1995.

Table 24. Number of Vessels that Landed Snapper Grouper Species in Different Poundage Categories in the South Atlantic Region Based on 1994 Logbook Data (Source: Nelson Johnson, NMFS Beaufort Lab; December 1996).

Poundage Category	Pounds	Number of Vessels	% Reporting Vessels in 1995	% Reported Landings
(no fishing)	0	1,420	54.3	0
1-100	5,199	109	4.2	0.1
101-500	59,077	213	8.2	0.7
501-1,000	106,510	145	5.6	1.2
1,001-2,000	220,785	152	5.8	2.5
2,001-2,500	128,603	56	2.1	1.4
2,501 - 5,000	551,815	161	6.2	6.2
5,001 - 10,000	840,431	116	4.4	9.4
10,001 - 20,000	1,654,811	114	4.4	18.5
> 20,000	5,349,411	125	4.8	60.0

Table 25 shows the number of vessels that would qualify in the entire South Atlantic region under a poundage qualifier based on reported landings for 1995. If the poundage qualifier is greater than 1,000 pounds, a total of 724 vessels would qualify. For greater than 2,500 pounds, 516 vessels would qualify. The number of vessels declines to 355 for a >5,000 pound qualifier. As the poundage requirement increases, the number of vessels that would qualify declines.

Tables 25 to 29 provide breakdown for the South Atlantic region into north and south of St. Lucie Inlet, Florida. For the same time period, 467 vessels reported landings north of St. Lucie Inlet, Florida (Table 26). Table 27 shows that 467 vessels would qualify north of St. Lucie Inlet, Florida if the poundage requirement is less than 2,500 pounds based on reported landings for 1994. These accounted for 40% of the vessels that reported landings of snapper grouper species in the South Atlantic region.

Table 28 shows the number of vessels that reported landings of snapper grouper south of St. Lucie Inlet, Florida. A total of 689 vessels reported landings in 1994. Table 21 shows that 689 vessels would qualify south of St. Lucie Inlet, Florida if the poundage requirement is less than 2,500 pounds based on reported landings for 1994. The vessels that reported landings of snapper grouper species south of St. Lucie Inlet, Florida accounted for 60% of the vessels that reported landings of snapper grouper species in the entire South Artlantic region.

Table 25. Number of South Atlantic Vessels that Qualify under Various Poundage Requirements Based on 1995 Logbook Data (Source: Nelson Johnson, NMFS Beaufort Lab; December 1996).

Poundage	Number of Vessels	% Reporting Vessels in 1995	% Reporting Landings in 1995
> 1,000	724	28	61
> 2,500	516	20	43
> 5,000	355	14	30
> 10,000	239	9	20

Table 26. Number of Vessels that Landed Snapper Grouper Species in Different Poundage Categories North of St. Lucie Inlet, Florida Based on 1994 Logbook Data.

POUNDAGE	# OF VESSELS	% OF VESSELS REPORTING	% OF REPORTED LANDINGS
< 2,500	191	41%	3%
2,501 - 5,000	47	10%	3%
5,001 - 10,000	65	14%	7%
10,001 - 20,000	59	13%	15%
> 20,000	105	23%	72%
TOTAL	467	100%	100%

Table 27. Number of Vessels North of St. Lucie Inlet, Florida Qualifying under Various Poundage Requirements Based on 1994 Logbook Data.

POUNDAGE	# OF VESSELS	% OF PERMITTED VESSELS	% OF REPORTED LANDINGS
< 2,500	467	16%	100%
2,501 - 5,000	276	10%	96%
5,001 - 10,000	229	8%	94%
10,001 - 20,000	164	7%	87%
> 20,000	105	4%	72%

Table 28. Number of Vessels that Landed Snapper Grouper Species in Different Poundage Categories South of St. Lucie Inlet, Florida Based on 1994 Logbook Data.

POUNDAGE	# OF VESSELS	% OF VESSELS REPORTING	% OF REPORTED LANDINGS
< 2,500	427	62%	14%
2,501 - 5,000	121	18%	16%
5,001 - 10,000	73	11%	18%
10,001 - 20,000	40	6%	23%
> 20,000	28	4%	30%
TOTAL	689	100%	100%

Table 29. Number of Vessels South of St. Lucie Inlet, Florida Qualifying under Various Poundage Requirements Based on 1994 Logbook Data.

POUNDAGE	# OF VESSELS	% OF PERMITTED VESSELS	% OF REPORTED LANDINGS
< 2,500	689	24%	100%
2,501 - 5,000	262	9%	86%
5,001 - 10,000	141	5%	70%
10,001 - 20,000	68	2%	52%
> 20,000	28	1%	29%

Social Impacts

Using landings criteria in this option will certainly reduce the number of permits within the fishery. Those remaining in the fishery will continue to have the ability to increase their effort if other measures are not implemented to restrict expansion of fleet capability. Certainly, the higher the landings criteria the more individuals that will be excluded, primarily the part-time or smaller producer.

Conclusion

The Council rejected this option because at a higher poundage level, it would exclude more fishermen than the preferred option and could result in more resistance to the management approach.

4.2.2 Additional Measures.

4.2.2.1 ACTION 2. Redefine overfishing and optimum yield.

A. A snapper grouper species (including jewfish) is considered to be overfished when the transitional spawning potential ratio (SPR) is below 20%.

B. The South Atlantic Council's target level or Optimum Yield (OY) is 40% static SPR.

C. When a stock is overfished (transitional SPR less than 20%), a rebuilding program that makes consistent progress toward restoring stock condition must be implemented and continued until the stock is restored beyond the overfished condition. The rebuilding program must be designed to achieve recovery within an acceptable time frame as specified by the council (generally cannot exceed 10 years). The council will continue to rebuild the stock until the stock is restored to the management target (OY).

D. When a stock is not overfished (transitional SPR equal to or greater than 20%), the act of overfishing is defined as a static SPR that exceeds 20% (i.e., $F_{20\%}$). If fishing mortality rates that exceed the level associated with the static SPR overfished level are maintained, the stock may become overfished. Therefore, if overfishing is occurring, a program to reduce fishing mortality rates toward management target levels (OY) will be implemented, even if the stock is not in an overfished condition.

E. The threshold level for snapper grouper species is defined as 10% transitional SPR. If the stock(s) were to be overfished to such an extent that their transitional SPR was below the threshold level, the council will take appropriate action including but not limited to eliminating directed fishing mortality and evaluating measures to eliminate any bycatch mortality in a timely manner through the framework procedure.

F. For species, where there is insufficient information to determine whether the stock is overfished (transitional SPR), overfishing is defined as a fishing mortality rate in excess of the fishing mortality rate corresponding to a default static SPR of 30%. If overfishing is occurring, a program to reduce fishing mortality rates to at least the level corresponding to management target levels will be implemented.

G. The timeframe for recovery of overfished stocks remains unchanged (see No Action option below for actual wording). For species which were not documented as overfished in Amendment 3, Year 1 is the year in which the species is documented as being overfished. For example, gag were documented as being overfished in the 1996 assessment; therefore, Year 1 = 1996.

H. Definitions and Terminology (directly from Mace et al., 1996).

The acronym, SPR, *has been used to represent both Spawning Potential Ratio and Spawning (biomass) Per Recruit. As implied by its name, the spawning potential ratio is a relative measure. It expresses the spawning production of a fished population relative to the spawning production of an unfished population with otherwise similar characteristics. By contrast, spawning per recruit is an absolute measure (usually expressed in units of weight or numbers of eggs), intended to be analogous to yield per recruit (YPR). Spawning per recruit is converted to a relative measure by dividing by the maximum spawning per recruit, which is converted to a relative measure by dividing by the maximum spawning per recruit,*

which occurs under conditions of no fishing, and expressing the result as a percentage. Relative spawning per recruit is commonly abbreviated as %SPR. Thus, spawning potential ratio is usually measured on a scale of 0 to 1 while % spawning per recruit is expressed as a percentage. Use of proportions or percentages in FMP overfishing definitions, in the scientific literature, and even in this report may not be consistent, but it is usually clear which one is being used because %SPR levels less than 1% are rarely considered.

A much more fundamental point of departure between the two SPR measures is that % spawning per recruit is a static measure while spawning potential ratio is a transitional measure. Although the conceptual foundation for the two measures is similar, there are differences in methods of calculation and in the interpretation of results. For spawning per recruit (static measure), the reference points are calculated from a standard (Beverton-Holt "spawning per recruit analysis" which is analogous to the familiar yield per recruit analysis, and uses exactly the same inputs (e.g. constant weights at age, a constant natural mortality vector, and a constant fishing mortality vector), with the addition of a constant maturity ogive. For the spawning potential ratio (transitional measure), the reference points are calculated from empirical estimates of population numbers and fishing mortalities by age and year derived from age-structured stock assessments. With the exception of some of the work conducted by Goodyear (1980, 1993; see original report of the NMFS Overfishing Definition Review Panel), virtually all of the theoretical development and empirical analyses of SPR reference points relate to the static approach, for which each level of SPR (or %SPR) corresponds directly to a unique level of fishing mortality (for a given selectivity ogive).

In this supplemental report, the acronym "SPR" is always preceded by the terms "static," , "static %" or "transitional," to differentiate between the alternative interpretations.

The Review Panel considered two primary measures of transitional SPR; the spawning production in year t relative to that which would have been produced in year t if there had been no fishing on the cohorts that exist in year t; and the spawning production per recruit in year t (called SPR1 and SPR2, respectively, by Powers MS). These measures have been variously referred to as "non-equilibrium," "dynamic," and "transitional." The Review Panel preferred the latter terminology and has used it consistently from here on. SPR1 is referred to as the weighted transitional SPR (where the weighting is by year class strength); while SPR2 is referred to as the unweighted transitional SPR, or simply transitional SPR. Similarly, "static %SPR" has frequently been referred to as "equilibrium %SPR," but since equilibrium conditions are not essential for the measure to be valid, the Review Panel preferred the term "static." The word "static" refers to the underlying assumption that growth rates, maturity schedules, natural mortality, fishing mortality, and selectivity patterns are constant; however, recruitment itself need not be constant.

In terms of the use of transitional SPR measures in control laws, the Review Panel believes that the unweighted transitional SPR can be considered an index of stock condition in terms of whether or not the stock is overfished (i.e. whether or not the age structure is distorted due to historical fishing patterns), but not necessarily in terms of whether or not the stock is depleted (with respect to total or spawning biomass). Thus, controls laws that specify lower thresholds beyond which fishing should cease probably need to consider explicit indices of biomass as well as or instead of the unweighted transitional SPR. Ideally, a control law (or series of control laws) would have axes corresponding to the act of overfishing (indexed by the static %SPR), the overfished condition (indexed by the unweighted transitional SPR), and the extent of stock depletion (indexed by absolute or

relative estimates of biomass). This level of complexity is required because spawning or total biomass may be depleted due to adverse environmental effects, yet the stock may not be considered overfished based on estimates of transitional SPR. Similarly, a stock can be overfished, even though spawning or total biomass is high relative to optimum or historical levels. In effect, the term "overfished" can be thought of an index of the degree of distortion in the age structure due to historical fishing practices, whereas "depleted" simply implies low biomass. An overfished stock will often also have low biomass, but need not.

The best way to think of the overfishing and optimum yield definitions is to relate them to the amount of spawners in the water. Research for a number of species has shown as the percentage of spawners is reduced from the number or amount in pounds that would be in the water if there was no fishing, the risk of stock collapse increases. If the amount of spawning fish is reduced below 20% (which the scientists refer to as 20% SPR), the chance of stock collapse becomes a very real possibility. If it is reduced below 10%, you can be pretty sure you are going to see severe declines in numbers of fish and probably see the stock collapse. If we had sufficient information to accurately determine where this level was for each species we could avoid any biological problems. The problem is our information is incomplete and we do not know what the specific percentage is for each species to prevent risk of stock collapse. As a result, the Council is proposing to aim for having 40% of the spawners in the water that would be there if there was no fishing (scientists call this 40% SPR). In this way, when the stock declines for environmental or other "non-fishing" reasons, the spawners should not go below the 20% level. Some years the quantity of spawners will be above 40% and some years below 40%. The Council wants to ensure it will remain above the 20% level thereby avoiding problems and risk of stock collapse.

In the event the quantity of spawners should go below 20%, the Magnuson-Stevens Act requires the Council specify how long they will take to rebuild the stock. The timeframe for recovery of snappers (excluding red snapper), greater amberjack, black sea bass, and red porgy is not to exceed 10 years. For red snapper and the groupers, the timeframe is not to exceed 15 years. These timeframes were established in Amendment 4 and are based on the life history characteristics (growth rate, mortality rate, longevity, etc.). Longer lived, slower growing species are more susceptible to overfishing and will rebuild more slowly, hence the 15 year recovery period. Shorter-lived, faster growing species will recover more quickly and was the basis for choosing 10 years. Year 1 for species considered overfished at that time (Amendment 4) was the 1991 fishing year. The recovery time period may be modified by the framework (regulatory amendment) procedure.

If the quantity of spawners is above 20% but below the Council's long-term target (optimum yield) of 40%, the Council will determine the timeframe to get the stock above 40%. This allows the Council greater flexibility to balance social and economic costs of rebuilding a stock.

Biological Impacts

Specifying the target level or optimum yield (OY) at 40% static SPR will provide more biological protection and lead to more stability in the fishery. This is the Council's long-term goal. Establishing such a target will accommodate natural stock fluctuations and fluctuations due to poor data, lack of data, delays in obtaining data, and low levels of data collection and monitoring. The Council's short-term goal is to rebuild overfished species above 20% transitional SPR.

The threshold level will provide a biological fail-safe such that if the stock(s) should fall below 10% transitional SPR, the council will take steps to eliminate all fishing mortality. This will prevent extreme population declines and reduce the frequency of extreme population responses due to man-induced mortality. The threshold level and the Council's intent to eliminate all fishing mortality if a stock(s) should fall below this level will prevent any of these species from becoming threatened or endangered.

Economic Impacts

No direct economic impact is associated with this action. However, it would preserve the biological integrity of the stocks and could result in increased net economic benefit in the long-term.

Social Impacts

The social impacts that come from defining overfishing and optimum yield stem from the management measures that are implemented to reach either goal. The choice of an overfishing definition certainly has impacts when stocks reach that level because the Council must implement a program to begin rebuilding stocks above that level. There may be short term negative impacts associated with measures implemented to help stocks recover, but the long term benefits of a healthy fishery depend upon a sustainable resource. The program determined to best help a stock recover from overfishing must also meet mandated timeframe requirements. The associated impacts would surely depend upon the Council's program for stock recovery within that timeframe.

Selecting optimum yield is less rigid than overfishing and economic and social factors are to be incorporated into the selection. This makes selecting optimum yield slightly more uncertain because economic and social information about fisheries is often lacking. There is also no timeframe requirement for reaching optimum yield, although the Council is supposed to continuously make progress toward that goal. The impacts from selecting optimum yield will most likely depend upon the timeframe chosen to reach optimum yield and the associated benefits that are desired from the fishery.

Choosing 20% SPR for overfishing is primarily a biological decision about stock sustainability. Social impacts should be beneficial if the SPR chosen will ensure that stocks will remain sustainable. Optimum yield at 40% SPR may have various impacts depending upon which species is being considered. It has been suggested that for some species dropping below 40% SPR may compromise long-term viability for the stock. In such a case, the long term sustainability might also be affected. Therefore, the Council may wish to choose a risk averse strategy and manage certain fisheries at this level. Other species may be stable at a lower SPR level. Again, the social impacts would come from the associated measures the Council would implement to reach optimum yield. Since most fisheries have been managed at lower SPR levels, there could be considerable impacts if the Council tries to attain a 40% SPR level in a very short timeframe. Because biological management measures are dependent upon the stock assessment which is analyzed using the SPR level chosen as target level (Optimum Yield), the ensuing impacts become tied to the selection of a target and the speed at which that target is to be reached.

Having a threshold level gives the Council the authority to take acute measures to address problems in the fishery. With an overfishing definition and a recommended action in place it is unlikely that the threshold level would be reached. However, under extreme conditions this

threshold level will provide added assurance that the Council will have the ability to address an extremely over stressed fishery.

Conclusion

The Council reviewed the draft report titled "An Evaluation of the Use of SPR Levels as the Basis for Overfishing Definitions in the Gulf of Mexico Finfish Fishery Management Plans" during the June 1995 Snapper Grouper Committee meeting and subsequently during the April 1996 Joint SAFMC/GMFMC Mackerel Committee meeting. The proposed definition is consistent with recommendations contained in the report; however, the Council has specified a more conservative OY level and is using the original intent of the threshold level.

Although the currently defined overfishing level of 30% is higher than the preferred level of 20%, the more important level is the target level. Currently, the target level is also the overfishing level (30%). However, under this preferred action, the target is increased to 40% which is more biologically conservative. In addition, the Council has specified a threshold level at 10% which is more biologically conservative than the current definition.

The Council concluded that the proposed action provides more biological protection to the snapper grouper resource and represents prudent management to ensure long-term productivity and sustainable use of the snapper grouper resource.

Other Possible Options for Action 2:

Option 1. No Action. The current definitions remain: Overfishing for all species other than jewfish is defined as follows (Snapper Grouper Amendment 3 and included in each subsequent amendment):

(i) A snapper grouper stock or stock complex is overfished when it is below the level of 30% of the spawning stock biomass per recruit which would occur in the absence of fishing.

(ii) When a snapper grouper stock or stock complex is overfished, overfishing is defined as harvesting at a rate that is not consistent with a program that has been established to rebuild the stock or stock complex to the 30% spawning stock biomass per recruit level. (Note: For jewfish 40% was used.)

(iii) When a snapper grouper stock or stock complex is not overfished, overfishing is defined as a harvesting rate that, if continued, would lead to a state of the stock or stock complex that would not at least allow a harvest of Optimum Yield (OY) on a continuing basis.

The timeframe for recovery of snappers (excluding red snapper), greater amberjack, black sea bass, and red porgy is not to exceed 10 years. For red snapper and the groupers, the timeframe is not to exceed 15 years. Year 1 was the 1991 fishing year. The recovery time period may be modified by the framework (regulatory amendment) procedure. These timeframes were established in Amendment 4 and are based on the life history characteristics (growth rate, mortality rate, longevity, etc.). Longer lived, slower growing species are more susceptible to overfishing and will rebuild more slowly, hence the 15 year recovery period. Shorter-lived, faster growing species will recover more quickly and was the basis for choosing 10 years.

Biological Impacts

When the council adopted a definition of overfishing in terms of the minimum level of spawning biomass, the management emphasis shifted to the prevention of recruitment failure by increasing potential egg production. This was accomplished by adopting a fishing mortality rate that would allow 30% of the spawning stock biomass to survive in the fishery. This limit should not be considered a management goal but rather as a base level below which the stock should not

be pushed. The spawning stock ratio (SSR) strategy should drive the spawning stock away from a critical value that may result in recruitment overfishing. For spawning stocks above the critical value, the fishery may remain below long-term optimum yield. Therefore, fishing mortality designed to recuperate the stocks to 30% SSR may be above or below the fishing mortality rate that would generate Optimum Yield. There is uncertainty associated with the current and projected fishing mortality values. This uncertainty increases the risk of not achieving the target biomass at 30% SPR during the specified recovery period.

Having the same level as the target and the overfishing level results in times when the stock(s) will be below the overfished level. This results in greater biological risk for the stock(s).

Economic Impacts

Not redefining overfishing and optimum yield could result in dissipation of economic benefits and overcapitalization in the fishery. The redefinition of overfishing and optimum yield gives the council some flexibility to manage the fishery. The different SPR levels for overfishing and target or optimum yield would allow for more efficient management measures in that once stocks are above 20% SPR, measures would be implemented that would move those stocks to the target level of 40% SPR. The no action option does not distinguish between the overfishing level and optimum yield. This does not provide for flexibility and for increasing net benefits in the long-term.

Social Impacts

Not taking action and leaving the current overfishing definition in place may have few social impacts, initially. If some species are not sustainable at the current over fishing level problems will likely develop within the fishery.

Conclusion

The Council rejected this option because the preferred action is more biologically conservative and reduces the level of biological risk. Although the defined overfishing level of 30% is higher than the preferred level of 20%, the more important level is the target level. Under the no action, the target level is also the overfishing level (30%). However, under the preferred action, the target is increased to 40% which is more biologically conservative. In addition, the Council has specified a threshold level at 10% which is more biologically conservative than the no action option. Thus, the no action option would maintain a higher level of biological risk and was rejected by the Council.

Option 2. Specify a threshold level in the range of 5% to 30% Spawning Potential Ratio (SPR) and a target level in the range of 30% to 50% SPR.

Biological Impacts

The biological impacts vary depending on the level chosen. The higher threshold levels (i.e., above 10%) would be less conservative biologically than the proposed 10% threshold level, while threshold levels lower than 10% would be more conservative. Conversely, higher target levels (i.e., above 30%) would be more conservative biologically than the proposed 30% target level, while target levels lower than 30% would be less conservative.

Economic Impacts

This option is less conservative than the proposed action at levels above 10%. It could result in dissipation of economic benefits and overcapitalization of the fishery, particularly for long lived species. However, if stocks are managed above the overfishing level, the threshold level would have no significance below 20% SPR. For levels above 20% SPR, the overfishing level would have to be changed since it should be higher than the threshold level.

Social Impacts

The threshold level is one that offers the Council an added measure to ensure that fishing mortality can be reduced in extreme cases where other measures have been unsuccessful. Choosing a threshold level is a decision that is primarily biological, however, social and economic concerns are certainly present. Threshold depends upon the species susceptibility to fishing pressure. The social impacts from choosing a threshold would depend upon the accuracy of the threshold level chosen and the subsequent impact on the stock. If the threshold is artificially high, a closure of the fishery may have more negative impacts than beneficial ones. If the threshold is set too low, the fishery may collapse.

Choosing a target level provides the opportunity to incorporate social and economic impacts into management of fisheries. The primary concern when setting target levels is how will it affect other management measures, like bag limits, size limits, etc. Choosing a target level at the lower end of the SPR range will give more flexibility in other management options, but may jeopardize stocks. Choosing from the higher range of SPRs is more restrictive and may create unnecessary hardship on fishermen in the short term. In both cases, the impacts will vary according to the timeframe chosen by the Council.

Conclusion

The Council rejected this option because the proposed overfishing definition better protects the biological integrity of the snapper grouper resource.

Option 3. Establish species specific definitions of overfishing - target, overfished, and threshold.

For example, jewfish - specify 50% SPR as a target level, 40% SPR as an overfished level, and 20% as the threshold level.

Biological Impacts

The biological impacts vary depending on the level chosen. Lower threshold levels would be less biologically conservative, while higher threshold levels would be more conservative. High target and overfishing levels would be more conservative biologically, while lower target and overfishing levels would be less conservative.

Economic Impacts

This option takes into consideration the different life spans of the species in the complex. However, because of the multiple species nature of the fishery, it is not practicable to optimize benefits from the fishery by managing each species at different levels of SPRs.

Social Impacts

The social impacts of selecting species specific definitions would likely be beneficial to fishermen in knowing that the scientific basis for managing each fishery has not been artificially imposed as a general category.

Conclusion

The Council rejected this option because the proposed overfishing definition better protects the biological integrity of the snapper grouper resource.

4.2.2.2 ACTION 3. Allow use of one bait net up to 50 feet long by 10 feet high with a stretched mesh size of 1.5" or smaller. Allow one net per boat. Also allow possession and use of cast nets for catching bait.

Reports have surfaced that fishermen in south Florida are using small nets to catch pilchards for bait and then going to fish for snapper grouper species. Under current regulations, the possession of nets and snapper grouper species in excess of the bag limits (for species with bag limits) on a vessel is not allowed. The nets are 30 feet long by 8 feet high with a mesh of 1 1/2" stretch or 3/4" square. The net is fished at night with one end attached to the boat. Deck lights and chum are used to attract the pilchards. The net retains a pilchard of about 6" length.

Currently possession of cast nets also results in the technical violation of the Council's allowable gear provisions.

Biological Impacts

None.

Economic Impacts

This action would allow fishermen to obtain live baits used for fishing snapper grouper species. It specifies the size of the net to be used for catching live bait so that drift net could not be used illegally under the guise that it is used for catching live bait. It should aid fishermen in their activity and promote better understanding between fishermen and management.

Social Impacts

This action will allow fishermen who use bait nets prior to fishing for snapper grouper to continue using them. It is a clarification of allowable gear and should enhance enforcement. The social impacts should be positive and ensure a flexible management program.

Conclusion

The Council concluded this option would allow fishermen to catch bait without negatively impacting the snapper grouper resource and would clarify regulations.

Other Possible Options for Action 3:
Option 1. No Action.

Biological Impacts

None.

Economic Impacts

This option would hinder the activities of some fishermen. It would increase their operating costs by requiring them to make additional trips or purchase bait.

Social Impacts

No action would impose unnecessary hardship on fishermen who use these bait nets. It is unlikely that they are ever used for snapper grouper and therefore pose little problem for the fishery.

Conclusion

The no action option was rejected by the Council because it would impose unnecessary hardship on fishermen who use bait nets.

4.2.2.3 ACTION 4. Species within the snapper grouper management unit (whether whole or fillets) caught in Bahamian waters in accordance with Bahamian law may be possessed aboard a vessel in the South Atlantic EEZ and landed in the U.S. provided the vessel is in transit from the Bahamas and valid Bahamian fishing and cruising permits are onboard.

Biological Impacts

None.

Economic Impacts

This option would allow fishermen fishing legally in the Bahamas to bring in fish in whole or filleted form into the United States through the south Atlantic EEZ as long as they cleared customs and obtain exit certificates before leaving the Bahamas. It provides some flexibility to these fishermen and prevents them from violating regulations which applies to snapper grouper species caught in the South Atlantic EEZ. Also, it would make for hire boat trips to the Bahamas more attractive resulting in increased revenue to the for hire boat industry, particularly in the Florida area.

Social Impacts

Fishermen who travel to the Bahamas to fish are allowed to keep filleted fish but when they travel back to the United States they are prevented from bringing fillets into the United States EEZ. This action would allow these fishermen to bring legally caught fish from the Bahamas into U.S. ports. The social impacts from this action would be the increased satisfaction for those individuals who fish Bahamian waters. However, there may be some incentive for others to circumvent the intent of this regulation and claim fillets were legally caught in the Bahamas when actually caught in U.S. waters.

Conclusion

This action will provide an exception for vessels returning from the Bahamas to possess legally caught Bahamian fish (whole or fillet) that are otherwise in violation of snapper grouper regulations (e.g., undersized, out of season, etc.). The Council concluded this action would allow proper enforcement of snapper grouper regulations within the EEZ without negatively impacting fishermen returning from the Bahamas with legally harvested fish.

Other Possible Options for Action 4:
Option 1. No Action.

Biological Impacts
None.

Economic Impacts
This option would prevent those who fish legally in the Bahamas and can take their catches with them, from bringing those fish in filleted form into the United States through South Atlantic EEZ. If this option results in less trips being made to the Bahamas by for hire boats, the for hire boat industry could experience some reduction in revenue.

Social Impacts
The no action alternative will continue to make it illegal for fishermen who legally caught fish in the Bahamas to bring that catch back to the United States. There will likely be continued frustration with the inconsistency of regulations between the Bahamas and the United States.

Conclusion
The Council rejected taking no action because they concluded the proposed action would allow proper enforcement of snapper grouper regulations within the EEZ without negatively impacting fishermen returning from the Bahamas.

4.3. Research Needs

The research needs are listed in the original FMP (SAFMC, 1983) and Amendments 1-7 for snapper grouper. Also, the Council works with NMFS on an annual "Operations Plan" which identifies specific activities to be accomplished during the next year and identifies research needs.

4.4. Unavoidable Adverse Effects

The following information summarizes the short-term losses which will be mitigated by long-term gains with the snapper grouper resources at Optimum Yield (see Table 1 and the discussion under each action item for more details):

Action 1. Limit snapper grouper permit holders: Decrease in number of vessels but minimal impact in terms of total catch.

Action 2. Redefine overfishing and optimum yield: None.

Action 3. Specify allowable net gear for catching bait: None.

Action 4. Allow possession of species within the snapper grouper complex caught in Bahamian waters: May be some increased enforcement cost.

There may also be some shift in effort to other fisheries, however, such shifts are expected to be minimal (see Section 7.6 under the heading "Effort Directed at or From Other Fisheries").

Without management, fishing effort would increase and catches in the snapper grouper fishery would decline. In the absence of additional management measures limiting fishing mortality rates, such declines would be expected to continue and could reach such low levels that the snapper grouper fishery would no longer be economically feasible. If this situation were allowed to continue, the fishery would ultimately collapse.

The proposed measures will establish a limited entry program which will change the way in which fishermen think about the snapper grouper resource. It will be in their best interest to plan for the long-term and voluntary compliance would increase. This fundamental change in behavior, combined with the other measures proposed, will help prevent future declines in the snapper grouper resource and will assist in rebuilding the resource to the long-term goal (Optimum Yield) of 40% static SPR.

Therefore, the potential adverse effects resulting from a collapse of the snapper grouper resource will be avoided. Also, the resulting large negative social and economic costs will be avoided. For additional justification see Sections 1.4, 1.5, 3.4, 4.2, 4.7, 4.9, and Appendix F.

4.5. Relationship of Short-term Uses and Long-term Productivity

The level of reduction proposed is necessary to ensure the long-term productivity of the snapper grouper fishery resource. Without such regulations, the long-term yield of snapper grouper species would be jeopardized. Again it must be remembered the proposed measures will establish a limited entry program which will change the way in which fishermen think about the snapper grouper resource. It would then be in their best interest to plan for the long-term and voluntary compliance would increase. They would bear the burden of management regulations (e.g., size limits, quotas, etc.) but the benefits would not be reduced by new entrants to the fishery.

The Council weighed the likely short-term losses to fishermen against the long-term yield in target species and the effect of the snapper grouper fishery on the ecosystem, and concluded the proposed actions would likely result in net benefits to society. For additional justification see Sections 1.4, 1.5, 3.4, 4.2, 4.7, 4.9, and Appendix F.

4.6. Irreversible and Irretrievable Commitments of Resources

There are no irreversible or irretrievable commitments of resources associated with the proposed actions. If the Council does not take action to regulate the snapper grouper fisheries there will be a reduction in yields, damage to essential bottom habitat, and excessive investment in the fishery.

4.7. Effects of the Fishery on the Environment

4.7.1 Damage to Ocean and Coastal Habitats

The proposed actions, and their alternatives, are not expected to have any adverse effect on the ocean and coastal habitats. In fact, the measures will protect essential ocean and coastal habitats by reducing the negative impact of the fishery on the environment.

Management measures adopted in the original management plan through Amendment 7 combined have significantly reduced the impact of the fishery on essential 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 the use of bottom longlines to depths greater than 50 fathoms north of St. Lucie Inlet, only for species other than wreckfish, and prohibiting bottom longlines south of St. Lucie Inlet, and prohibiting the 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. For additional discussion see Sections 1.3, 8.4, and Appendix F.

The additional management measure proposed in Amendment 8, specifying allowable bait nets, will protect habitat by making existing regulations more enforceable. Establishing a controlled effort program will limit 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), such impacts will be limited. Also, capping overall fishing mortality will reduce the likelihood of overharvesting of species with the resulting loss in genetic diversity, ecosystem diversity, and sustainability. For additional discussion see the information under each of the proposed measures in Section 4.2.

Measures adopted in the coral plan and shrimp plan have further restricted access by fishermen that had potential 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 Section 8.0 of this document and the Shrimp and Coral FMP/Amendment documents for additional information).

4.7.2 Public Health and Safety

The proposed actions, and their alternatives, are not expected to have any substantial adverse impact on public health or safety. The proposed measures do not increase hazards for vessels or crew safety.

Establishing a limited entry program will remove some of the potential for creating "derby" fishing. Fishermen in the snapper grouper fishery will be better able to plan their fishing trips and avoid areas/times which pose safety risks (e.g., due to weather conditions).

4.7.3 Endangered Species and Marine Mammals

The original FMP prohibited use of poisons and explosives and limited use of fish traps to depths greater than 100 feet. In 1983, a Section 7 consultation under the ESA with NMFS concluded that the management actions contained in the Snapper Grouper FMP were not likely to adversely affect the continued existence of threatened or endangered sea turtles or marine mammals or result in the destruction or adverse modification of habitat that may be critical to those species. Amendment 1 to the FMP prohibited roller-rig trawls. Amendment 4 prohibited the use of fish traps and entanglement nets in the fishery. In addition, an "allowable gear" provision was implemented. Subsequent amendments have limited the use of sea bass pots to north of Cape Canaveral, Florida; limited the use of bottom longlines to depths greater than 50 fathoms and to areas north of St. Lucie Inlet, Florida; established special management zones where all gear other than hook-and-line and diving are prohibited; and prohibited fishing for bottom species in the Oculina Bank HAPC. Consultations on these actions concluded on April 28, 1989; July 6, 1990; March 7, 1991; May 3, 1991; September 19, 1991; December 30, 1992; September 21, 1993; and March 18, 1994. The latest consultation was for proposed measures in Amendment 8 conducted on May 16, 1997. All consultations concluded that neither the proposed management measures nor the fishery would adversely affect the recovery of endangered or threatened species, or their critical habitat. A description of the need for management and fishing practices is given in Section 1 and Section 3.3.

The gear currently allowed, as described above, are believed to have few, if any interactions with endangered species and marine mammals. NMFS currently has no information on documented interactions with marine mammals or endangered species in this fishery. Consequently, the fishery is listed as a Category III fishery (indicating interactions are rare to non-existent) in the 1997 List of Fisheries.

Amendment 8 will reduce participation and cap future potential increases in effort. Therefore, the Council has concluded that neither the proposed management measures in Amendment 8 nor the fishery will adversely affect the recovery of endangered or threatened species, or their critical habitat.

4.7.4 Cumulative Effects

The proposed actions, and their alternatives, are not expected to result in cumulative adverse effects that could have a substantial effect on the snapper grouper resource or any related stocks, including endangered and threatened species, such as turtles. In fact, the proposed measures will improve status of stocks, minimize habitat damage, rebuild overfished stocks, minimize user conflicts, protect threatened and endangered species, minimize overcapitalization and other adverse economic impacts that result from unlimited access to this fishery, and enhance compliance with existing regulations because fishermen will benefit from these measures. See Table 1 for more information.

Establishment of a limited entry program will result in the removal of up to 1,228 permit holders. However, they have not reported any landings of snapper grouper species since 1993, and are not considered to rely on this fishery at the present time (see the discussion under Action 1 for details). For those included in the limited entry program, there will be a cumulative impact from existing regulations (particularly Amendment 4) and the additional proposed measures in Amendment 9. However, it is important to understand that under the limited entry program these same individuals will be the ones to realize the future benefits of regulation as the stocks rebuild to a sustainable level.

The Council recognizes the actions proposed in Amendment 8 may result in some effort shift into other fisheries. Section 4.2.1 presents information on the other fisheries for which snapper grouper permit holders also qualify. It should be remembered these individuals are currently permitted in these fisheries and as a result would not represent "new" effort or participation. Further, those not included in the limited entry program currently catch limited amounts of snapper grouper species and therefor must be actively fishing in other fisheries. If this is the case, then any impacts from effort shifting would be expected to be minimal.

Fishermen have suggested the Council consider establishing a limited entry program for commercial fishermen versus the current fishery specific approach. The Council has discussed this in the past and will over the next two years further evaluate establishing a "Comprehensive Commercial Fishing Limited Entry Program" that includes all fisheries under the Council's jurisdiction.

There will also be cumulative positive effects. Rebuilding the overfished species and preventing overfishing in the other species will ensure the long-term productivity of the snapper grouper resource. This will achieve the Council's biological objectives of preventing overfishing, minimizing localized depletion, and minimizing habitat damage. The controlled access program will achieve the Council's social and economic objectives of vesting participants, promoting stability and facilitating long-run planning, creating market-driven harvest pace and increasing product continuity; minimizing gear and area conflicts among fishermen, decreasing incentives for overcapitalization; and preventing continual dissipation of returns from fishing through open access.

4.7.5 Effects of Fishery on Human Environment

The size and capacity of the fleet have increased significantly in recent years. Despite bag and trip limits, and other regulatory measures, some of the stocks are still overfished or near

the overfished stage. Any gains from current regulatory measures under the open access situation are likely to attract new entrants to the fishery and provide incentive for those already in the fishery to increase harvest capacity even when gains in production are marginal or when economies of scale are not necessarily realized. This results in excess capacity or overcapitalization, inefficiency, low conservation and compliance incentives, potential conflicts among participants, high regulatory costs and low marketing incentives (see Sections 1.1 and 1.2 for more information about these problems).

Amendment 8 proposes measures to address these problems by: establishing a limited entry program (Action 1), redefine Optimum Yield and overfishing (Action 2), further defining allowable gear (Action 3), and allowing fishermen returning from the Bahamas to land fish legally caught in the Bahamas (Action 4). For additional discussion please refer to the information presented for each Action in Section 4.2.

Social and economic information on fishermen is extremely limited. Surveys of portions of the commercial snapper grouper fishery have been recently completed. Results are included in Section 3.3.1 and have been used in analyzing the social and economic impacts of each Action as shown in Section 4.2.

Detailed discussions of the proposed measures on the human environment are presented under each Action in Section 4.2. For a summary of the economic and social impacts please refer to Tables 1 and 2 which summarize the impacts described in Section 4.2.

4.8. Public and Private Costs

Preparation, implementation, enforcement, and monitoring of this and any federal action involves expenditure of public and private resources which can be expressed as costs associated with the regulation. Costs associated with these actions include:

Council costs of document preparation, meetings, scoping meetings, public hearings and information dissemination	$150,000
NMFS administrative costs of document preparation, meetings and review	$65,000
NMFS law enforcement costs	$0
Total	$215,000

4.9 Effects on Small Businesses: Initial Regulatory Flexibility Analysis

The Regulatory Flexibility Act requires a determination as to whether or not a proposed rule has a significant impact on a substantial number of small entities. If the rule does have this impact then an Initial Regulatory Flexibility Analysis (IRFA) has to be completed for public comment. The IRFA becomes final after the public comments have been addressed. If the proposed rule does not meet the criteria for "substantial number" and "significant impact" then a certification to this effect must be prepared.

This proposed rule, if promulgated, will :

(i) Limit eligibility for permits to participate in the snapper grouper fishery to owners of boats/vessels that can: (a) demonstrate any landings of species in the snapper grouper management unit in 1993, 1994, 1995 or 1996 (as of August 20, 1996); and (b) had a valid snapper grouper permit any time during the period from February 11, 1996 through February 11, 1997. Vessels landing at least 1,000 pounds of species in the snapper grouper management unit

in any one of these years receive a transferable permit. All other vessels receive a non-transferable permit and are limited to 225 pound trip limit.

(ii) Redefine overfishing and optimum yield.

(iii) Allow use of one bait net up to 50 feet long by 10 feet high with a stretched mesh size of 1.5" or smaller. Allow one net per boat. Also, allow possession and use of cast net for catching bait.

(iv) Allow species within the snapper grouper management unit (whether whole or fillets) caught in Bahamian waters in accordance with Bahamian law to be possessed aboard a vessel in the South Atlantic EEZ and landed in the U.S. provided the vessel is in transit from the Bahamas and valid Bahamian fishing and cruising permits are onboard.

All of the commercial and recreational (headboats, charter boats, and private / rental boats) entities harvesting snapper grouper species affected by the rule will qualify as small business entities because their gross revenues are less than $3.0 million annually. Hence, it is clear that the criterion of a substantial number of the small business entities comprising the snapper grouper harvesting industry being affected by the proposed rule will be met. The outcome of "significant impact" is less clear but can be triggered by any of the five conditions or criteria discussed below.

The regulations are likely to result in a change in annual gross revenues by more than 5 percent.

The discussions under economic impacts in Section 4 details the effects on commercial and recreational entities for each proposed action to the extent possible. It is estimated that the limited entry action would reduce annual gross revenue of commercial fishermen by approximately $1.0 million in the first year. The action redefining overfishing and optimum yield has no direct economic impact. However, it would preserve the biological integrity of the fish stocks and could result in increased net economic benefits in the long-term. The allowable gear action would enable fishermen obtain live baits for fishing snapper grouper species. It should aid fishermen in their activity and promote better understanding between fishermen and management. The action that allows fishermen fishing legally in the Bahamas to possess species in the snapper grouper management unit caught in Bahamian waters onboard their vessels while transiting the South Atlantic EEZ would make for hire boat trips to the Bahamas more attractive. This could increase demand for those trips resulting in increased revenues to the for hire boat industry.

Based on an estimated exvessel value of $15.5 million for the snapper grouper fishery for 1995 extrapolated from the General Canvass data, the reduction in annual gross revenue in the first year represents approximately 6.5% of the 1995 estimated exvessel value of the fishery. However, it should be noted that some of the 513 vessels listed as having landed snapper grouper species that would not qualify under the limited entry program may no longer be participating in the fishery. Also, some of these vessels have gone through re-documentation because of Coast Guard requirements. Such vessels would be permitted under new vessel identification numbers while the old vessel identification numbers would show up under the non-permitted vessels category during the one year window. Thus, the actual reduction in gross revenue could be much less than the estimated $1.0 million.

No recreational entity would experience any change in annual gross revenue as a result of the proposed actions. In fact the headboat and charter boat sectors could experience increased revenue as a result of Action 4. Also, private recreational boat anglers could experience increased fishing satisfaction from their fishing trips to the Bahamas.

Annual compliance costs (annualized capital, operating, reporting, etc.) increase total costs of production for small entities by more than 5 percent. None of the actions would involve added costs to fishermen. The allowable gear action could reduce costs to fishermen by enabling fishermen obtain live baits for fishing snapper grouper species at reduced costs.

Compliance costs as a percent of sales for small entities are at least 10 percent higher than compliance coasts as a percent of sales for large entities. All the firms expected to be impacted by the rule are small entities and hence there is no differential impact.

Capital costs of compliance represents a significant portion of capital available to small entities considering internal cash flow and external financing capabilities. The proposed actions do not require any existing fishing entity to acquire new equipment or to completely refit existing equipment for compliance purposes.

The requirements of the regulation are likely to result in a number of the small entities affected being forced to cease business operations. This number is not precisely defined by SBA but a "rule of thumb" to trigger this criterion would be two percent of the small entities affected. The analysis under economic impacts for Action 1 indicate that some fishing entities may be forced out of business. However, some of the 513 vessels listed as having landed snapper grouper species but would not qualify may have left the fishery. Other vessels that have gone through re-documentation and are permitted under different vessel identification numbers would qualify for permits. The number of those vessels is unknown. Thus, the actual number of vessels that will be forced out of business is likely much less than 513 vessels. The analyses for the remaining actions do not indicate that any entity will be forced out of business.

Considering all the criteria discussed above, the conclusion is that small businesses will be significantly affected by the proposed rule. Hence, the determination is made that the proposed rule will have a significant impact on a substantial number of small business entities and an Initial Regulatory Flexibility Analysis (IRFA) is required.

The full details of the economic analyses conducted for the proposed rule are contained in the RIR under the heading "Economic Impacts" in Section 4. Some of the relevant results are summarized for the purposes of the IRFA.

Description of the reasons why action by the agency is being considered: Action 1 will promote orderly utilization of the resource, decrease incentive for overcapitalization, prevent continual dissipation of returns from fishing through open access (by capping the number of permits), promote stability and facilitate long-term planning, and provide for a flexible management system. The other actions will promote public compliance and enforcement, and allow recreational and commercial fishermen to operate efficiently.

Statement of the objectives of, and legal basis for, the proposed rule: The following objectives are a part of these actions: (1) Prevent overfishing in all species by maintaining the spawning potential ratio (SPR) at or above optimum yield levels; (2) Minimize habitat damage due to direct and indirect effects of recreational and commercial fishing activities as well as other non-fishery impacts; Promote stability and facilitate long- term planning; (3) Create market driven harvest pace and increase product continuity; (4) Decrease incentives for overcapitalization and; (5) Evaluate and minimize localized depletion. The Magnuson-Stevens Fishery

Conservation and Management Act (Public Law 94-265) as amended through October 11, 1996 provides the legal basis for the rule.

Description and estimate of the number of small entities to which the proposed rule will apply: The proposed rule will apply to all of the entities that currently hold valid permits in the snapper grouper fishery, and recreational fishermen (including headboats, charter boats, and private / rental boats). It is estimated that about 2,500 commercial vessels currently hold valid snapper grouper permits. Preliminary results from an economic survey of commercial snapper grouper fishermen conducted in 1994 (Waters, pers. comm.) indicate that the average investment in vessel and equipment ranged from $53,000 for vessels operating with vertical lines to $237,000 for vessels operating with bottom longlines. The estimated cost of new vessels comparably equipped ranged from an average of $113,000 for vessels with vertical lines to $340,000 for vessels with bottom longlines. Data extrapolated from the General Canvass data for 1995 indicate an estimated annual exvessel value of $15.5 million generated by commercial vessels that landed snapper grouper species.

Description of the projected reporting, recordkeeping 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: The proposed rule will contain three new collections of information for commercial entities. The first is the opportunity for providing additional information by those individuals who do not agree with the initial determination of eligibility. The second collection will be an appeal form and information for submission to the Application Oversight Committee. The third is notification and copy of the contract entered into and dated as of 8/20/96 which includes provisions for a permit transfer with purchase of a vessel. The proposed rule will not require any additional reporting or recordkeeping on the part of recreational entities. Compliance will be monitored through existing systems established by the National Marine Fisheries Service and the U.S. Coast Guard. The professional skills necessary to meet these requirements will not change relative to the level that all the fishermen are familiar with and have previously used.

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.

Description of significant alternatives to the proposed rule and discussion of how the alternatives attempt to minimize economic impacts on small entities: In Section 4, each proposed action includes a number of options under the heading: "Other Possible Options for Actions 1 - 4". Each of these options include an economic impact assessment. Refer to Section 4.2: "Management Options" for details of the economic impact assessment on small entities for each option. The status quo or "no action" option was also considered for each proposed action. Relative to the proposed actions, all the other possible options would result in reduced net benefits from the fishery in the long-term. Some of the options would minimize economic impacts on small entities in the short-term, but would not achieve the council's goal of managing species in the management unit at the optimum yield level. Thus, these options would not meet the stated objectives of the Snapper Grouper FMP.

5.0 LIST OF PREPARERS

Dr. Theophilus R. Brainerd, Fishery Economist, South Atlantic Fishery Management Council
Michael E. Jepson, Fishery Cultural Anthropologist, South Atlantic Fishery Management Council
Gregg T. Waugh, Deputy Executive Director, South Atlantic Fishery Management Council
Roger Pugliese, Fishery Biologist, South Atlantic Fishery Management Council

The following individuals assisted by reviewing this document:
Robert K. Mahood, Executive Director, South Atlantic Fishery Management Council
Ben Hartig, Chairman, South Atlantic Fishery Management Council

The following individuals provided comments on the original options paper:

Dr. Joe Kimmel	NMFS SERO	Mike McLemore	NOAA GC
Dr. Peter Eldridge	NMFS SERO	Dr. John Merriner	NMFS SEFSC
Dr. John Vondruska	NMFS SERO	Dr. Jim Waters	NMFS SEFSC

The following individuals provided data for the original options paper, public hearing document and final document:

Ed Burgess	NMFS SERO	Alex Chester	NMFS SEFSC
Sam Cox	NMFS SEFSC	Bob Dixon	NMFS SEFSC
Nelson Johnson	NMFS SEFSC	Dr. Charles Manooch	NMFS SEFSC
John Poffenberger	NMFS SEFSC	Jennifer Potts	NMFS SEFSC
Dr. Douglas Vaughan	NMFS SEFSC	Dr. James Waters	NMFS SEFSC
Mike Burton	NMFS SEFSC	Dr. Ken Backman	Clemson
Greg Hawkins	Clemson	Kim Iverson	SCDNR
Robert Wiggers	SCDNR	Ray Rhodes	SCDNR

The following individuals aided in review and development of the original options paper and public hearing document:

SAFMC Snapper Grouper Advisory Panel

Dean Adams	Billy Higgins	Doug Brady
Vic Lloyd	William Conklin	Miles Philip Mackaness
Don DeMaria	Anthony P. Morris	Steve Grubish
Greg Smith	Judy Helmey	Tom Swatzel

SAFMC Snapper Grouper Plan Development Team

Charles Barans	Dr. George Sedberry	Dr. Jim Bohnsack
Glenn Ulrich	Bob Dixon	Dr. Jim Waters
Dr. Gene Huntsman	John Witzig	Dr. Chuck Manooch
Dr. Jim Zwiefel	Fritz Rhode	

SAFMC Scientific and Statistical Committee

Dr. Robert G. Muller, Chairman	Dr. Don Hayne
Dr. Charles Marcus Adams, Vice Chairman	Frank "Stu" Kennedy
Dr. Robert Dorazio	Ron Michaels
Dr. James Easley	Dr. Suzanna Smith
Dr. David Eggleston	Dr. James R. Waters
Dr. Nelson Ehrhardt	David Whitaker

6.0 LIST OF AGENCIES AND ORGANIZATIONS

Responsible Agency

South Atlantic Fishery Management Council
1 Southpark Circle
Southpark Building, Suite 306
Charleston, South Carolina 29407-4699
(803) 571-4366
(803) 769-4520 (FAX)
safmc@noaa.gov (email)

List of Agencies, Organizations, and Persons Consulted

SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Scientific and Statistical Committee
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida Department of Environmental Protection
Florida Marine Fisheries Commission
Georgia Department of Natural Resources
Gulf and South Atlantic Fisheries Development Foundation
Gulf of Mexico Fisheries Management Council
South Carolina Department of Natural Resources
North Carolina Department of Environment, Health, and Natural Resources
National Marine Fisheries Service
- Washington Office
- Office of Ecology and Conservation
- Southeast Region
- Southeast Fisheries Science Center

National Oceanic and Atmospheric Administration
- General Counsel

United States Coast Guard
United States Environmental Protection Agency, Region IV
Center for Marine Conservation
National Fisheries Institute
Florida Sea Grant
Atlantic Coast Conservation Association
Atlantic States Marine Fisheries Commission
North Carolina Fisheries Association
Organized Fishermen of Florida
Southeastern Fisheries Association

7.0 OTHER APPLICABLE LAW

7.1 Vessel Safety

PL. 99-659 amended the Magnuson Act to require that a fishery management plan or 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 the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting the safety of the vessels.

No vessel will be forced to participate in the fishery under adverse weather or ocean conditions as a result of the imposition of management regulations set forth in this amendment. Therefore, no management adjustments for fishery access will be provided.

There are no fishery conditions, management measures, or regulations contained in this amendment which would result in the loss of harvesting opportunity because of crew and vessel safety effects of adverse weather or ocean conditions. No concerns have been raised by people engaged in the fishery or the 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, there are no procedures for making management adjustments in this amendment due to vessel safety problems because no person will be precluded from a fair or equitable harvesting opportunity by the management measures set forth.

There are no procedures proposed to monitor, evaluate, and report on the effects of management measures on vessel or crew safety under adverse weather or ocean conditions.

Establishing a limited entry program will remove much of the potential for creating "derby" fishing. Fishermen in the snapper grouper fishery will be better able to plan their fishing trips and avoid areas/times which pose safety risks (e.g., due to weather conditions).

7.2 Coastal Zone Consistency

Section 307(c)(1) of the federal Coastal Zone Management Act of 1972 requires that all federal activities which 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 Council to have complementary management measures with those of the states, federal and state administrative procedures vary and regulatory changes are unlikely to be fully instituted at the same time. Based upon the assessment of this amendment's impacts in previous sections, the Council has concluded this amendment is an improvement to the federal management measures for snapper grouper species.

This amendment is consistent with the Coastal Zone Management Plan of Florida, South Carolina, and North Carolina to the maximum extent practicable; Georgia is in the process of developing a federal Coastal Zone Management Program.

This determination will be submitted to the responsible state agencies under Section 307 of the Coastal Zone Management Act administering approved Coastal Zone Management Programs in the states of Florida, South Carolina, and North Carolina.

7.3 Endangered Species and Marine Mammal Acts

The original FMP prohibited the use of poisons and explosives and limited the use of fish traps to depths greater than 100 feet. In 1983, a Section 7 consultation under the ESA with NMFS concluded that the management actions contained in the Snapper Grouper FMP were not likely to adversely affect the continued existence of threatened or endangered sea turtles or marine mammals or result in the destruction or adverse modification of habitat that may be

critical to those species. Amendment 1 to the FMP prohibited roller-rig trawls. Amendment 4 prohibited the use of fish traps and entanglement nets in the fishery. In addition, an "allowable gear" provision was implemented. Subsequent amendments have limited the use of sea bass pots to north of Cape Canaveral, Florida; limited the use of bottom longlines to depths greater than 50 fathoms and to areas north of St. Lucie Inlet, Florida; established special management zones where all gear other than hook-and-line and diving are prohibited; and prohibited fishing for bottom species in the Oculina Bank HAPC. Consultations on these actions concluded on April 28, 1989; July 6, 1990; March 7, 1991; May 3, 1991; September 19, 1991; December 30, 1992; September 21, 1993; and March 18, 1994. The latest consultation was for proposed measures in Amendment 8 conducted on May 16, 1997. All consultations concluded that neither the proposed management measures nor the fishery would adversely affect the recovery of endangered or threatened species, or their critical habitat. A description of the need for management and fishing practices is given in Section 1 and Section 3.3.

The gear currently allowed, as described above, are believed to have few, if any interactions with endangered species and marine mammals. NMFS currently has no information on documented interactions with marine mammals or endangered species in this fishery. Consequently, the fishery is listed as a Category III fishery (indicating interactions are rare to non-existent) in the 1997 List of Fisheries.

Amendment 8 will further restrict use of allowable gear, reduce fishing pressure, and reduce participation. Therefore, the Council has concluded that neither the proposed management measures in Amendment 8 nor the fishery will adversely affect the recovery of endangered or threatened species, or their critical habitat.

Listed and protected species under the Endangered Species Act (ESA) and Marine Mammals Protection Act (MMPA) and governed by the jurisdiction of NMFS include:

	Whales:	Date Listed
(1)	The northern right whale- *Eubalaena glacialis* (ENDANGERED)	12/2/70
(2)	The humpback whale- *Magaptera novaeangliae* (ENDANGERED)	12/2/70
(3)	The fin whale- *Balaenoptera physalus* (ENDANGERED)	12/2/70
(4)	The sei whale- *Balaenoptera borealis* (ENDANGERED)	12/2/70
(5)	The sperm whale- *Physeter macrocephalus* (ENDANGERED)	12/2/70
(6)	The blue whale- *Balaenoptera musculus* (ENDANGERED)	

	Sea Turtles:	Date Listed
(1)	The Kemp's ridley turtle- *Lepidochelys kempii* (ENDANGERED)	12/2/70
(2)	The leatherback turtle- *Dermochelys coriacea* (ENDANGERED)	6/2/70
(3)	The hawksbill turtle- *Eretmochelys imbricata* (ENDANGERED)	6/2/70
(4)	The green turtle- *Chelonia mydas* (THREATENED/ENDANGERED)	7/28/78
(5)	The loggerhead turtle- *Caretta caretta* (THREATENED)	7/28/78

Other:

(1) The manatee- *Trichechus manatus* (ENDANGERED)

7.4 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 proposing measures under this amendment that will involve increased paperwork and consideration under this Act. Limiting permits available and processing of those permits may reduce the burden.

7.5 Federalism

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 adoption of this amendment.

7.6 National Environmental Policy Act

The discussion of the need for this amendment, proposed actions and alternatives, and their environmental impacts are contained in Sections 1.0 and 2.0 of this amendment and the supplemental environmental impact statement. A description of the affected environment is contained in Section 3.0 and Council recommendations for protection and restoration of essential snapper grouper habitat and are contained in Section 8.0.

The proposed amendment is a major action having a significant positive impact on the quality of the marine and human environment of the South Atlantic. The proposed action will have a significant positive impact by limiting the numbers of vessels/fishermen and reducing effort in the commercial snapper grouper fisheries in the South Atlantic. A formal Environmental Impact Statement (EIS) was prepared for the snapper grouper fishery for the original fishery management plan (SAFMC, 1983).

Mitigating measures related to proposed actions are unnecessary. No unavoidable adverse impacts on protected species, wetlands, or the marine environment are expected to result from the proposed management measures in this amendment.

The proposed regulations will further protect other species presently caught and discarded as unwanted bycatch. Overall, the benefits to the nation resulting from implementation of this amendment are greater than management costs.

Environmental Significance and Impact of the Fishery, Proposed Action and Alternatives.

Section 4.0 describes the Council's management measures in detail. Section 1508.27 of the CEQ Regulations list 10 points to be considered in determining whether or not impacts are significant. The analyses presented below are based on the detailed information contained in Section 4.0 Environmental Consequences including the Regulatory Impact Review, Regulatory Flexibility Determination, and Social Impact Assessment.

Beneficial and Adverse Impacts

There are beneficial and adverse impacts from the proposed actions. The impacts are described for each action in Section 4.0 and summarized in Section 2.0.

The Council is proposing to: Limit permit holders to owners of boats/vessels that can: (a) demonstrate any landings of species in the snapper grouper management unit in 1993, 1994, 1995 or 1996 (as of 8/20/96); and (b) had a valid snapper grouper permit any time during the period from 2/11/96 through 2/11/97. Vessels landing at least 1,000 pounds of species in the snapper grouper

management unit in any of these years receive a transferable permit. All other vessels receive a non-transferable permit and are limited to a 225 pound trip limit.; Redefine overfishing and optimum yield; Allow use of one bait net up to 50 feet long by 10 feet high with a stretched mesh size of 1.5" or smaller. Allow one net per boat. Also, allow the possession and use of cast nets for catching bait; and Species within the snapper grouper management unit (whether whole or fillets) caught in Bahamian waters in accordance with Bahamian law may be possessed aboard a vessel in the South Atlantic EEZ and landed in the U.S. provided the vessel is in transit from the Bahamas and valid Bahamian fishing and cruising permits are onboard.

Summary of Adverse Impacts: There will be short-term economic losses to the commercial fishery. These short-term losses are necessary to rebuild overfished stocks and prevent overfishing of other species. The short-term losses will be outweighed by the long-term benefits from a sustainable snapper grouper resource.

Without management, fishing effort would increase and catches in the snapper grouper fishery would decline. In the absence of additional management measures limiting fishing mortality rates, such declines would be expected to continue and could reach such low levels that the snapper grouper fishery would no longer be economically feasible. If this situation were allowed to continue, the fishery would ultimately collapse. For a detailed discussion of the biological, social, and economic adverse impacts of the proposed measures refer to the biological, social, and economic impact discussions under each Action in Section 4.2.

Summary of Beneficial Impacts: The proposed measures will establish a limited entry program which will change the way in which fishermen think about the snapper grouper resource (by capping the number of permits). It would then be in their best interest to plan for the long-term and voluntary compliance would increase. This fundamental change in behavior, combined with the other measures proposed, will prevent future declines in the snapper grouper resource and will in fact result in rebuilding the resource to the long-term goal (Optimum Yield) of 40% static SPR. For a detailed discussion of the biological, social, and economic beneficial impacts of the proposed measures refer to the biological, social, and economic impact discussions under each Action in Section 4.2.

Public Health or Safety

The proposed actions, and their alternatives, are not expected to have any substantial adverse impact on public health or safety. The proposed measures do not increase hazards for vessels or crew safety.

Establishing a limited entry program will remove much of the potential for creating "derby" fishing. Fishermen in the snapper grouper fishery will be better able to plan their fishing trips and avoid areas/times which pose safety risks (e.g., due to weather conditions).

Unique Characteristics

The proposed actions have no impacts on characteristics of the area such as proximity to historic or cultural resources, park lands, wetlands, or ecologically critical areas.

Prior amendments (see snapper grouper, shrimp, and coral amendments) established an experimental closed area in the Oculina Habitat Area of Particular Concern (see Section 8.4). This area is being studied to evaluate the effectiveness of closed areas for protecting long-lived species such as snapper and groupers (see Section 1.5). Such areas are useful in preserving the

genetic diversity present in such species. In addition, special management zones have been established around artificial reefs to preserve the original intent of such areas.

Controversial Effects

The proposed actions are not expected to have significant controversial effects but there will be comments from those fishermen excluded under the proposed limited entry program. The Council has considered both historical and recent participation in the fishery in designing the proposed program. The Council considered more restrictive options to limit entry but adopted the preferred action in part to "grandfather" active fishermen into the system thereby minimizing resistance to this management approach.

The Council provided extensive opportunity for input by holding scoping meetings, public hearings, and by providing the opportunity for interested persons to provide written comments. During development of this amendment, the Council has incorporated suggestions from the public. Additionally, states incorporate public input into their management measures which track the federal measures.

Section 1.3.2 describes the extensive public input received on measures within Amendment 8. In addition, the Council's Snapper Grouper Advisory Panel has been extensively involved in the development process.

Uncertainty or Unique/Unknown Risks

The proposed actions are not expected to have any significant effects on the human environment that are highly uncertain or involve unique or unknown risks. Benefits from management cannot be quantified but the direction and relative magnitude are known and are positive. If the proposed actions were not implemented there would be a high level of uncertainty as to the future status of the species being impacted.

Precedent/Principle Setting

The proposed actions are not expected to have any significant effects by establishing precedent and do not include actions which would represent a decision in principle about a future consideration.

The Council has previously established a limited entry program for the wreckfish fishery and for the golden crab fishery. Fishermen are positive about the wreckfish program and the social and economic benefits have increased under the management regime. The golden crab program was only recently established.

Relationship/Cumulative Impact

The proposed actions, and their alternatives, are not expected to result in cumulative adverse effects that could have a substantial effect on the snapper grouper resource or any related stocks, including endangered and threatened species, such as turtles. In fact, the proposed measures will improve status of stocks, minimize habitat damage, rebuild overfished stocks, minimize user conflicts, protect threatened and endangered species, minimize overcapitalization and other adverse economic impacts that result from unlimited access to this fishery, and enhance compliance with existing regulations because fishermen will benefit from these measures. See Table 1 for more information.

Establishment of a limited entry program will result in the removal of up to 1,228 permit holders. However, these have not reported any landings of snapper grouper species since 1993,

and are not considered to rely on this fishery at the present time (see the discussion under Action 1 for details). For those included in the limited entry program, there will be a cumulative impact from existing regulations (particularly Amendment 4) and the additional proposed measures in Amendment 9. However, it is important to understand that under the limited entry program these same individuals will be the ones to realize the future benefits as the stocks rebuild to a sustainable level.

The Council recognizes the actions proposed in Amendment 8 will result in some effort shift into other fisheries. Section 4.2.1 presents information on the other fisheries for which snapper grouper permit holders also qualify. It should be remembered these individuals are currently permitted in these fisheries and as a result would not represent "new" effort or participation. Further, those not included in the limited entry program currently catch limited amounts of snapper grouper species and therefor must be actively fishing in these other fisheries. If this is the case, then any impacts from effort shifting would be expected to be minimal.

Fishermen have suggested the Council consider establishing a limited entry program for commercial fishermen versus the current fishery specific approach. The Council has discussed this in the past and will over the next two years further evaluate establishing a "Comprehensive Commercial Fishing Limited Entry Program" that crosses all fisheries under the Council's jurisdiction.

There will also be cumulative positive effects. Rebuilding the overfished species and preventing overfishing in the other species will ensure the long-term productivity of the snapper grouper resource. This will achieve the Council's biological objectives of preventing overfishing, minimizing localized depletion, and minimizing habitat damage. The controlled access program will achieve the Council's social and economic objectives of vesting participants, promoting stability and facilitating long-run planning, creating market-driven harvest pace and increasing product continuity; minimizing gear and area conflicts among fishermen, decreasing incentives for overcapitalization; and preventing continual dissipation of returns from fishing through open access.

Historical/Cultural Impacts

The proposed actions are not expected to have any significant effects on historical sites listed in the National Register of Historic Places and will not result in any significant impacts on significant scientific, cultural, or historical resources.

Endangered/Threatened Species Impacts

The original FMP prohibited the use of poisons and explosives and limited the use of fish traps to depths greater than 100 feet. In 1983, a Section 7 consultation under the ESA with NMFS concluded that the management actions contained in the Snapper Grouper FMP were not likely to adversely affect the continued existence of threatened or endangered sea turtles or marine mammals or result in the destruction or adverse modification of habitat that may be critical to those species. Amendment 1 to the FMP prohibited roller-rig trawls. Amendment 4 prohibited the use of fish traps and entanglement nets in the fishery. In addition, an "allowable gear" provision was implemented. Subsequent amendments have limited the use of sea bass pots to north of Cape Canaveral, Florida; limited the use of bottom longlines to depths greater than 50 fathoms and to areas north of St. Lucie Inlet, Florida; established special management zones where all gear other than hook-and-line and diving are prohibited; and prohibited fishing for bottom species in the Oculina Bank HAPC.

The gear currently allowed, as described above, are believed to have few, if any interactions with endangered species and marine mammals. NMFS currently has no information on documented interactions with marine mammals or endangered species in this fishery. Consequently, the fishery is listed as a Category III fishery (indicating interactions are rare to non-existent) in the 1997 List of Fisheries.

Amendment 8 will further restrict use of allowable gear, reduce fishing pressure, and reduce participation. Therefore, the Council has concluded that neither the proposed management measures in Amendment 8 nor the fishery will adversely affect the recovery of endangered or threatened species, or their critical habitat.

Interaction With Existing Laws for Habitat Protection

The proposed actions are not expected to have any significant interaction which might threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment. The habitat of stocks comprising the management unit is described in Section 8.2 and existing habitat protection programs are described in Section 8.2.4. Habitat areas of particular concern are described in Section 8.4. Federal habitat protection laws, programs, and policies are described in Section 8.5.1 and State habitat protection programs are described in Section 8.5.2.

The Council has adopted a habitat policy which is included Section 8.3.1. In addition, the Council has prepared and adopted a number of positions that direct the protection of essential habitat (see Sections 8.3.2, 8.3.3, 8.3.4, and 8.3.5. The Council has subsequently adopted a seagrass policy statement and presented available distribution maps (maps are in SAFMC, 1996) of this habitat essential to various snapper grouper species (including gag) as well as many other managed and non-managed species. This and other habitat policy statements are included in Section 8.3.2.

Effects of the Fishery on the Environment

Section 8.2 describes the habitat essential to species in the snapper grouper management unit. Section 3.0 Affected Environment combined with Section 4.0 Environmental Consequences, presents the detailed information on the impacts of the proposed actions and alternatives on the environment.

Management measures adopted in the original management plan through Amendment 7 combined have significantly reduced the impact of the fishery on essential habitat. The Council has reduced the impact of the fishery and protected essential habitat by prohibiting the use of poisons and explosives, prohibiting the use of fish traps and entanglement nets in the EEZ, banning the use of bottom trawls on live/hard bottom habitat north of Cape Canaveral, Florida, restricting the use of bottom longlines to depths greater than 50 fathoms (and only north of St. Lucie Inlet and only for species other than wreckfish), and prohibiting the 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. For additional discussion see Sections 1.3, 8.4, and Appendix F.

Additional management measures proposed in Amendment 8, including specifying allowable bait will protect habitat by making existing regulations more enforceable. Establishing a controlled effort program will limit 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), such impacts will be limited. Also, capping

the overall fishing mortality will reduce the likelihood of overharvesting of species with the resulting loss in genetic diversity, ecosystem diversity, and sustainability. For additional discussion see the information under each of the proposed measures in Section 4.2.

Measures adopted in the coral plan and shrimp plan have further restricted access by fishermen that had potential 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 Section 8.0 of this document and the Shrimp and Coral FMP/Amendment documents for additional information).

Bycatch

Prior Council actions prohibiting roller-rig trawls (Snapper Grouper Amendment 1); prohibiting entanglement nets and fish traps, establishing allowable gear, and bottom longline restrictions (Snapper Grouper Amendment 4) have reduced bycatch in the snapper grouper fishery.

Measures proposed in Amendment 8 to address bycatch include: additional clarification on allowable gear (Action 3). This action will result in there being less of a bycatch issue in the snapper grouper fishery.

Effort Directed at or From Other Fisheries

The Council recognizes the actions proposed in Amendment 8 will result in some effort shift into other fisheries. Section 4.2.1 presents information on the other fisheries for which snapper grouper permit holders also qualify. It should be remembered these individuals are currently permitted in these fisheries and as a result would not represent "new" effort. Further, those not included in the limited entry program currently catch limited amounts of snapper grouper species and therefor must be actively fishing in these other fisheries. If this is the case, then any impacts from effort shifting would be expected to be minimal.

The limited entry program established under Action 1 will prevent additional fishermen entering the snapper grouper fishery. This will reduce the biological, social, and economic problems present in the fishery.

Fishermen have suggested the Council consider establishing a limited entry program for commercial fishermen versus the current fishery specific approach. The Council has discussed this in the past and will over the next two years further evaluate establishing a "Comprehensive Commercial Fishing Limited Entry Program" that crosses all fisheries under the Council's jurisdiction.

8.0 DESCRIPTION OF HABITAT AND STOCKS COMPRISING THE MANAGEMENT UNIT

8.1 Description of the Stocks Comprising the Management Unit

Sections 8.1.1 through 8.1.10 of the original snapper grouper FMP (SAFMC, 1983), and the draft revised source document (SAFMC, 1991c) present detailed information on the stocks comprising the management unit. A complete list of species in the management unit is contained in Appendix A.

8.2 Description of Habitat of the Stocks Comprising the Management Unit

Snapper grouper utilize both pelagic and benthic habitats during their life cycle. A planktonic larval stage lives in the water column and feeds on zooplankton and phytoplankton. Juveniles and adults are typically demersal and usually associated with bottom topographies on the continental shelf (less than 100 m) that have high relief; i.e., coral reefs, artificial reefs, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings. More detail on these habitat types is found in the Fishery Management Plan for Corals and Coral Reefs (GMFMC and SAFMC, 1982). However, several species are found over sand and soft-bottom substrates. Some juvenile snapper and grouper such as *Lutjanus analis*, *L. griseus*, *L. jocu*, *L. synagris*, *Ocyurus chrysurus*, *Epinephelus itajara*, *E. morio*, *Mycteroperca microlepis* and *M. venenosa*, may occur in inshore seagrass beds, mangrove estuaries, lagoons, and bay systems.

The principal snapper grouper fishing areas are located in live bottom and shelf-edge habitats, and to a lesser extent the lower habitat. Temperatures range from 11° to 27° C over the continental shelf and shelf-edge due to the proximity of the Gulf Stream, with lower shelf habitat temperatures varying from 11° to 14° C. Depths range from 54 to 90 feet or greater for live-bottom habitats, 180 to 360 feet for the shelf-edge habitat, and from 360 to 600 feet for the lower-shelf habitat.

The exact extent and distribution of productive snapper grouper habitat on the continental shelf north of Cape Canaveral is unknown. Current data suggest that from 3 to 30 percent of the shelf is suitable bottom. These hard, live-bottom habitats may be low relief areas supporting sparse to moderate growth of sessile invertebrates, moderate relief reefs from 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 fans. Live-bottom habitat is scattered irregularly over most of the shelf north of Cape Canaveral, but is most abundant off northeastern Florida.

South of Cape Canaveral the continental shelf narrows from 35 to 10 miles and less 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 characteristics. The coral rock reefs, from 30 to 46 feet at the shallowest lies between West Palm Beach and Miami and from 80 to 125 feet for the deepest most rugged reefs, are natural habitats for snappers and groupers. These reefs comprise from 20 to 30 percent of the shelf area south of Cape Canaveral.

Man-made artificial reefs also are utilized to attract fish and increase fish harvests. Research on man-made reefs including those composed of cars, tires, pipes, etc., is limited and opinions differ as to whether or not artificial structures actually promote an increase of biomass or merely concentrate fishes by attracting them from nearby natural areas. Some evidence indicates that artificial reefs actually increase the standing stock of snappers and groupers (Stone, 1978; Stone et al., 1979). Driessen (1985) believes that, "offshore platforms and other artificial

reefs raise primary productivity levels, create new habitats, augment carrying capacities, and increase the variety, numbers, range, size, and growth rates of highly desirable fish and shellfish." The following excerpt from Bohnsack and Sutherland (1985) adequately portrays the current state of knowledge on artificial reefs:

> *"Artificial reef literature was critically reviewed to determine what knowledge about the biology, ecology, and economics of artificial reefs had been scientifically established and to identify and recommend future projects, areas, and methods of research. General agreement exists that artificial reefs are effective fish attractants and an important fishery management tool. Most published papers deal with building artificial reefs or are qualitative descriptive studies detailing successional changes and species observed. Conclusions were often based on little or no scientific data. Few studies used quantitative experimental methods and many lacked scientifically valid controls.*
>
> *Drastically different approaches to artificial reefs in terms of purpose, funding, research, materials, and size have been taken by Japan and the United States. Most marine artificial reefs in the United States are large, low budget, and haphazardly constructed from scrap materials, using volunteer labor. These reefs are usually built in deeper offshore waters for use by recreational fishermen with boats. Japan's artificial reefs, however, are designed and constructed by engineers, built of durable, non-waste, prefabricated materials, placed in scientifically selected sites in shallow and deep water, and are primarily used by commercial fishermen.*
>
> *In this paper, 29 recommendations are made for future studies. Improved professional publication standards and more carefully controlled studies using an experimental approach are suggested. Greater emphasis should be placed on determining optimal design, size, and placement of artificial reefs to maximize production. More attention should be given to small, shallow, nearshore artificial reefs that are accessible without a boat. Also, reefs designed for increasing larval and juvenile recruitment, survival, and growth should be considered. Improved quantitative assessment techniques are needed to describe artificial reefs, reef communities, and to monitor biotic changes. Artificial reef data bases should be maintained so that the effectiveness of various artificial reefs can be more easily assessed. The importance of fish attraction versus fish production and the relationship between standing crop and fish catch have not been adequately addressed. The economics and social impact of artificial reefs also have not been carefully examined, especially the benefits from alternative designs and approaches."*

Currently, Florida has the most active artificial reef program in the nation with over 300 constructed since 1986 representing over 50% of reefs created in US waters to date (Vose, Posey, and Lindberg, 1996). Artificial reef programs also are underway in Georgia, South Carolina, and North Carolina.

8.2.1 Habitat Condition

Offshore areas used by adults appear to be the least affected by nearshore habitat alterations and water quality degradation. Since most of the catch comes from offshore in deeper water, there is an unknown effect of pesticides, herbicides, and other harmful wastes which have been considered as deleterious to many inshore fisheries (Ketchum, 1972; Walsh et al., 1981; Walsh, 1984). Nearshore reefs have been adversely affected to various degrees by man (see later

discussion), but overall are in good condition. Some coral reef tracts are protected. These include Dry Tortugas (Ft. Jefferson National Monument), Looe Key, Biscayne National Park, and Grays Reef. Other important areas are listed below.

The estuarine phase of juveniles, if obligatory, may be critical as alterations of the environment coupled with local changes in environmental parameters, such as temperature and salinity occurred to a large extent in estuaries. Natural and man-induced changes have altered freshwater inflow and removed much habitat. Natural wetland losses result from forces such as erosion, sea level rises, subsidence, and accretion. The major man-induced activities that have impacted environmental gradients in the estuarine zone are:

- construction and maintenance of navigation channels;
- discharges from wastewater plants and industries;
- dredge and fill for land use development;
- agricultural runoff;
- ditching, draining, or impounding wetlands;
- oil spills;
- thermal discharges;
- mining, particularly for phosphate, and petroleum;
- entrainment and impingement from electric power plants;
- dams;
- marinas;
- alteration of freshwater inflows to estuaries;
- saltwater intrusion;
- non-point-source discharges of contaminants.

All South Atlantic estuaries have been impacted to some degree by one or more of the above activities. Estuaries also have been the most impacted by water quality degradation. Numerous pollution-related reports and publications exist, but there still is no complete list of chemical contaminants, their effects, or concentrations. A comprehensive inventory to assess how seriously the South Atlantic's estuaries are polluted also is needed. The majority of snappers and groupers spend their entire life cycle offshore where environmental conditions are more stable and man's effect on estuaries is less severe. However, if an obligatory relationship between juveniles and estuarine habitats is determined, estuaries will have to be managed to the same degree for snappers and groupers as for other estuarine-dependent species such as shrimp.

Important coral reef tracts have been identified in the South Atlantic in the Corals and Coral Reefs Fishery Management Plan (GMFMC and SAFMC, 1982). These include the Key Largo Coral Reef, Looe Key, Dry Tortugas, Biscayne National Park, *Oculina* Banks (Figure 12), and Grays Reef. Since these reefs play an essential role in the life cycle of the species by providing excellent snapper grouper habitat, they are again identified here.

Other valuable areas include John Pennekamp Coral Reef State Park at Key Largo, Florida, the Florida Reef Tract and the other reefs and live bottoms between North Carolina and Cape Canaveral, Florida. The relationship between snapper grouper and the estuaries is still poorly understood. If an obligatory relationship is determined in specific estuaries, then these estuaries also will be listed as Habitat Areas of Particular Concern.

We are unaware of any current habitat condition that affects the ability to harvest and market snapper grouper resources. The same applies to recreationally caught fish. Stout (1980), however, has found low levels of DDT, PCB, endrin, and dieldrin organochlorines in red and

black grouper, gag, and red snapper. If the residue levels of organochlorines or other pesticides ever becomes dangerous to humans it is likely that the marketability of snapper and grouper could be adversely affected.

8.2.2 Habitat Threats

Currently, the primary threat to offshore habitat comes from oil and gas development and production, offshore dumping, and the discharge of contaminants by river systems. The destruction of suitable reefs (natural and man-made) or other types of live bottom areas also may prove deleterious to this fishery as most of the current data indicate an affinity for these habitats by snapper grouper (Starck, 1968; Shinn, 1974; Huntsman and Waters, 1987). Natural impacts on reef habitat may arise from severe weather conditions such as hurricanes and excessive freshwater discharge resulting from heavy rain. Human impacts on reef habitat result from activities such as pollution, dredging and treasure salvage, boat anchor damage, fishing and diving-related perturbations, and petroleum hydrocarbons (Jaap, 1984). Ocean dumping and nutrient over-enrichment also may cause local problems. Discussion of some of these factors occurs in the Corals and Coral Reefs Fishery Management Plan (GMFMC and SAFMC 1982) and will not be repeated here.

Nearshore reefs, especially off Florida, may be impacted by coastal pollution such as sewage and non-point-source discharges, urban runoff, herbicides, and pesticides (Jaap, 1984). Residues of the organochlorine pesticides DDT, PCB, dieldrin, and endrin have been found in gag, red grouper, black grouper, and red snapper (Stout, 1980). Heavy metal accumulations in sediment and reef biota near population centers have been noted (Manker, 1975). Disposal of wastes has created local problems. Jaap (1984) reports of batteries and refuse disposed of on the reef flat at Carysfort Lighthouse in Florida. Juvenile snapper and grouper temporarily residing in estuaries may be adversely affected by coastal pollutants and alterations (Figure 12).

Any life stage of snapper grouper species may be affected by pollution (Figure 11) but during the first months is the time when fish can be particularly sensitive to toxins. Factors affecting prerecruit mortality are more significant in determining long-term population stability (Sindermann, 1994). Critical aspects determining the effects of pollution on fish presented by Sindermann (1994) include:

- location of spawning (freshwater, estuarine, coastal, offshore)
- location of egg deposition (pelagic, demersal)
- depth preference of hatched larvae in the water column - surface film to bottom
- location of nursery area for postlarvae and juveniles
- feeding behavior and diets of all life stagers
- extent of migration into and out of polluted zones, and duration of occupation of those zones

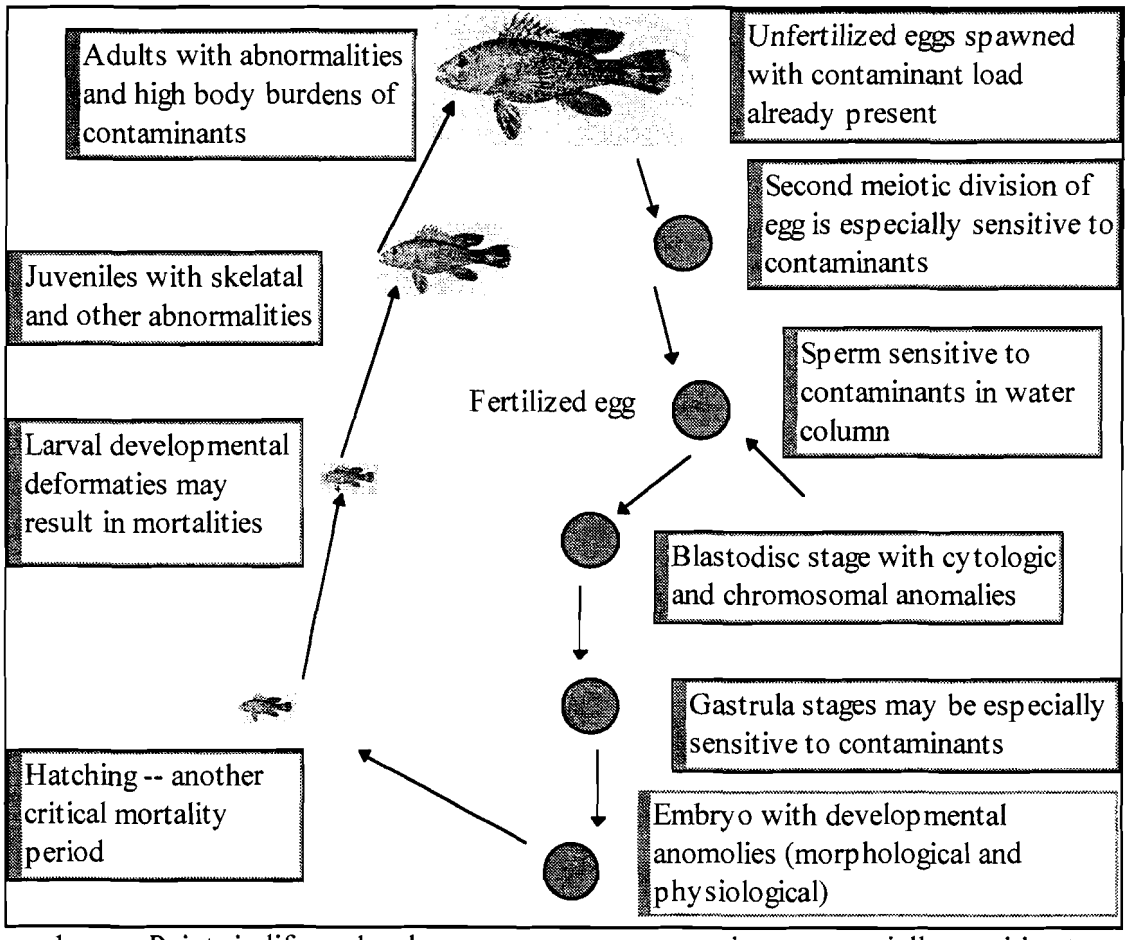

Figure 1. Points in life cycle where snapper grouper species are especially sensitive to pollutants (Adapted from Sinderman, 1994).

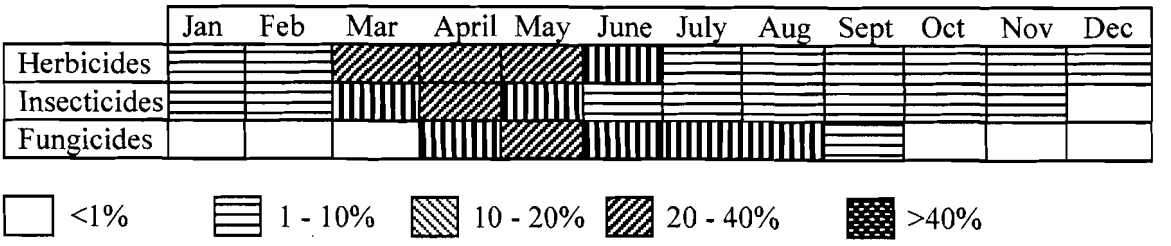

Figure 2. Seasonal application of pesticides in the South Atlantic region (Data Source: NOAA, 1992b).

Hydrocarbon pollution also may adversely affect fish and other biota. Malins (1982) reviewed laboratory experiments describing the deleterious effects of petroleum fractions on fish. Pierce et al. (1980) documented that wild fish have been injured by petroleum pollutants. Grizzle (1983) suggested that larger liver weights in fish collected in the vicinity of production platforms versus control reefs could have been caused by increased toxicant levels near the platforms. He also suspected that severe gill lamella epithelium hyperplasia and edema in red

snapper, vermilion snapper, wenchman, sash flounder, and creole fish were caused by toxicants near the platforms. These types of lesions are consistent with toxicosis.

Dredging and salvaging near or on reefs is potentially the most damaging physical human activity. Dredge gear impacts reefs by dislodging corals and other organisms and by creating lesions or scars that lead to infection or mortality. Sedimentation from dredging may seriously damage reefs. Dredged sediments may be anaerobic and bind up available oxygen thereby stressing corals and other sessile reef organisms. If the organisms cannot purge the sediments deposited on them, they generally are killed. Silt generated by dredging may remain in the area for long periods and continue to impact reefs when suspended during storms. Reef habitat also may be removed by dredging for borrow materials and disposal on beaches and by dredging and filling associated with navigation channel construction and maintenance.

Anchor damage is a significant threat to reefs, especially those composed of corals. Anchors, ground tackle, lines, and chains can break hard and soft corals, scar reefs, and open lesions which can become infected. Heavy use of reef areas by boaters can compound the problem. Although anchoring by oil and gas lease operators is prohibited on most of the coral reefs, anchoring for other purposes is not restricted. Fishing gear such as bottom trawls, bottom longlines, and traps also damage reefs. Effects are similar to anchor damage and in many cases more widespread. Hook and line fishing and related losses of line, leaders, hooks, and sinkers also may damage corals. Disposal of garbage by boats has been identified as a problem at Pulaski Shoal near Dry Tortugas (Jaap, 1984).

Recreational spearfishing, especially with explosive power heads, has damaged corals and may become more of a problem in areas of heavy diver concentration. Divers often overturn corals and cause other damage. Specimen collecting also may result in localized reef damage, especially when chemical collecting agents are improperly used. Collecting corals and the use of chemicals are regulated under the Coral Fishery Management Plan (GMFMC and SAFMC, 1982).

8.2.3 Habitat Information Needs

The vast majority of our highly valued living marine resources are critically dependent upon healthy environments. Declines in several of these commercially and recreationally important fisheries have been attributed to overfishing, loss of habitat, pollution, environmental alteration, disease, and natural variability of the stocks. Effective fisheries management requires an improved understanding of these factors.

The Council's chief concern related to living marine resources is how human activities impact fishery productivity. Research is needed to provide knowledge of the factors that affect energy flow. This understanding of ecological processes must then be combined with information on the health, distribution, and abundance of ecologically important organisms. By understanding the ecological linkages and information on the status of fishery stocks, managers of fisheries and habitat will be better able to manage estuarine dependent living marine resources.

To understand the causes of fishery declines and better predict the effects of human activities on fishery populations, the following research needs relative to snapper grouper habitat are provided so that state, federal, and private research efforts can focus on those areas that would allow the South Atlantic Fishery Management Council to develop measures to better manage snapper grouper and their habitat:

1. Identify optimum snapper grouper habitat and environmental and habitat conditions that limit snapper grouper production (e.g., what are the critical fisheries habitats for food, cover, spawning, nursery areas, and migration?);

2. Determine the relationship between juvenile snapper grouper and estuarine habitat. If an obligatory relationship is found, determine the distributions, rates of change, and documented causes of loss for estuarine habitat types;

3. Quantify the relationships between snapper grouper production and habitat (e.g., what are the key trophic pathways in the ecosystem, and how does the flux of essential nutrients, carbon compounds, and energy through these systems influence fisheries productivity?);

4. Determine the relative effects of fishing, pollution, and natural mortality on fishery population dynamics. Also determine the effects of cumulative habitat loss on fisheries productivity and economic value;

5. Determine methods for restoring snapper grouper habitat and/or improving existing environmental conditions that adversely affect snapper grouper production. The 29 recommendations for future studies in Bohnsack and Sutherland (1985) are supported here; and

6. Identify areas of particular concern for snapper grouper.

8.2.4 Habitat Protection Programs

State and Federal laws and policies that affect snapper grouper habitat are found in Section 8.3. Specific involvement by other federal agencies are noted as follows:

Office of Coastal Zone Management, Marine Sanctuaries Program, National Oceanic and Atmospheric Administration. Specifically, this program manages and funds the marine sanctuaries program. On-site management and enforcement are generally delegated to the states through special agreements. Funding for research and management is arranged through grants.

National Marine Fisheries Service. The enactment of the Magnuson Act provides for exclusive management of fisheries seaward of state jurisdiction. This includes both specific fishery stocks and habitat. The process for developing Fishery Management Plans is highly complex. It includes plan development by various procedures through fisheries management councils. National Marine Fisheries Service implements approved plans. The Coast Guard, National Marine Fisheries Service, and states enforce Fishery Management Plans. The National Marine Fisheries Service is responsible for data collection, research and resource assessment in support of Fishery Management Plans. Fishery Management Plans under authority of the South Atlantic Fishery Management Council for corals and coral reefs, snapper grouper, swordfish, coastal migratory pelagics, and spiny lobster are in force.

National Park Service. National parks and monuments are under the jurisdiction of the National Park Service. Management, enforcement, and research are accomplished within the agency.

Minerals Management Service. This agency has jurisdiction over mineral and petroleum resources on the continental shelf. Management has included specific lease regulations and mitigation of exploration and production activities in areas where coral resources are known to exist.

Fish and Wildlife Service. Fish and Wildlife Service assists with environmental impact review, develops biological resource evaluations, and administers the endangered species program with the National Marine Fisheries Service. The Fish and Wildlife Service manages parks and refuges for wildlife in the South Atlantic.

Geological Survey. In the coral reef areas Geological Survey has conducted considerable reef research and assisted or cooperated with other institutions and agencies to facilitate logistics and support of coral reef research.

U.S. Coast Guard. The 1978 Waterways Safety Act charges the Coast Guard with marine environmental protection. The Coast Guard is the general enforcement agency for all marine activity in the federal zone. Among the duties are enforcement of sanctuary and fishery management regulations, managing vessel salvage, and coordinating oil spill cleanup operations at sea.

U.S. Army Corps of Engineers. The Corps of Engineers contracts and regulates coastal engineering projects, particularly harbor dredging and beach renourishment projects. The Corps of Engineers also reviews and is the permitting agency for coastal development projects, artificial reefs, and offshore structures.

Environmental Protection Agency. This agency has a general responsibility for controlling air and water pollution. Disposal of hazardous wastes and point-source discharge permitting are Environmental Protection Agency functions. Certain mineral and petroleum exploration and production activities are managed by Environmental Protection Agency. Environmental research germane to waste disposal and pollution also are funded.

Federal environmental agencies such as the National Marine Fisheries Service, Mineral Management Service, Fish and Wildlife Service, and the Environmental Protection Agency also analyze projects proposing inshore and offshore alterations for potential impacts on resources under their purview. This is similar to the function of the South Atlantic Fishery Management Council Habitat Committee. Recommendations resulting from these analyses are provided to the permitting agencies (the Corps of Engineers for physical alterations in inshore waters and territorial sea, the Mineral Management Service for physical alterations in the Outer Continental Shelf or the offshore Exclusive Economic Zone and Environmental Protection Agency for chemical alterations). Even though the Corps of Engineers issues permits for oil and gas structures in the Exclusive Economic Zone, they only consider navigation and national defense impacts, thus leaving the rest to the Department of Interior, in a nationwide general permit.

In administering the oil and gas resources on the Outer Continental Shelf, the Department of Interior through the Mineral Management Service has not been recognizing the authority of the Fish and Wildlife Coordination Act. Instead they have contended that the Outer Continental Shelf Lands Act, as amended, supersedes the Fish and Wildlife Coordination Act. They also require that the oil and gas lease permit stipulations be more closely coordinated with other

Department of Interior bureaus, e.g., Fish and Wildlife Service, as provided in Departmental Manual 655. Coordination with other federal and state agencies is less frequent. For example, coordination between National Marine Fisheries Service and Mineral Management Service results from NOAA participation in the Outer Continental Shelf Advisory Board and from authorities under the Endangered Species Act and National Environmental Policy Act. The latter involves the periodic review of environmental statements for proposed lease sales. While review under Endangered Species Act generally involves exploration and development plans, it is very difficult for agencies like National Marine Fisheries Service to have Mineral Management Service implement less environmentally damaging procedures in oil and gas operations around reefs, etc., if the Fish and Wildlife Service has not already objected to the procedure during the Department of Interior, Departmental Manual 655 coordination. However, though not required to do so, Fish and Wildlife Service frequently informally coordinates their proposed actions under Departmental Manual 655 with National Marine Fisheries Service. None of the fish and wildlife agencies have veto power over Mineral Management Service permitting for oil and gas exploration, development and production on the Outer Continental Shelf, or on essentially the Exclusive Economic Zone.

Environmental Protection Agency is the permitting agency for chemical discharges into waters of the South Atlantic, under the National Pollution Discharge Elimination System program of the Clean Water Act for chemicals used or produced in the South Atlantic (i.e., drilling muds, produced water or biocides) and then released, or under the Ocean Dumping Regulations of the Marine Protection, Research and Sanctuaries Act if the chemicals are transported into the Atlantic Ocean for the purpose of dumping. When discharge or dumping permits are proposed, federal and state fish and wildlife agencies may comment and advise under the Fish and Wildlife Coordination Act and National Environmental Policy Act. The South Atlantic Fishery Management Council may do likewise under the Magnuson Act and National Environmental Policy Act. The South Atlantic Fishery Management Council also protects snapper grouper habitat under both the Coral, Coral Reefs and Live/Hard Bottom Habitat Fishery Management Plan and the Shrimp Fishery Management Plan.

8.2.5 Pollution and Habitat Degradation along the Atlantic Coast

8.2.5.1 Concerns in the South Atlantic States

Effects of pollution on snapper grouper species are not well documented, yet generally it can be assumed that degradation of water quality and sediments in estuarine, nearshore, and offshore environments will impact adults, juveniles, larvae, and eggs to some degree. Pollutant-related stresses may reduce fecundity or viability of ova; decrease survival of larvae, postlarvae, juveniles, and adults, increase vulnerability to disease and predation; and reduce growth rates.

The Council's habitat and environmental protection advisory panel has developed a list of major fishery habitat concerns:

North Carolina•
- Non-point source pollution (i.e., nutrient loading).
- Impacts of high density development on barrier islands and ocean outfalls for island development.
- Marina development.
- Ulcerative mycosis and its occurrence in virtually all species in specific parts of the estuarine system.
- Identification of critical habitats such as nursery habitats.
- Hydrologic changes in instream flow.
- Land use changes resulting in freshwater impacts changing salinity regimes, phosphate mining, and loss of 404 wetlands.
- Chemical discharges from offshore phosphate mining.
- Impacts of peat mining.

South Carolina•
- Dredged material disposal for port development.
- Increased barrier island development.
- Impacts of beach renourishment projects.
- Non-point source pollution.
- Impoundment of wetland areas.
- Lack of chemical water quality standards.
- Instream flow and aquaculture in pumping water from the estuarine system.

Georgia•
- Freshwater drainage from silvaculture.
- Changing time period of water affecting low salinity nursery areas.
- Siting of marinas.
- Port development.
- Dredge disposal.
- Increased salinity of Savannah River.

Florida •
- Impoundments for mosquito control and need to pursue increased rotational impoundment management.
- Impacts of beach renourishment.
- The designation of a marine sanctuary in the Indian River Area.
- Dredge and fill operations.
- Freshwater inflow alterations.
- Water pollution.
- Seagrass dieoffs.
- Extensive coastal development and related problems.

8.2.5.2 SAFMC Habitat Priorities

In cooperation with the four state habitat advisory panels, the SAFMC developed a list of habitat priorities to aid in the review of projects or policies affecting fisheries habitat and in development of policy statements on such activities. The following list in priority order was approved by the SAFMC:

1. impoundment, dredging, or filling of wetlands
2. point and non-point source pollution
3. identification and acquisition of important fishery habitats reefs
4. chemical water quality standards
5. beach renourishment
6. dredge and fill of seagrass beds
7. ocean incineration
8. offshore mineral mining
9. silvaculture
10. plastic pollution
11. ocean outfalls
12. aquaculture in wetlands
13. habitat restoration, enhancement, and artificial
14. anchoring on reefs and groundings
15. habitat utilization documentation
16. impacts of fishing techniques
17. sea level rise
18. impacts of jetties and groins
19. mandatory boat access

8.2.5.3 Habitat Loss

Degradation of estuarine, nearshore, and offshore environments is in direct conflict with attempts to maintain optimal habitat conditions for shrimp spawning, survival, and growth. The loss of seagrass beds in North Carolina and Florida has reduced preferred habitat areas available to larval, juvenile, and adult shrimp. These losses are due in part to dredge and fill operations; to increased turbidity resulting from discharges of waste materials and runoff; and from elevated levels of suspended solids. In addition to seagrass losses, the entire Atlantic Coast has had a large portion of its salt marsh and estuarine systems degraded or lost to development through dredge and fill operations. In South Carolina and Georgia the marsh systems are of principal importance as nursery areas. Major threats to shrimp habitat include: impoundment of unaltered estuarine wetlands and the reimpoundment of wetlands that have reverted to productive estuarine wetlands; open water disposal of dredged material in shallow water estuarine bottom; and agricultural practices that allow rapid introduction of soil and pesticides into the marine

environment. Tables 30 and 31 present baseline estimates of coastal wetland acreage by estuarine drainage area in the South Atlantic region compiled through a cooperative effort of NOAA and USFWS (NOAA 1991a).

Table 30. Estimated wetlands acreage remaining (in thousands of acres), by Atlantic coast state, as derived from the National Wetland Inventory Program. (Source: DOC, 1987).

State	Salt Marsh	Fresh Marsh	Tidal Flats	Swamp	Total
North Carolina	158.8	92.0	N/A	2,107.5	2,358.3
South Carolina	369.5	64.5	N/A	N/A	434.0
Georgia	374.3	31.5	9.5	286.0	701.3
Florida	95.9	383.4	N/A	259.0	738.3
South Atlantic Total					4,231.9

N/A - not available.

Table 31. Coastal wetlands by estuarine drainage area in the south Atlantic. (Source: NOAA 1991a).

	(Acres X 100)				
Estuarine Drainage Area[a]	Salt Marsh[b]	Fresh Marsh[b]	Forested and Scrub[b]	Tidal Flats[b]	Total[b]
1 Albemarle/Pamlico Sounds (8)	1,576 (14)	365 (3)	9,062 (80)	311 (3)	11,314
2 Bogue Sound (65)	211 (22)	11 (1)	616 (64)	118 (12)	956
3 New River (46)	41 (16)	5 (2)	203 (81)	45 (1)	252
4 Cape Fear River (13)	90 (6)	97 (6)	1,291 (86)	20(1)	1,498
5 Winyah Bay (30)	124 (2)	308 (5)	5,472 (93)	6 (0)	5,910
6 North and South Santee Rivers (88)	129 (7)	174 (9)	1,613 (84)	1 (0)	1,916
7 Charleston Harbor (10)	268 (14)	169 (9)	1,540 (78)	8 (0)	1,985
8 St. Helena Sound (100)	916 (21)	321 (7)	3,036 (71)	25 (1)	4,299
10 Savannah Sound (100)	322 (11)	141 (5)	2,428 (84)	9 (0)	2,900
11 Ossabaw Sound (82)	245 (10)	40 (2)	2,282 (89)	4 (0)	2,571
12 St. Catherines/ Sapelo Sounds (29)	352 (40)	46 (5)	461 (53)	13 (2)	872
13 Altamaha River (35)	79 (7)	81 (7)	976 (86)	2 (0)	1,138
14 St. Andrews/ Simmons Sounds (66)	1,134 (20)	157 (3)	4,420 (77)	59 (1)	5,771
15 St Marys R./Cumberland Sound	N/A	N/A	N/A	N/A	N/A
16 St. Johns River (96)	168 (2)	2,646 (25)	7,665 (73)	2 (0)	10,481
17 Indian River (95)	24 (2)	591 (57)	368 (36)	45 (4)	1,028
18 Biscayne Bay (79)	104 (3)	1,556 (41)	2,059 (55)	49 (1)	3,769
South Atlantic Total	66,666 (11)	6,743 (11)	44,615 (76)	747 (1)	58,770

a. Values in parentheses represent the percent of county grid sampled by NOAA. Areas with less than 100 percent coverage may not be completely mapped by the U. S. Fish and Wildlife Service.
b. Values in parentheses represent the percent of total Estuarine Drainage Area wetlands grid sampled by NOAA.

More detailed estimates of wetland by county are presented in Appendix G of the Shrimp FMP (SAFMC, 1993a). This compilation of existing wetland habitat may, as refined to hydrological units, begin to serve as a baseline upon which to implement the policy directive of no net loss and the long-term objective of a net gain of wetland habitats in the South Atlantic region. One program that is presently being developed in response to the National Wetlands Policy Forum recommendation to improve inventory, mapping, and monitoring programs by USFWS and NOAA is Coastwatch. The Coastwatch program's purpose is to develop a nationally standardized geographic information system using ground-based and remote sensing

data to assess changes in land cover and habitat in U.S. coastal regions to improve understanding of coastal uplands, wetlands, and seagrass beds and their links to distribution, abundance, and health of living marine resources.

One way to control wetland loss is through restoration, generation, or enhancement of habitat. Mitigation, however, often may not be desirable since some of the mitigation technologies still are poorly understood. Wetland creation technology is an emerging science that requires more development before it can be applied routinely. Moreover, optimum habitat and environmental conditions must be determined for each estuary so that the best habitat conditions can be created when the methodologies are adequately developed.

8.2.5.4 Plastic Pollution (Persistent Marine Debris)

The production of plastic resin in the U.S. increased from 6.3 billion pounds in 1960 to 47.9 billion pounds in 1985. The increased production, utilization, and subsequent disposal of petro-chemical compounds known as plastics has created a serious problem of persistent marine debris. Marine ecosystems have, over the years, become the final resting place for a variety of plastics originating from many ocean and land-based sources including the petroleum industry, plastic manufacturing and processing activities, sewage disposal, and littering by the general public and government entities (commercial fishing industry, merchant shipping vessels, the U.S. Navy, passenger ships, and recreational vessels) (Department of Commerce, 1988c).

The impacts of persistent marine debris on the Atlantic Coast snapper grouper species population are not well known at this time, but might include pollution related mortality resulting from ingestion of plastic materials. As part of the NMFS Marine Entanglement Research Program in the northern Gulf of Mexico, fish samples are being collected and evaluated to determine the presence of plastic particles small enough to be ingested by larval and juvenile fish. Researchers have noted the possibility of mapping the distribution and abundance of plastic particles relative to larval and juvenile fish concentrations (Department of Commerce, 1988b). Effective January 1, 1989, the disposal of plastic into the ocean is regulated under the Plastic Pollution Research and Control Act of 1987 implementing MARPOL Annex V (Appendix B).

Recognizing worldwide concern for preservation of our oceanic ecosystems, the Act prohibits all vessels, including commercial and recreational fishing vessels, from discharging plastics in U.S. waters and severely limits the discharge of other types of refuse at sea. This legislation also requires ports and terminals receiving these vessels to provide adequate facilities for in-port disposal of non-degradable refuse, as defined in the Act.

The utilization of plastics to replace many items previously made of natural materials in commercial fishing operations has increased dramatically. The unanticipated secondary impact of this widespread use of plastics is the creation of persistent marine debris. Commercial fishing vessels have historically contributed plastics to the marine environment through the common practice of dumping garbage at sea before returning to port and the discarding of spent gear such as lines, traps, nets, buoys, floats, and ropes. Two types of nets are routinely lost or discarded drift gill nets and trawl nets (Department of Commerce, 1988c). These nets are durable and may entangle marine mammals and endangered species as they continue to fish or when lost or discarded.

An estimated 16 million recreational boaters utilize the coastal waters of the United States (Department of Commerce, 1988c). Disposal of spent fishing gear (e.g., monofilament fishing line), plastic bags, tampon applicators, six pack yokes, Styrofoam coolers, cups and beverage containers, etc. is a significant source of plastic entering the marine environment.

In the mid 1970s, the National Academy of Science (NAS) estimated that approximately 14 billion pounds of garbage was disposed of annually into the world's oceans. Approximately 85% of total trash is produced from merchant vessels, with 0.7% of that total, or eight million pounds annually being plastic. The use of plastics has risen dramatically since the NAS study. At present, 20% of all food packaging is plastic and by the year 2000 this figure may rise to 40% (CEE, 1987).

The main contribution of plastic to the marine environment from cruise ships is the disposal of domestic garbage at sea. Ships operating today carry between 200 and 1,000 passengers and dispose of approximately 62 million pounds of garbage annually, of which a portion is plastics (CEE, 1987).

The U.S. Navy operates approximately 600 vessels worldwide, carrying about 285,000 personnel and discharging nearly four tons of plastic refuse into the ocean daily (Department of Commerce, 1988a). The U.S. Coast Guard and NOAA operate 226 vessels which carry nearly 9,000 personnel annually and have internal operating orders prohibiting the disposal of plastic at sea. MARPOL Annex V does not apply to public vessels although the Plastic Pollution Research Control Act of 1987 requires all Federal agencies to come into compliance by 1994 (CEE, 1987).

8.2.5.5 Oil and Gas Exploration

Exploration for oil and gas in South Carolina and Georgia's coastal plain has not occurred. The major interest on the Atlantic coast lies within offshore areas. Oil and gas exploration is presently under way along the Atlantic coast outer continental shelf. Four offshore areas on the Atlantic coast are being investigated: the Blake Plateau, the Southeast Georgia Embayment, Baltimore Canyon, and Georges Bank. Forty three tracts totaling 244,812 acres have been leased in the South Atlantic region (Fish and Wildlife Service, 1980). Potential adverse effects associated with offshore petroleum production include development effects from the construction of the pipeline, chronic small spills, and catastrophic spills of crude oil or refined products (Fish and Wildlife Service, 1980). Impacts associated with drilling include the introduction of large amounts of drilling muds into the marine environment. Secondary impacts include the proliferation of on-shore support facilities that could result in greater pressure to develop wetlands. If a pipeline is constructed from the site to the mainland, it is estimated that approximately one to three million cubic yards of dredge material will result from laying the line which would be 150 to 320 miles long. A large oil spill can be lethal to sea birds, marine mammals, marsh vegetation, fish, and invertebrates. Wetland vegetation may suffer from smothering or toxicity. Benthic marine life and larval fishes are often eliminated (Fish and Wildlife Service, 1980). In addition to leases previously mentioned, pre-sale information and Environmental Impact Statements have been prepared for Mid-Atlantic Sale 121 and South Atlantic Sale for the exploration of oil and gas offshore of Cape Hatteras, North Carolina. Mobile Oil Company currently plans to drill an exploratory well off North Carolina's Outer Banks. Should gas or oil be found, the laying of pipe to North Carolina's shoreline facilities would likely have to traverse wetlands and/or barrier island grass flats. Since juvenile shrimp occur along most shoreline habitats, local production could be adversely affected by dredging and pipe laying activities. Increased industrial activities could also affect adult migrations and behavior, since they react to man-made disturbances. Minerals Management Service has developed an Environmental Impact Statement for 1992-1997 offshore drilling leases and SAFMC recommendations submitted to MMS pertaining to this EIS are contained in Section 8.3.4.

8.2.5.6 Ocean Dumping

The western Atlantic Ocean, including state territorial seas and the EEZ off the eastern United States, have long been used for disposal of such wastes as dredged material, sewerage sludge, chemical waste, plastic waste, and radioactive material. Approximately 149 million metric tons (wet) of dredge material is disposed in estuaries, the territorial seas, and areas of the EEZ along the entire Atlantic coast and Gulf of Mexico. Approximately 27.8 million metric tons (wet) of dredge spoil, is presently disposed of in the EEZ. Composition of dredge material varies among areas with some being contaminated with heavy metals and organic chemicals originating from industrial and municipal discharges and non-point source pollution. The U.S. Army Corps of Engineers classifies only a small portion of the total dredge material as contaminated, but presently has no specific numerical criteria to define such contamination (Office of Technology and Assessment, 1987). The SAFMC has adopted a policy statement on ocean dumping (Section 8.3.2).

8.2.5.7 Trends in Human Population and Recreational Boat Registration in the South Atlantic Region

As coastal populations in the South Atlantic region continue to increase so does recreational boating and fishing activity. Snapper grouper species are vulnerable to harvest by an ever-increasing number of coastal recreational fishermen. Recreational boat registrations in the South Atlantic states increased 70% between 1976 and 1986. As numbers of recreational vessels increase, so will the need for increased boat landings and marinas to afford access to the ocean, rivers, harbors, bays, and estuaries. All these factors will result in increased pressure on the South Atlantic snapper grouper species resource and habitat.

8.2.5.8 Relationship of Habitat Quality to the Ability to Harvest Snapper Grouper Species

Preservation of quantity and environmental quality of estuarine, nearshore, and offshore habitat in the South Atlantic region is essential to maintaining snapper grouper species stocks. Discharge of pollutants may result in direct mortality of snapper grouper species at various stages of their life history. Exposure to certain chemicals could limit the desirability or the possibility of consumption, as occurred in bluefish with PCBs. Presently there is limited information on the concentrations or occurrence of chemicals such as PCBs or Dioxin in snapper grouper species coastwide.

Pesticides, herbicides, fungicides, oil, grease, heavy metals are all resident in sediments of certain coastal estuaries, rivers, bays and harbors. These pollutants have the potential to impact the aquatic resources utilizing the system. Pollutant sources are as diverse as point source discharges from industry and sewerage disposal from municipalities, to non-point source runoff from residential neighborhoods and agricultural fields. Various pollutants known to be harmful to fish and humans when consumed have been identified in bottom sediments of various southeastern estuary systems.

A 1989 National Research Council report indicated there may be substantial risk to the ecosystem and potentially human health from contaminated sediments (NRC, 1989). "In addition to the carcinogenic nature of many of these contaminants, reproductive impairments and other sub-lethal effects in humans are concerns that require increased attention."

Table 32 presents sites NOAA has identified sites in the South Atlantic region with concentrations of PCB, DDT, PAH, mercury, and lead in excess of levels that cause adverse biological effects (Millemann and Kinney, 1992).

Table 32. South Atlantic sites identified by NOAA as having sediments containing PCB, DDT, PAH, mercury, or lead, in excess of levels that cause biological effects (Source: Millerman and McKinney, 1992).

NOAA Sediment Sites with Concentrations of PCBs, DDT, PAHs, Mercury and Lead in Excess of Levels Adverse Biological Effects					
States and Sites	**PCBs (50-380ppb)**	**DDT (3-350ppb)**	**PAHs (4,000-35,000 ppb)**	**Mercury (0.15-1 ppm)**	**Lead (35-110ppm)**
South Carolina					
Charleston Harbor		3.5			
Georgia					
Sapelo Island		3.2			
Florida					
Apalachicola Bay		5.2			
Choctawhatchee Bay		818.3			86.7
Choctawhatchee Bay		12.5			
Saint Andrews Bay	940.8	41.1	9,233	0.32	40.9
Saint Johns River		8.2			
St. Johns River	98				

Research is underway and as information becomes available, the Council will readdress the issue and include information in subsequent amendments to the snapper grouper species management plan.

8.2.5.9 National Status and Trends Program

The Mussel Watch Project, a component of NOAA's National Status and Trends Program (NSTP) (NOAA, 1989) has annually collected contaminant data for 12 fixed stations along the Atlantic Coast. The chemical contaminants analyzed included polyaromatic hydrocarbons, polychlorinated biphenyls, chlorinated pesticides, and 12 trace elements. Aquatic organisms, especially shellfish like mussels and oysters, accumulate contaminants within their tissue at higher levels than surrounding waters. Contaminant levels therefore increase or decrease depending on the condition of the surrounding waters. The NSTP was initiated to monitor and assess temporal trends in coastal and estuarine waters of the United States. Based on data compiled from 1986 through 1988, the following trends were noted for some southeast estuaries: cadmium levels in the Charleston Harbor (SC) and the Sapelo Sound (GA) sites were decreasing; chromium levels in the Savannah River estuary and Matanzas River (FL) sites were

increasing; copper levels in Sapelo Sound were decreasing; levels of mercury for Roanoke Sound (NC), Cape Fear (NC) and Matanzas River were increasing; nickel concentrations were increasing in both the Pamlico Sound (NC) and Savannah River sites; silver levels were decreasing at both the Roanoke River and Cape Fear (NC) sites; zinc concentrations were shown to be decreasing in the Matanzas River site; and only the Matanzas River site was shown to have concentrations of more than two contaminants showing statistically significant changes with arsenic, chromium, and mercury increasing and zinc decreasing.

8.2.5.10 National Coastal Pollutant Discharge Inventory Program

NOAA's National Coastal Pollutant Discharge Inventory Program (NCPDI) was developed and started in 1982 to assess the sources, magnitudes, and impacts of point and nonpoint source pollutant discharges into the United States coastal and estuarine areas (NOAA, 1992a). A major component of the NCPDI is the comprehensive data base which contains pollutant estimates for point and non-point and riverine sources located in coastal counties or the United States Exclusive Economic Zone. Seasonal and annual discharge estimates are currently made for 17 pollutant parameters including runoff, sediment, and nutrients for urban, agricultural, forest, pasture, and range lands discharging into riverine estuarine and coastal waters. The entire inventory has been updated through 1991 and when available the information pertaining to the southeast will be included in subsequent amendments to this plan. Appendix E presents a table that describes the pollutants included in the NCPDI, their definition and effects on the environment, marine organisms, and humans.

8.2.5.11 Agricultural Pesticide use in Coastal Areas

Pesticides including herbicides, insecticides, fungicides, nematicides, algaecides, wood preservatives, and fumigants have been used extensively in the southeast coastal zone (Table 33 and Figures 3-6). Despite the fact that most organochlorine pesticides are no longer approved for agricultural use in the U. S., 29.4 million pounds of pesticides were applied to U.S. coastal watersheds in 1987 (NOAA, 1992b) with over 33% or 9.8 million pounds being applied in the southeast coastal region alone. As part of the NCPDI, NOAA accomplished a comprehensive review of pesticide use in coastal areas (Table 33). Detailed information on use and impacts of pesticides in the southeast based on NOAA's final national summary of agricultural pesticide use in coastal areas in the South Atlantic region follows.

The transport of pesticides from agricultural areas upstream may impact coastal water quality. Assuming pesticide use upstream provides an indicator of pesticide sources. The use of pesticides, herbicides, and fungicides varies substantially between South Atlantic states. To a degree, this is related to agricultural and pest patterns in each area. Major harvested crops in the South Atlantic region include soybean, corn, wheat, and peanuts. Other important crops in the region include tobacco, cotton, and citrus. The Albemarle/Pamlico Sound estuarine drainage area (EDA) has the second highest pesticide use in the U.S. (40 million pounds).

Table 33. List of Selected Agricultural pesticides used in the South Atlantic region (Data Source: NOAA, 1992b).

Number	Pesticide	Pounds Used
1	2,4-D	568,000
2	Alachlor	2,025,000
3	Atrazine	1,579,000
4	Butylate	691,000
5	Metolachlor	503,000
6	Carbaryl	613,000
7	Carbofuran	461,000
8	Chloropyrifos	398,000
9	Terbufos	243,000
10	Chlorothalonil	614,000

Herbicides were used the most in the Albemarle/Pamlico Sound EDA in 1987, followed by use in Winyah Bay, South Carolina. and Cape Fear, North Carolina. The major herbicide used in the region was athrazine. Around Biscayne Bay, Florida, over 163,000 pounds of atrazine was used the same year. 937,000 pounds of insecticides representing 26% of all used in 1987, were applied in the Albemarle/Pamlico Sound EDA. In addition, the amount used in Winyah Bay area amounted to 760,000 pounds and 273,000 pounds were used in 1987 in the Cape Fear area. The highest use of fungicides occurred in the St. Andrews / St. Simon EDA with 159,000 pounds total of which 132,000 was chlorothalonil. Herbicides were mostly applied March through June (Figure 5) as pretreatment for grass and weeds. However, in Florida, alachlor and atrazine were used in August and September. Insecticides were generally applied March through September but are used to a degree throughout the year. The fungicide chlorothalonil is predominantly applied to peanuts and tomatoes from April through September (Figures 3-6).

Fish kills, pesticide residues in aquatic organisms, and changes in community biomass are examples of stresses on the marine environment caused by pesticides (NOAA, 1992b). Due to the development of pesticides that have shorter persistence, lower bioconcentration potential, lower application rates, coupled with a greater public awareness, the impact of pesticides on the marine environment has somewhat been reduced. However, even with the overall degree of impacts (as compared to the use of DDT) as still significant because the compounds are just as toxic to aquatic biota (NOAA, 1992b). Some pesticides cause greater impacts and are more hazardous. Endosulfan for example, was responsible for most fish kills in US estuaries between 1980 and 1989. It was the most often found pesticide and is considered to be the most hazardous because it is highly toxic, may affect estuarine biomass, has a high bioaccumulation factor, and has a long soil half-life.

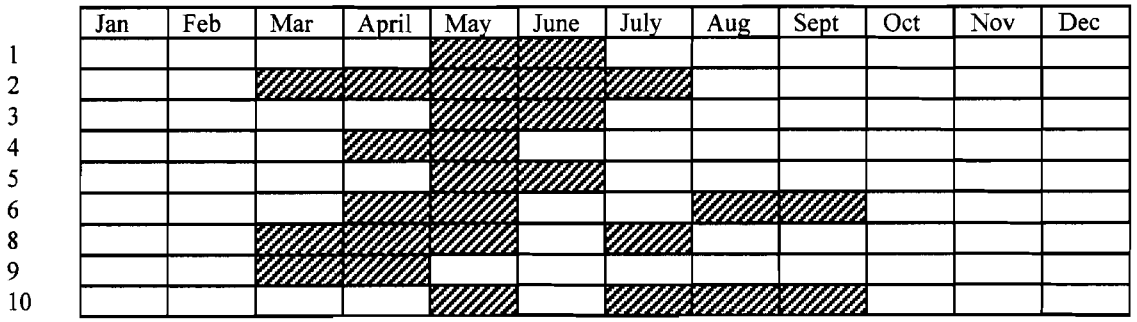

Figure 3. Seasonality of selected pesticides in North Carolina (Data Source: NOAA, 1992b).

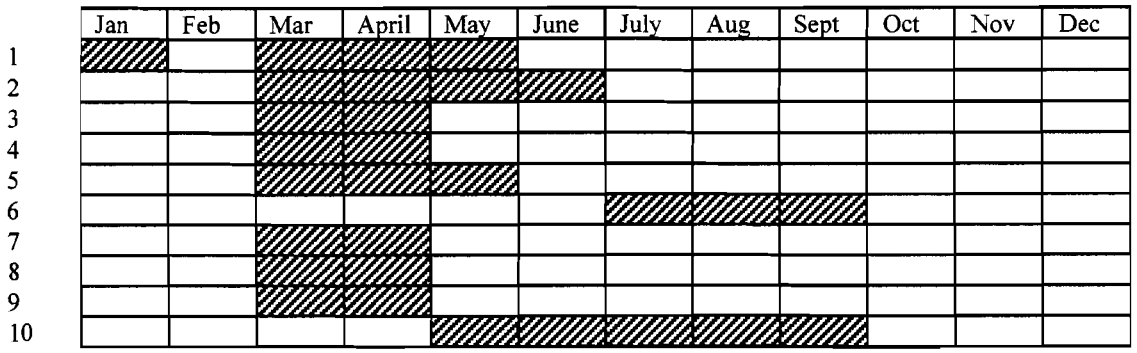

Figure 4. Seasonality of selected pesticides in South Carolina (Data Source: NOAA, 1992b).

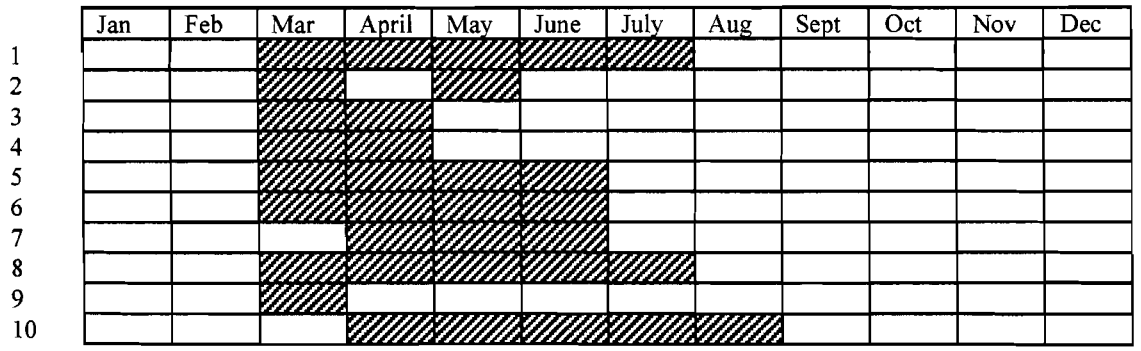

Figure 5. Seasonality of selected pesticides in Georgia (Data Source: NOAA, 1992b).

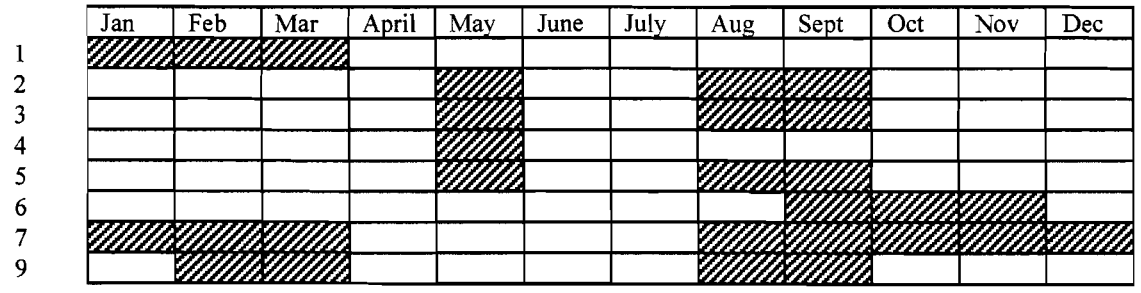

Figure 6. Seasonality of selected pesticides in Florida East Coast (Data Source: NOAA, 1992b).

The insecticide which was found the most in aquatic biota was chloropyrifos; also one of the most hazardous pesticides in the NOAA inventory. The herbicide trifluralin readily bioaccumulates and is again very toxic to aquatic organisms. Combined endosulfan, chloropyrifos, and trifluralin are the mots commonly found pesticides as well as being the most toxic (NOAA, 1992b). Other pesticides which are hazardous to aquatic biota include fenvalerate, phorate, and chlorothalonil. Malathion is also highly toxic and responsible for the second highest number of fish kills, over 50% attributable to spraying for mosquitoes. Most fish kills occurred in the spring and summer months corresponding to major growing seasons in coastal areas. Methyl parathion an organophosphorous insecticide, found in water and sediment, is rarely found in tissue. The organophosphorous insecticides (diazinon, malathion, methyl parathion) do not have a high bioaccumulation factor however they are all extremely toxic especially to crustaceans.

The Albemarle/Pamlico Sound EDA has the highest hazard rating of any EDA in the U.S. followed by the Chesapeake Bay and then Winyah Bay.

Very few studies have been accomplished to determine the long-term effects of pesticides on aquatic environments and aquatic communities. In the South Atlantic region one study was undertaken on the North Edisto River in South Carolina. The study showed that the biomass in the control site in a non-agricultural area, was 5 times greater than in the site impacted by agricultural runoff .

8.3 Habitat Preservation Recommendations

8.3.1 SAFMC Habitat and Environmental Protection Policy

In recognizing that snapper grouper 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 snapper grouper species fisheries 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 snapper grouper 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.

8.3.2 SAFMC Policy Statement Concerning Dredging and Dredge Material Disposal Activities

8.3.2.1 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.

8.3.2.2 Offshore and Near shore 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 ODMDSs. Further, new offshore and near shore underwater berm creation activities should be reviewed under the most rigorous criteria, on a case-by-case basis.

8.3.2.3 Maintenance Dredging and Sand Mining for Beach Renourishment

The Council recognizes that construction and maintenance dredging of the seaward portions of entrance channels and dredging borrow areas for beach re-nourishment occur in the EEZ. These activities should be done in an appropriate manner in accordance with the policies adopted by the Council.

The Council acknowledges that endangered and threatened species mortalities have occurred as a result of dredging operations. Considering the stringent regulations placed on commercial fisherman, dredging or disposal activities should not be designed or conducted so as to adversely impact rare, threatened or endangered species. NMFS Protected Species Division should work with state and federal agencies to modify proposals to minimize potential impacts on threatened and endangered sea turtles and marine mammals.

The Council has and will continue to coordinate with Minerals Management Service (MMS) in their activities involving exploration, identification and dredging/mining of sand resources for beach renourishment. This will be accomplished through membership on state task forces or directly with MMS. The Council recommends that live bottom/hard bottom habitat and historic fishing grounds be identified for areas in the South Atlantic region to provide for the location and protection of these areas while facilitating the identification of sand sources for beach renourishment projects.

8.3.2.4 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.

8.3.3 SAFMC Policy on Oil & Gas Exploration, Development and Transportation

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 Minerals Management Service (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 involve 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 Councils objection to the proposed exploration activities is 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 recommends 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 SAFMC recommends the following to the MMS when considering proposals for oil and gas activities for previously leased areas under Council jurisdiction:

1) That oil or gas drilling for exploration or development on or closely associated with live bottom habitat, or other special biological resources essential to commercial and recreational fisheries under Council jurisdiction, be prohibited.

2) That all facilities associated with oil and gas exploration, development, and transportation be designed to avoid impacts on coastal wetlands 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 within the trajectory time to land, and have industry post a bond to assure labor or other needed reserves.

4) That exploration and development activities should be scheduled to avoid northern right whales in coastal waters off Georgia and Florida as well as migrations of that species and other marine mammals off South Atlantic states.

5) That the EIS for lease Sale 56 be updated to address impacts from activities related to specifically natural gas production, safety precautions which must be developed in the event of a discovery of a "sour gas" or hydrogen sulfide reserve, the potential for southerly transport of hydrocarbons to near shore and inshore estuarine habitats resulting from the cross-shelf transport by Gulf Stream spin-off eddies, the development of contingency plans to be implemented if problems arise due to the very dynamic oceanographic conditions and the extremely rugged bottom, and the need for and availability of onshore support facilities in coastal North and South Carolina, and an analysis of existing facilities and community services in light of existing major coastal developments.

The SAFMC recommends the following concerns and issues be addressed by the MMS prior to approval of any application for a permit to drill any exploratory wells in Lease Sale 56 and that these concerns and issues also be included in the Environmental Impact Statement for the Outer Continental Shelf (OCS) Leasing Plan for 1992-1997:

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. Eggs and larvae are most sensitive to oil spills, and seismic exploration has been documented to cause mortality of eggs and larvae in close proximity.

2) Identification of on-site species designated as endangered, threatened, or of special concern, such as shortnose sturgeon, striped bass, blueback herring, American shad, sea turtles, marine mammals, pelagic birds, 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; temporary preclusion from fishing grounds by exploratory drilling; and permanent preclusion from fishing grounds by production and transportation.

4) Identification of commercial and recreational fishing activities in the vicinity of the lease or Exploratory Unit area, their season of occurrence and intensity.

5) Determination of the physical oceanography 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 an adequate informational database upon which to base subsequent decision making on-site specific proposed activities.

6) Description of required existing and planned monitoring activities intended to measure environmental conditions, and provide data and information on the impacts of exploration activities in the lease area or the Exploratory Unit area.

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 including a current list of persons and regulatory agencies to be notified when an oil spill is discovered, and well defined and specific actions to be taken after discovery of an oil spill.

9) Studies should include detailing seasonal surface currents and likely spill trajectories.

10) 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); the 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).

11) Planning for oil and gas product transport should be done to determine methods of transport, pipeline corridors, and onshore facilities. Siting and design of these facilities as well as onshore receiving, holding, and transport facilities could have impacts on wetlands and endangered species habitats if they are not properly located.

12) Develop understanding of community dynamics, pathways, and flows of energy to ascertain accumulation of toxins and impacts on community by first order toxicity.

13) Determine shelf-edge down-slope dynamics and resource assessments to determine fates of contaminants due to the critical nature of canyons and steep relief to important fisheries (e.g., swordfish, billfish, and tuna).

14) Discussion of the potential adverse impacts upon fisheries resources of the discharges of all drill cuttings that may result from activities in, and all drilling muds that may be approved for use in the lease area or the Exploration Unit area including: physical and chemical effects upon pelagic and benthic species and communities including their spawning behaviors and 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 and discharged muds and cuttings from exploration activities.

15) Discussion of secondary impacts affecting fishery resources associated with on-shore 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.

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 and 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 "deemphasize 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 (MMS, 1990).

The MMS also funded a Literature Synthesis study (USDOI MMS, 1993a) and a Physical Oceanography study (USDOI 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 (USDOI MMS, 1993b). The MMS had a Cooperative Agreement with East Carolina University to conduct a study titled, Coastal North Carolina Socioeconomic Study (USDOI 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.

Citations:

USDOI, MMS. 1990. Atlantic Outer Continental Shelf, Final Environmental Report on Proposed Exploratory Drilling Offshore North Carolina, Vols. I-III.
USDOI, MMS. 1993a. North Carolina Physical Oceanography Literature Study. Contract No. 14-35- 0001-30594.
USDOI, MMS. 1993b. Benthic Study of the Continental Slope Off Cape Hatteras, North Carolina. Vols. I-III. MMS 93-0014, -0015, -0016.
USDOI, MMS. 1993c. Coastal North Carolina Socioeconomic Study. Vols. I-V. MMS 93-0052, -0053, -0054, -0055, and -0056.
USDOI, MMS. 1994. North Carolina Physical Oceanographic Field Study. MMS 94-0047.

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

8.3.4 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 a 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) 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 back 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).

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 marcroalgae, macroinvertebrates. Within the seagrass system, phytoplankton also are 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 (Haemulidae), snook (Centropomus sp.), bonefish (Albulu vulpes), tarpon (Megalops atlanticus) and several species of snapper (Lutjanidae) and grouper (Serranidae). 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 irradains) 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 a 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 SAV Policy Statement- Appendix 4

The SAV Distribution Maps are included in Amendment 3 to the Fishery Management Plan for Coral, Coral Reefs and Live/Hard Bottom Habitats of the South Atlantic Region (SAFMC, 1995).

8.3.5 Joint Agency Habitat Statement

The SAFMC has endorsed a "Joint Statement to Conserve Marine, Estuarine, and Riverine Habitat" to promote interagency coordination in the preservation, restoration, and enhancement of fishery habitat. This statement as adopted by state, Federal, and regional bodies concerned over fishery habitat, is presented in Appendix C along with the Atlantic States Marine Fisheries Commission policy on marine, estuarine and riverine habitat.

8.4 Habitat Areas of Particular Concern

No habitat areas of particular concern are proposed or designated for species in the snapper grouper management unit. However, important habitat includes those areas required during the each individual species life cycle. Offshore and nearshore areas of particular concern include those habitats required during larval, postlarval, juvenile and adult stages. Although these areas are generally less vulnerable to habitat alteration than the salt marsh and estuarine areas, deep water mining (oil, gas and sand) and fishing gear-related damage (traps, anchors and grapples) can result in habitat and water quality degradation.

Oculina coral (*Oculina varicosa*) is distributed along the South Atlantic shelf with concentrations occurring off the central east coast of Florida (Reed, 1992). According to Reed (1980) the majority of massive *Oculina* growth occurs between 27° 30' N. latitude and 28° 30' N. latitude. *Oculina*, a slow growing coral species, constitutes essential habitat to a complex of species, including those managed under the snapper grouper fishery management plan (SAFMC, 1983).

Deep water coral communities support a very rich and diverse community composed of large numbers of species of mollusks, amphipods, echinoderms with *Oculina varicosa*, *Lophelia prolifera*, and *Emallopsamia profunda* constituting the dominant species. The diversity of this system is equivalent to that of many tropical reef systems (Reed, 1992). The geomorphological nature of the deep water Oculina Banks is characterized by high current regimes which trap fine sand, mud and coral debris forming the basis for the diverse invertebrate community (Reed, 1992).

Lophelia prolifera is similar in gross morphology to *Oculina varicosa* but is distributed in depths from 60-2,170 meters. *Emallopsamia profunda* banks are found at depths from 500-800 meters between Miami and South Carolina, and between 640 and 869 meters in over 200 banks mapped on the outer eastern edge of the Blake Plateau.

Reed (1992) contains a detailed description of submersible studies of deep water *Oculina*, *Lophelia* and *Emallopsamia* conducted along the shelf edge off central Florida over the last ten years and includes information on distribution, structure, and function of this protected coral resource and essential habitat.

To protect this fragile and limited coral habitat, a 92 square mile Oculina Bank Habitat Area of Particular Concern (HAPC) was established under the Federal Fishery Management Plan for Coral and Coral Reefs (GMFMC and SAFMC, 1982) (Figure 7). Existing regulations protecting the Oculina HAPC are as follows:

Regulations in the Snapper Grouper and Coral Fishery Management Plans:

The Oculina Bank is located approximately 15 nautical miles east of Fort Pierce, Florida, at its nearest point to shore and is bounded on the north by 27° 53' N. latitude., on the south by 27° 30' N. latitude, on the east by 79° 56' W. longitude, and on the west by 80° 00' W. longitude. In the HAPC, fishing with bottom longlines, traps, pots, dredges, or bottom trawls is prohibited. Additional prohibitions on fishing for snapper-grouper in the Oculina Bank HAPC.

No fishing for fish in the snapper-grouper fishery may be conducted in the Oculina Bank HAPC; such fish may not be retained in or from the Oculina Bank HAPC. Fish in the snapper-grouper fishery taken incidentally in the Oculina HAPC by hook-and-line must be released immediately by cutting the line without removing the fish from the water. It is a rebuttable presumption that fishing aboard a vessel that is anchored in the HAPC constitutes fishing for fish in the snapper-grouper fishery.

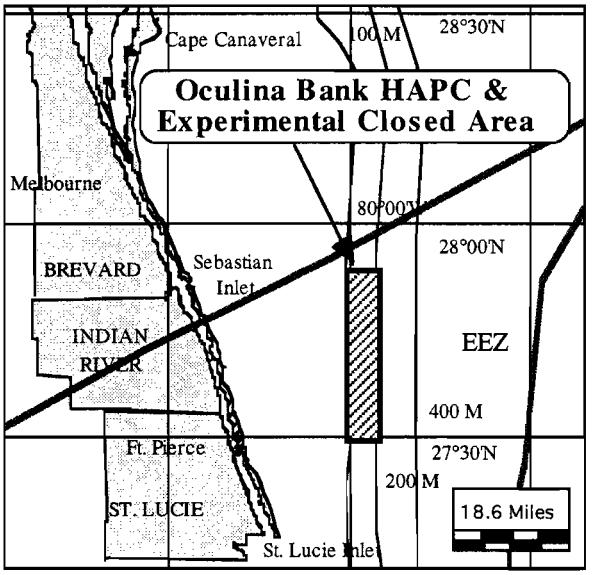

Figure 7. Florida east coast showing location of Oculina Bank Habitat Area of Particular Concern (HAPC). Source: Roger Pugliese, SAFMC Staff.

South Atlantic Rock Shrimp Regulations.

South Atlantic EEZ Area Closure:

Effective October 9, 1996, no person may trawl for rock shrimp in area east of 80°.00' W. longitude between 27, 30' N. latitude and 28° 30' N. latitude shoreward of the 100-fathom (183-m) contour (Figure 8), as shown on the latest edition of NOAA chart 11460; and no person may possess rock shrimp in or from this area on board a fishing vessel.

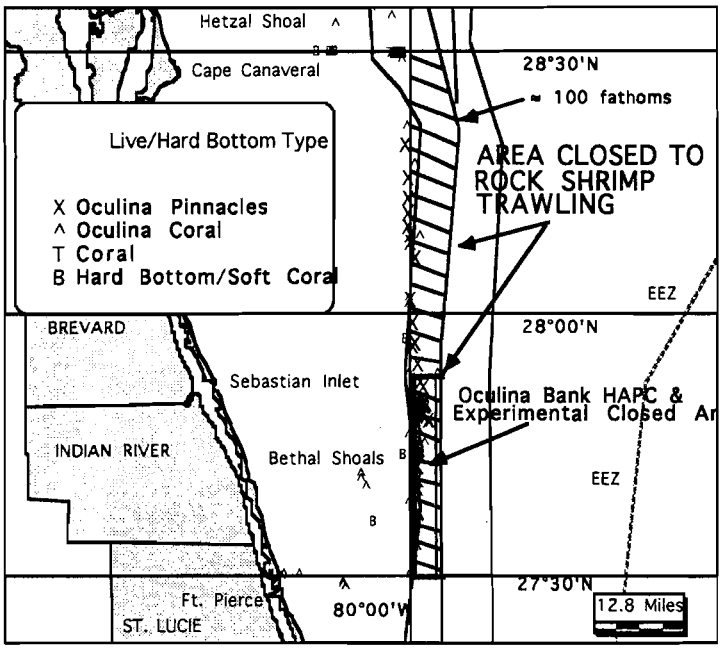

Figure 8. Area closed to protect *Oculina* coral and live / hard bottom habitat from rock shrimp trawling. Source: Roger Pugliese, SAFMC Staff.

8.5 Habitat Protection Laws, Programs, and Policies

8.5.1 Federal

See Appendix D for a listing and brief description of environmental laws directly, or indirectly protecting marine resources and the habitat they depend on. One program is discussed below, the Florida Keys National Marine Sanctuary.

The Florida Keys National Marine Sanctuary is part of a national system of marine sanctuaries around the U.S. Four sanctuaries have been established in the South Atlantic Region based on the existence of significant natural or cultural resources. These sanctuaries include: Grays Reef, Key Largo, Looe Key and the Florida Keys National Marine Sanctuary (Figure 9).

The most recent sanctuary designated in the South Atlantic is the Florida Keys National Marine Sanctuary. The measures will adopted will protect essential snapper grouper habitat including coral reefs and the surrounding marine communities. The problems addressed in the sanctuary plan include the following:

- Deteriorating water quality
- Declining health of the living coral reefs
- Physical damage to the coral reefs and seagrass communities
- User conflict
- Visitor safety
- Quality of life
- Declining marine resources

The following ten action plans were developed to address the problems identified, mainly through non-regulatory actions.

- Channel / reef marking
- Education / outreach

- Mooring buoys
- Regulatory measures
- Research and monitoring
- Submerged cultural resources
- Water quality
- Volunteer
- Zoning.

For details on the measures included in the plan refer to the Florida Keys National Marine Sanctuary Plan and Environmental Impact Statement (FKNMS 1996).

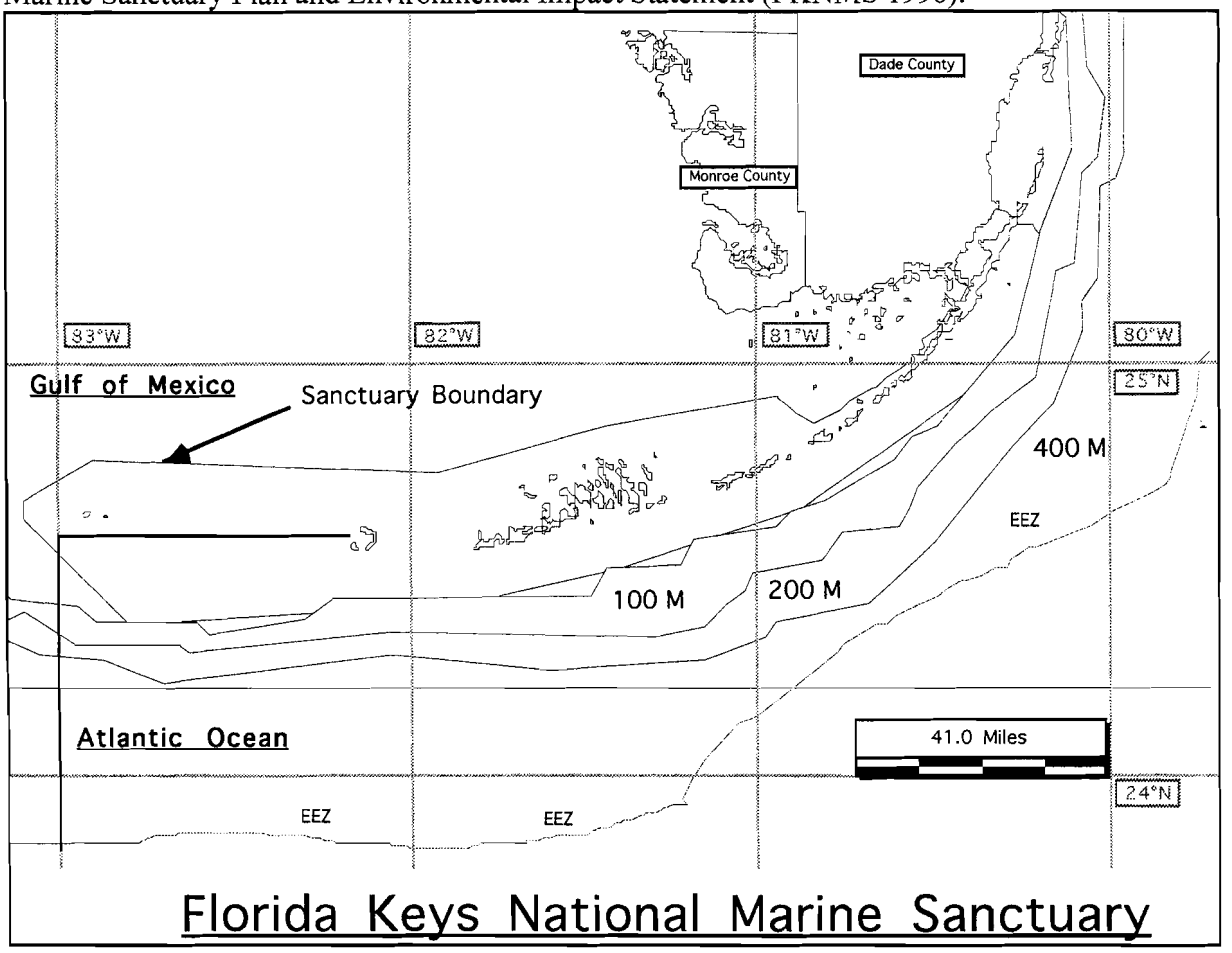

Figure 9. Florida Keys National Marine Sanctuary. Source: Roger Pugliese, SAFMC Staff.

8.5.2 State Habitat Protection Programs

8.5.2.1 North Carolina

The Coastal Area Management Act was passed in 1974 to protect North Carolina's fragile coastal resources through planning and management at the state and local level. The Department of Environment, Health and Natural Resources administers the program. Policy direction is provided by the Coastal Resources Commission, a 15 member group of citizens appointed by the Governor. The coastal program requires that land use plans be developed and adopted by county governments. Municipalities may also elect to develop plans. The Coastal Resources Commission has authority to prepare plans should the county fail to do so. Once

approved, these plans are the basis for permitting. Currently, there are approved land use plans for all 20 coastal counties and approximately 55 coastal municipalities. These plans are revised regularly to address new management concerns. The regulatory program applies in areas designated as Areas of Environmental Concern which are considered the most sensitive. Activities occurring in these areas require coastal development permits. Permits for "major development" are issued by the Department of Environment, Health and Natural Resources. All other development activity is considered "minor development" and the corresponding permits are issued by local government (Department of Commerce, 1987).

8.5.2.2 South Carolina

The Office of Ocean and Coastal Management implements the Coastal Management Act. The Office has authority to formulate and implement a comprehensive coastal management program and direct control through a permit program that oversees activities in critical areas that include coastal waters, tidelands, beaches, and primary ocean-front sand dunes. Indirect management authority of coastal resources is granted to the Office in counties containing one or more of the critical areas. In issuing permits, the Coastal Management Act requires that the Office consider the effects of proposed alterations on the production of fish, shrimp, oysters, crab, or any marine life, wildlife, or other natural resources.

8.5.2.3 Georgia

The State of Georgia, until recently, did not participate in the Federal Coastal Zone Management Program. However, the Coastal Marshlands Protection Act of 1970 and the Shore Assistance Act of 1979 were passed to protect the state's beaches, dunes, and marshes. These acts created two statutory committees to consider permit applications for developing or altering marshes or sand sharing systems (beaches, sand dunes, or near shore sand bars). The committees are composed of two top managers of the Georgia Department of Natural Resources, an oceanographer, and a professional engineer, who regularly convene at monthly public meetings.

Under authority of these acts, the Marsh and Beach Section, the Coastal Resources Division of the Georgia Department of Natural Resources, has resource management responsibility for marshes, dunes, and beaches. Management is administered by a permit system for all activities and structures that alter any marshland, sand dunes, beaches, and submerged sandbars and shoals.

In January 1992, Georgia Department of Natural Resources was designated as the lead agency to develop and implement Georgia's coastal management program. A management plan and program for the state is being developed with the input of an 18 member advisory committee appointed by the Governor. The goals of the program will be to protect coastal resources, manage coastal resources, and simplify the permitting process.

8.5.2.4 Florida

The Florida Coastal Management Program was approved by the Secretary of Commerce in September 1981. The Department of Environmental Protection is responsible for coordinating and monitoring implementation of the laws and rules which comprise the Coastal Management Program.

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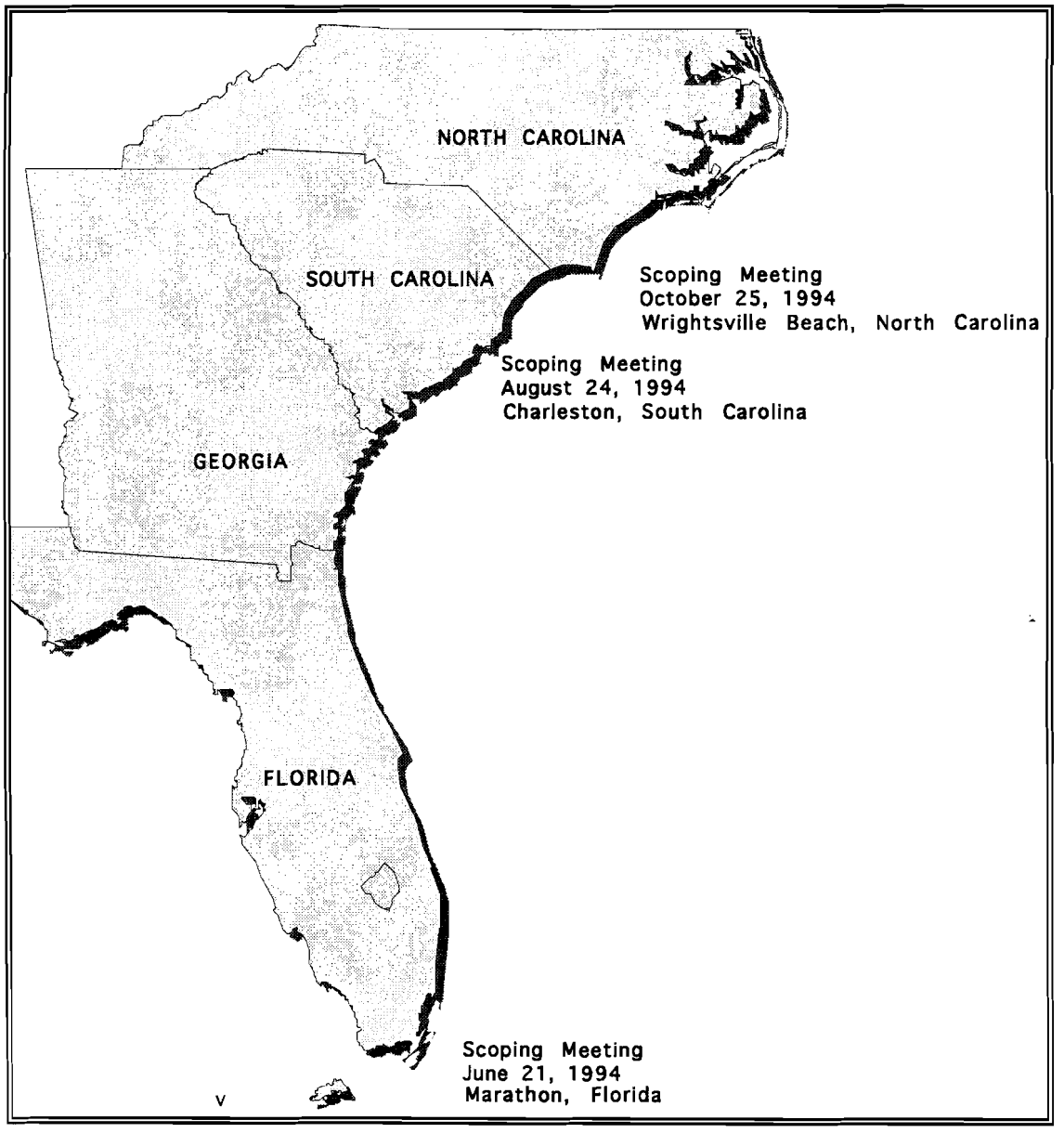
10.0 SCOPING MEETINGS AND PUBLIC HEARING LOCATIONS AND DATES



PUBLIC HEARINGS:

Monday, January 6, 1997
Ramada Inn
301 Governor Treutlen Drive
Pooler, Georgia 31322

Tuesday, January 7, 1997
Comfort Inn Oceanfront
1515 N. 1st Street
Jacksonville Beach, Florida 32250

Wednesday, January 8, 1997
Holiday Inn
1300 N. Atlantic Avenue
Cocoa Beach, Florida 32931

Thursday, January 9, 1997
Sheraton Hotel
630 Clearwater Park Road
West Palm Beach, Florida 33401

Friday, January 10, 1997
Banana Bay Resort
4590 Overseas Highway
Marathon, Florida 33050
(rescheduled to January 24, 1997)

Monday, January 13, 1997
Town & Country Inn
2008 Savannah Highway
Charleston, South Carolina 29407

Tuesday, January 14, 1997
Holiday Inn
1601 Virginia Dare Trail
Kill Devil Hills, North Carolina 27948

Wednesday, January 15, 1997
Sheraton Resort
Salter Path Road
Atlantic Beach, North Carolina 28512

Thursday, January 16, 1997
Holiday Inn
4903 Market Street
Wilmington, North Carolina 28405

Friday, January 17, 1997
Myrtle Beach Martinique Resort Hotel
7100 N. Ocean Blvd.
Myrtle Beach, South Carolina 29572

Friday, January 24, 1997
Monroe County Regional Service Center
2798 Overseas Highway
(Mile Marker 47.5 Gulf Side)
Marathon, Florida 33050

11.0 APPENDICES

Appendix A. Species in the snapper grouper management unit.

SPR Estimates Available	
Lane snapper	*Lutjanus synagris*
Yellowtail snapper	*Ocyurus chrysurus*
Gray snapper	*Lutjanus griseus*
Mutton snapper	*Lutjanus analis*
Vermilion snapper	*Rhomboplites aurorubens*
Red Snapper	*Lutjanus campechanus*
SPR Estimates Unavailable	
Black snapper	*Apsilus dentatus*
Queen snapper	*Etelis oculatus*
Schoolmaster	*Lutjanus apodus*
Blackfin snapper	*Lutjanus buccanella*
Cubera snapper	*Lutjanus cyanopterus*
Mahogany snapper	*Lutjanus mahogoni*
Dog snapper	*Lutjanus jocu*
Silk snapper	*Lutjanus vivanus*

SEA BASSES - Serranidae

SPR Estimates Available	
Black sea bass	*Centropristis striata*
SPR Estimates Unavailable	
Bank sea bass	*Centropristis ocyurus*
Rock sea bass	*Centropristis philadelphica*

GROUPERS = Serranidae

SPR Estimates Available	
Gag	*Mycteroperca microlepis*
Scamp	*Mycteroperca phenax*
Red grouper	*Epinephelus morio*
Black grouper	*Mycteroperca bonaci*
Speckled hind*	*Epinephelus drummondhayi*
Snowy grouper*	*Epinephelus niveatus*
Warsaw grouper*	*Epinephelus nigritus*
Wreckfish	*Polyprion americanus*
SPR Estimates Unavailable	
Rock hind	*Epinephelus adscensionis*
Graysby	*Epinephelus cruentatus*
Yellowedge grouper*	*Epinephelus flavolimbatus*
Coney	*Epinephelus fulva*
Red hind	*Epinephelus guttatus*
Jewfish	*Epinephelus itajara*
Misty grouper*	*Epinephelus mystacinus*
Nassau grouper	*Epinephelus striatus*
Yellowmouth grouper	*Mycteroperca interstitialis*
Tiger grouper	*Mycteroperca tigris*
Yellowfin grouper	*Mycteroperca venenosa*

SPR Estimates Available	
Red porgy	*Pagrus pagrus*
SPR Estimates Unavailable	
Sheepshead	*Archosargus probatocephalus*
Grass porgy	*Calamus arctifrons*
Jolthead porgy	*Calamus bajonado*
Saucereye porgy	*Calamus calamus*
Whitebone porgy	*Calamus leucosteus*
Knobbed porgy	*Calamus nodosus*
Longspine porgy	*Stenotomus caprinus*
Scup	*Stenotomus chrysops*

TRIGGERFISHES - Balistidae

SPR Estimates Available	
Gray triggerfish	*Balistes capriscus*
SPR Estimates Unavailable	
Queen triggerfish	*Balistes vetula*
Ocean triggerfish	*Canthidermis sufflamen*

JACKS - Carangidae

SPR Estimates Available	
Greater amberjack	*Seriola dumerili*
SPR Estimates Unavailable	
Yellow jack	*Caranx bartholomaei*
Blue runner	*Caranx crysos*
Crevalle jack	*Caranx hippos*
Bar jack	*Caranx ruber*
Almaco jack	*Seriola rivoliana*
Lesser amberjack	*Seriola fasciata*
Banded rudderfish	*Seriola zonata*

***These species form the deep water grouper fishery.**

Appendix A. Species in the snapper grouper management unit. (cont.)

GRUNTS - Pomadasyidae

SPR Estimates Available	
White grunt	*Haemulon plumieri*
SPR Estimates Unavailable	
Black margate	*Anisotremus surinamensis*
Porkfish	*Anisotremus virginicus*
Margate	*Haemulon album*
Tomtate	*Haemulon aurolineatum*
Smallmouth grunt	*Haemulon chrysargyreum*
French grunt	*Haemulon flavolineatum*
Spanish grunt	*Haemulon macrostomum*
Cottonwick	*Haemulon melanurum*
Sailors choice	*Haemulon parrai*
Blue striped grunt	*Haemulon sciurus*

TILEFISHES - Malacanthidae

SPR Estimates Available	
Tilefish (Golden)*	*Lopholatilus chamaeleonticeps*
SPR Estimates Unavailable	
Blueline tilefish*	*Caulolatilus microps*
Sand tilefish*	*Malacanthus plumieri*

SPR ESTIMATES ARE UNAVAILABLE FOR THE FOLLOWING SPECIES

SPADEFISHES - Ephippidae

Spadefish	*Chaetodipterus faber*

WRASSES - Labridae

Hogfish	*Lachnolaimus maximus*
Puddingwife	*Halichoeres radiatus*

***These species form the deep water grouper fishery.**

Appendix B. Marpol Annex V- Garbage disposal restrictions(Source: DOC 1988c).

GARBAGE TYPE	ALL VESSELS EXCEPT PLATFORMS AND ASSOCIATED VESSELS		OFFSHORE PLATFORMS AND ASSOCIATED VESSELS
	Outside Special Areas[a]	In Special Areas[b]	
Plastics- including synthetic ropes, fishing nets, and plastic bags	Disposal prohibited	Disposal prohibited	Disposal prohibited
Floating dunnage, lining, and packing materials	Disposal prohibited less than 25 miles from nearest land	Disposal prohibited	Disposal prohibited
Paper, rags, glass, metal bottles, crockery, and similar refuse	Disposal prohibited less than 12 miles from nearest land	Disposal prohibited	Disposal prohibited
Paper, rags, glass, etc., comminuted or ground[c]	Disposal prohibited less than 3 miles from nearest land	Disposal prohibited	Disposal prohibited
Food waste not comminuted or ground	Disposal prohibited less than 12 miles from nearest land	Disposal prohibited less than 12 miles from nearest land	Disposal prohibited
Food waste comminuted or ground[c]	Disposal prohibited less than 3 miles from nearest land	Disposal prohibited less than 12 miles from nearest land	Disposal prohibited
Mixed Refuse	Varies by component[d]	Varies by component[d]	Varies by component[d]

a Includes all fixed or floating platforms engaged in exploration or exploitation and associated offshore processing of seabed mineral resources, and all vessels alongside or within 500 m (1/3 mile) of such platforms.

b The Mediterranean, Baltic, Red and Black seas, and Persian Gulf.

c Must be able to pass through a screen with a mesh size no larger than 25 mm.

d When substances having different disposal or discharge requirements are mixed, the more stringent disposal requirement

Appendix C. ASMFC Habitat Statement (Source: ASMFC 1994).

JOINT STATEMENT TO CONSERVE MARINE, ESTUARINE AND RIVERINE HABITAT

presented at

Atlantic States Marine Fisheries Commission Meeting
Washington, DC

May 16, 1990
Final Revision November 7, 1990

Statement:

The undersigned parties agree to use available mandates and to expand interagency efforts to minimize adverse effects of human activities on marine, estuarine, and riverine species and their habitats. This statement offers general guidance to states, federal agencies and regional bodies that share responsibility for fish habitats through their respective roles in decisions on research, management, and specific human activities. All decisions related to habitat conservation and use must accommodate the ecological needs of living natural resources in marine, estuarine, and riverine systems.

Objectives:

1. To minimize avoidable adverse impacts to fish stocks and their habitat. Our shared intent is to grant these valuable resources an appropriate level of management concern that reflects their tremendous socioeconomic-cultural value to the Nation. Any determination of public interest should balance these values with other uses.

2. To conserve, restore, and enhance fish habitats for the long-term benefit of all users. This applies equally to habitats of existing fish stocks and the historic ranges of stocks covered by a restoration plan. Aggressive action may be warranted to recover lost benefits.

3. To promote innovative programs that will increase our knowledge of management strategies that may reduce habitat loss or augment fish stocks, including:

    a) Beneficial uses of dredged material;

    b) Mitigation techniques for specific habitats accomplished in a manner that does not adversely impact the habitat needs of other important living natural resources.

    c) Restoration measures for specific stocks.

4. To improve our use of existing authorities and adopt new interagency procedures that will improve our habitat management efforts, including:

    a) Policies, guidelines, and/or regulations regarding "no net loss" of

wetlands;

b) Recognition, support, and promotion of ecologically responsible wetland enhancement and management techniques that will add benefits for living resources of special concern while maintaining values for other important living resources.

c) Early identification procedures to accord special recognition to deserving habitats; and,

d) Incorporating all agencies into such efforts as fishery management plans (with the Fishery Management Councils established under the Magnuson Fishery Conservation and Management Act and with the Atlantic States Marine Fisheries Commission).

5. To foster greater interagency cooperation and collaboration, including:

a) Shared priority statements, policies and management plans that will improve overall awareness of habitat programs in other agencies;

b) Joint research and management initiatives to address common issues and needs; and,

c) Improved decision-making protocols, including mechanisms to incorporate best-available information into decisions affecting living resources and their habitat in ecological units within meaningful bio-geographic regions rather than administrative or political jurisdictions.

Recommended Actions:

Our shared responsibilities for marine, estuarine, and riverine habitats invite frequent opportunities for collaboration, including:

1) Share general information, recommendations, and decisions for other important living resources that relate to habitats or related resources, e.g., habitat policies or habitat discussions in Fishery Management Plans.

2) Collaborate with other parties on actions that relate to habitat or living resources, e.g., management plans or mitigation protocols.

3) Initiate new agreements to improve our efforts to conserve and manage living resources and their habitat, e.g. development and implementation of strategic multi-objective resource plans to address issues in resource or habitat management.

This statement of intent to conserve and manage marine, estuarine and riverine habitat is endorsed by the following agencies, states, and regional bodies:

RESOLUTION #1

MARINE, ESTUARINE AND RIVERINE HABITAT POLICY

RESOLUTION OF AGREEMENT

WHEREAS, the fishery stocks which inhabit the coastal rivers, estuaries, and shelf waters of the eastern seaboard of the United States represent commercial and recreational resources of enormous economic and social value to the citizens of our country; and,

WHEREAS, management of these resources is the responsibility of the states, the Atlantic States Marine Fisheries Commission, and the federal government acting through the three regional Fishery Management Councils, namely, New England, Mid-Atlantic, and South Atlantic, and,

WHEREAS, the efforts to conserve and manage these fishery resources, the necessary habitat, and water quality are the management responsibilities of the aforementioned organizations; and, further that Fishery Management Plans (FMPs) developed by the Commission and Regional Councils include a detailed Habitat Section dealing with the preservation of the fishery environment and the assessment of the degradation caused by human activities; and,

WHEREAS, the state, interstate, and federal agencies that enforce laws or are designated and authorized by law to monitor, assess, permit and/or regulate human activities that affect the habitat, water quality, and the fish stocks; and, further that these agencies (state agencies, interstate compacts, and NOAA/National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Coast Guard, U.S. Army Corps of Engineers, and U.S. Environmental Protection Agency), share with the Commission and Fishery Management Councils a pressing responsibility to address the impact of their planning and regulatory activities affecting the status of fishery resources which are clearly defined in the provisions of FMPs;

NOW THEREFORE BE IT RESOLVED that the Commission, recognizing the requirement for improved coordination, agrees to actively implement the "unified marine habitat policy statement" presented on May 16, 1990 in Washington, D.C. with final revision dated November 7, 1990 attached hereto and made a part hereof, and calls upon the Regional Councils and federal agencies named above to do so also.

Appendix D. Habitat laws (Source: EPA 1994).

major environmental laws

If you are interested in becoming active in environmental, health, and community safety issues, you will need to understand many of the following federal laws. These laws, and others enacted by states, have various requirements and are enforced by various agencies. We have presented a brief description of the intent of each law. For more details, you should obtain a copy from your local library, state library, or the relevant federal or state agency. Federal and state officials, community organizations, and interest groups will help you gain a working knowledge of these laws.

the clean air act (CAA)

42 U.S.C. s/s 7401 et seq. (1970)

The Clean Air Act is the comprehensive federal law which regulates air emissions from area, stationary, and mobile sources. This law authorizes the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. The goal of the Act was to set and achieve NAAQS in every state by 1975. This setting of maximum pollutant standards was coupled with directing the states to develop state implementation plans (SIPs) applicable to appropriate industrial sources in the state.

The Act was amended in 1977 primarily to set new goals (dates) for achieving attainment of NAAQS since many areas of the country had failed to meet the deadlines. The 1990 amendments to the Clean Air Act in large part were intended to meet unaddressed or insufficiently addressed problems such as acid rain, ground level ozone, stratospheric ozone depletion, and air toxics.

the clean water act (CWA)

33 U.S.C. s/s 121 et seq. (1977)

The Clean Water Act is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants to waters of the United States. This law gave EPA the authority to set effluent standards on an industry-by-industry basis (technology-based) and continued the requirements to set water quality standards for all contaminants in surface waters. The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit (NPDES) is obtained under the Act. The 1977 amendments focused on toxic pollutants. In 1987, the CWA was reauthorized and again focused on toxic substances, authorized citizen suit provisions, and funded sewage treatment plants (POTWs) under the Construction Grants Program.

The CWA provides for the delegation by EPA of many permitting, administrative, and enforcement aspects of the law to state governments. In states with the authority to implement CWA programs, EPA still retains oversight responsibilities.

the comprehensive environmental response, compensation, and liability act (CERCLA or Superfund)

42 U.S.C. s/s 9601 et seq. (1980)

CERCLA (pronounced SERK-la) provides a federal "Superfund" to clean up uncontrolled or abandoned hazardous waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through the Act, EPA was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup. EPA cleans up orphan sites when potentially responsible parties (PRPs) cannot be identified or located, or when they fail to act. Through various enforcement tools, EPA obtains private party cleanup through orders, consent decrees, and other small party settlements. EPA also recovers costs from financially viable individuals and companies once a response action has been completed.

EPA is authorized to implement the Act in all 50 states and U.S. territories. Superfund site identification, monitoring, and response activities in states are coordinated through the state environmental protection or waste management agencies.

the emergency planning & community right-to-know act (EPCRA)

42 U.S.C. 11011 et seq. (1986)

Also known as Title III of SARA, EPCRA was enacted by Congress as the national legislation on community safety. This law was designed to help local communities protect public health, safety, and the environment from chemical hazards.

To implement EPCRA, Congress required each state to appoint a State Emergency Response Commission (SERC). The SERCs were required to divide their states into Emergency Planning Districts and to name a Local Emergency Planning Committee (LEPC) for each district. Broad representation by fire fighters, health officials, government and media representatives, community groups, industrial facilities, and emergency managers ensures that all necessary elements of the planning process are represented.

the endangered species act

7 U.S.C. 136; 16 U.S.C. 460 et seq. (1973)

The Endangered Species Act provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The U.S. Fish and Wildlife Service (FWS) of the Department of Interior maintains the list of 632 endangered species (326 are plants) and 190 threatened species (78 are plants). Species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees. Anyone can petition FWS to include a species on this list or to prevent some activity, such as logging, mining, or dam building. The law prohibits any action, administrative or real, that results in a "taking" of a listed species, or adversely affects habitat. Likewise, import, export, interstate, and foreign commerce of listed species are all prohibited.

EPA's decision to register a pesticide is based in part on the risk of adverse effects on endangered species as well as environmental fate (how a pesticide will effect habitat). Under FIFRA, EPA can issue emergency suspensions of certain pesticides to cancel or restrict their use if an endangered species will be adversely affected. Under a new program, EPA, FWS, and USDA are distributing hundreds of county bulletins which include habitat maps, pesticide use limitations, and other actions required to protect listed species.

In addition, we are enforcing regulations under various treaties, including the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The U.S. and 70 other nations have established procedures to regulate the import and export of imperiled species and their habitat. The Fish and Wildlife Service works with U.S. Customs agents to stop the illegal trade of species, including the Black Rhino, African elephants, tropical birds and fish, orchids, and various corals.

the federal insecticide, fungicide and rodenticide act (FIFRA)

7 U.S.C. s/s 135 et seq. (1972)

The primary focus of FIFRA was to provide federal control of pesticide distribution, sale, and use. EPA was given authority under FIFRA not only to study the consequences of

pesticide usage but also to require users (farmers, utility companies, and others) to register when purchasing pesticides. Through later amendments to the law, users also must take exams for certification as applicators of pesticides. All pesticides used in the U.S. must be registered (licensed) by EPA. Registration assures that pesticides will be properly labeled and that, if used in accordance with specifications, will not cause unreasonable harm to the environment.

the (federal) freedom of information act (FOIA)

U.S.C. s/s 552 (1966)

The Freedom of Information Act provides specifically that "any person" can make requests for government information. Citizens who make requests are not required to identify themselves or explain why they want the information they have requested. The position of Congress in passing FOIA was that the workings of government are "for and by the people" and that the benefits of government information should be made available to everyone.

All branches of the federal government must adhere to the provisions of FOIA with certain restrictions for work in progress (early drafts), enforcement confidential information, classified documents, and national security information.

the national environmental policy act (NEPA)

42 U.S.C. s/s 4321 et seq. (1969)

The National Environmental Policy Act was one of the first laws ever written that establishes the broad national framework for protecting our environment. NEPA's basic policy is to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action which significantly affects the environment. NEPA requirements are invoked when airports, buildings, military complexes, highways, parkland purchases, and other such federal activities are proposed. Environmental Assessments (EAs) and Environmental Impact Statements (EISs), which are assessments of the likelihood of impacts from alternative courses of action, are required from all federal agencies and are the most visible NEPA requirements.

the occupational safety and health act

29 U.S.C. 61 et seq. (1970)

Congress passed the Occupational and Safety Health Act to ensure worker and workplace safety. Their goal was to make sure employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat

or cold stress, or unsanitary conditions. In order to establish standards for workplace health and safety, the Act also created the National Institute for Occupational Safety and Health (NIOSH) as the research institution for the Occupational Safety and Health Administration (OSHA). OSHA is a division of the U.S. Department of Labor which oversees the administration of the Act and enforces federal standards in all 50 states.

the pollution prevention act

42 U.S.C. 13101 and 13102, s/s 6602 et seq. (1990)

The Pollution Prevention Act focused industry, government, and public attention on reducing the amount of pollution produced through cost-effective changes in production, operation, and raw materials use. Opportunities for source reduction are often not realized because existing regulations, and the industrial resources required for compliance, focus on treatment and disposal. Source reduction is fundamentally different and more desirable than waste management or pollution control. Pollution prevention also includes other practices that increase efficiency in the use of energy, water, or other natural resources, and protect our resource base through conservation. Practices include recycling, source reduction, and sustainable agriculture.

the resource conservation and recovery act (RCRA)

42 U.S.C. s/s 321 et seq. (1976)

RCRA (pronounced "rick-rah") gave EPA the authority to control hazardous waste from "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes.

The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. RCRA focuses only on active and future facilities and does not address abandoned or historical sites (see CERCLA).

HSWA (pronounced "hiss-wa") - The federal Hazardous and Solid Waste Amendments. The 1984 amendments to RCRA which required phasing out land disposal of hazardous waste. Some of the other mandates of this strict law include increased enforcement authority for EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program.

the safe drinking water act (SDWA)

43 U.S.C. s/s 300f et seq.(1974)

The Safe Drinking Water Act was established to protect the quality of drinking water in the U.S. This law focuses on all waters actually or potentially designated for drinking use, whether from above ground or underground sources. The Act authorized EPA to establish safe standards of purity and required all owners or operators of public water systems to comply with primary (health-related) standards. State governments, which assume this power from EPA, also encourage attainment of secondary standards (nuisance-related).

the superfund amendments and reauthorization act (SARA)

42 U.S.C. 9601 et seq. (1986)

The Superfund Amendments and Reauthorization Act of 1986 reauthorized CERCLA to continue cleanup activities around the country. Several site-specific amendments, definitions, clarifications, and technical requirements were added to the legislation, including additional enforcement authorities.

Title III of SARA also authorized the Emergency Planning and Community Right-to-Know Act (EPCRA).

the toxic substances control act (TSCA)

15 U.S.C. s/s 2601 et seq. (1976)

The Toxic Substances Control Act of 1976 was enacted by Congress to test, regulate, and screen all chemicals produced or imported into the U.S. Many thousands of chemicals and their compounds are developed each year with unknown toxic or dangerous characteristics. To prevent tragic consequences, TSCA requires that any chemical that reaches the consumer market place be tested for possible toxic effects prior to commercial manufacture.

Any existing chemical that poses health and environmental hazards is tracked and reported under TSCA. Procedures also are authorized for corrective action under TSCA in cases of cleanup of toxic materials contamination. TSCA supplements other federal statutes, including the Clean Air Act and the Toxic Release Inventory under EPCRA.

Appendix E. Pollutants included in the National Pollutant Discharge Inventory, and Their Effects on the Environment, Marine Organisms and Humans (Source: NOAA, 1985).

Pollutant	Definition	Effects
1. **Oxygen-Demanding Materials** Biochemical Oxygen Demand (BOD)	Measure of organic material in a discharge that can be readily oxidized through microbial decomposition.	Can result in depletion of dissolved oxygen concentration: low concentration can result in death to marine organisms.
2. **Particulate Matter** Total Suspended Solids	Measure of suspended solid material.	Increases turbidity and bottom deposition: many toxic compounds are bound to, carried by, and deposited with TSS particles.
3. **Nutrients** a. Total Nitrogen (N)	Measure of all forms of nitrogen, i.e., nitrite, nitrate, ammonia-N, and organic forms.	N and P are major plant nutrients. Excessive amounts in water overstimulate plant growth; resultant oxygen depletion may have lethal effects on marine organisms.
b. Total Phosphorous	Measure of all forms of phosphorus, i.e., ortho and para-compounds.	
4. **Heavy Metals** a. Arsenic(As) b. Cadmium (Cd) c. Copper (Cu) e. Iron (Fe) f. Lead (Pb) g. Mercury (Mg)	A group of elements present in the environment from natural and anthropogenic sources that can produce toxic effects: determination based on EPA standard methods that measure environmentally available "metals".	Can be toxic to marine organisms and potentially to humans through consumption of contaminated water and organisms.
5. **Petroleum Hydrocarbons** (Pet HC)	A mixture of hydrocarbons found in petroleum comprised of hundreds of chemical compounds.	Acute lethal and chronic sublethal toxicity to marine organisms; interference with cellular and physiological processes, e.g., feeding and reproduction.
6. **Chlorinated Hydrocarbons** a. Polychlorinated Biphenyls (PCBs)	A group of aromatic compounds of two fused benzene rings and two or more chlorine atoms: used in heat exchange and insulating fluids.	Toxic to marine organisms; highly persistent; potential human carcinogen through consumption of contaminated water or organisms.
b. Chlorinated hydrocarbons other than PCBs (CHP)	Includes the chlorinated pesticides, aromatic, and nonaromatic.	Varying degree of acute and chronic aquatic toxicity, persistence, and human carcinogenicty.
7. **Pathogens** Fecal coliform bacteria (FCB)	Enteric bacteria which enter water in fecal material of human or animal origin: presence of pathogens.	Main effects are on public health and quality and safety of seafood.
8. **Sludges**	Solids or semi-solid materials generated as a result of potable or industrial water supply treatment, sanitary or industrial wastewater treatment, or flue gas scrubbing using wet processes.	May contain concentrated levels of contaminants found in wastewater, especially pathogens, heavy metals, and toxic organics, contaminants found in flue gases.
9. **Wastewater**	Water that has come in contact with pollutants as a result of human activities and is not used in a product, but discharged as a waste stream.	May contain concentrations of various pollutants or be contaminated by heat, or when discharged into marine waters the extra influx of fresh water may affect salinity gradients.

Appendix F. A Retrospective (1979-1995) Multispecies Assessment of Coral Reef Fish Stocks in the Florida Keys.

A Retrospective (1979-1995) Multispecies Assessment of Coral Reef Fish Stocks in the Florida Keys

Jerald S. Ault[1], James A. Bohnsack[2], and Geoff Meester[1]

[1] University of Miami
Rosenstiel School of Marine and Atmospheric Science
4600 Rickenbacker Causeway
Miami, Florida 33149
ault@shark.rsmas.miami.edu

[2] National Marine Fisheries Service
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida 33149
Jim.Bohnsack@noaa.gov

Running Headline: *Florida Keys Reef Fish Assessment*

Target Journal: Fishery Bulletin ; "IN REVIEW"

Key Words: Reef fisheries, Florida Keys, stock assessments, fishery management, overfishing, marine protected areas.

Abstract

The Florida Keys support a rich tropical marine ecosystem with high biodiversity, productive multispecies fisheries, a multibillion dollar tourist economy, and unique aesthetic qualities. Concern over changing and growing resource use resulted in the establishment of the Florida Keys National Marine Sanctuary in 1990. In preparation for changes in management, we conducted a retrospective analysis of the reef fish fishery including a multispecies assessment of 43 stocks (16 groupers, 13 snappers including one labrid, 13 grunts, and the barracuda). Fishing effort had increased substantially due to growth of recreational angling and increased average vessel nominal fishing power by commercial and recreational fleets. We developed an innovative assessment system using advanced visualization, data assimilation and quantitative analysis to facilitate the assessment. The system incorporates a spatially-explicit model that links relatively sparse survey estimates of reef fish densities and sizes relative to key physical factors, and a multispecies assessment index that uses the metabolic variable average size as a biological indicator of stock condition. The index was applied to a 17 year time-series of visual survey and headboat data to estimate the annual rates of fishing mortality and the current spawning potential ratios (SPRs) for each stock. Results show a classic pattern of serial overfishing where the longest lived, lowest mortality stocks (groupers) are those first adversely affected, followed in sequence by intermediate-lived stocks (snappers), and finally by short-lived stocks (grunts). A total of 13 of 16 groupers, 6 of 13 snappers, and 2 of 5 grunts show SPRs below the minimum for overfishing according to U.S. federal guidelines. These results underscore the need for an adaptive management strategy that defines the structure and function of marine reserves within the Florida Keys National Marine Sanctuary (FKNMS). Information provided here should facilitate FKNMS management decisions and help define the evolving role of marine protected areas in fishery management.

Figure 4

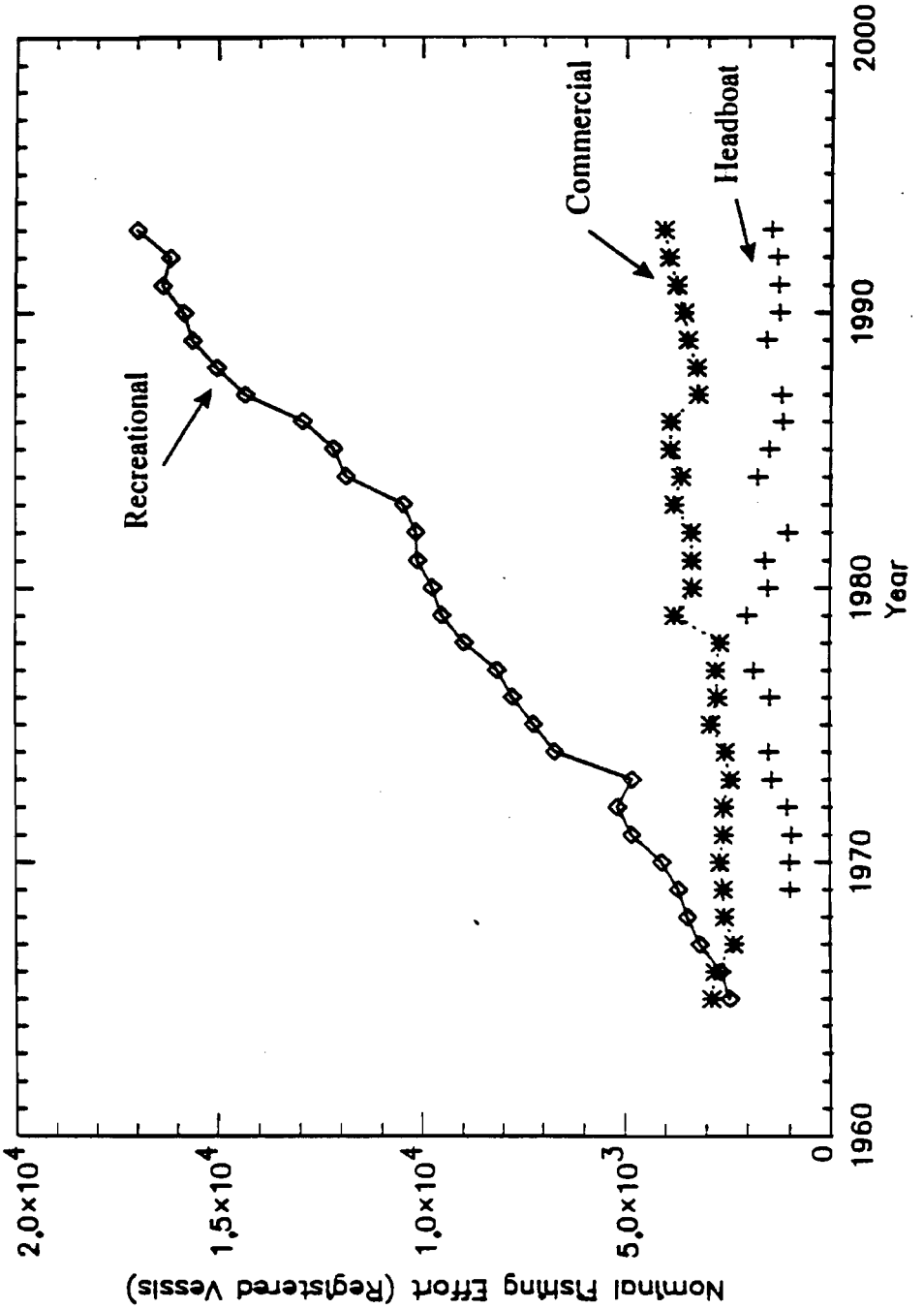

Recreational
Commercial
Headboat
Nominal Fishing Effort (Registered Vessels)
2.0x10^4
1.5x10^4
1.0x10^4
5.0x10^3
0
1960
1970
1980
1990
2000
Year

Table 4: FKNMS reef fish population dynamics parameters used in mortality estimation and fishery simulations.

4(A) GROUPERS

Species	Population Parameters											
	M	t_λ	L_∞	W_∞	K	t_0	t_m	L'	t_c	α_{WL}	β_{WL}	L_λ
Black Grouper	0.150	20	1200.0	31.587	0.160	-0.300	48	508.0	39	4.27E-06	3.2061	1163.07
Mycteroperca bonaci												
Coney	0.180	17	698.9	1.489	0.145	-1.080	13	203.2	19	7.29E-05	2.57	332.50
Epinephelus fulvus												
Gag	0.200	13	1187.2	25.145	0.149	-0.802	60	508.0	36	1.21E-05	3.0305	1034.44
Mycteroperca microlepis												
Graysby	0.200	15	415.0	1.140	0.130	-0.940	36	203.2	52	1.22E-05	3.0439	362.46
Epinephelus cruentatus												
Jewfish	0.061	37	2394.0	244.663	0.054	-3.616	72	508.0	88	2.09E-05	2.9797	2328.00
Epinephelus itajara												
Marbled Grouper	***present in recreational catch but not headboat catch or visual survey											
Epinephelus inermis												
Misty Grouper	***present in recreational catch but not headboat catch or visual survey											
Epinephelus mystacinus												
Nassau	0.180	17	698.9	5.871	0.145	-1.080	83	508.0	95	3.83E-06	3.2292	648.22
Epinephelus striatus												
Red Grouper	0.180	17	938.0	11.865	0.153	-0.099	48	508.0	61	1.13E-05	3.035	869.01
Epinephelus morio												
Red Hind	0.180	17	392.7	1.087	0.207	-0.831	49	203.2	33	1.80E-04	2.614	382.89
Epinephelus guttatus												
Rock Hind	0.250	12	486.1	2.274	0.191	-2.180	48	203.2	9	6.00E-06	3.193	453.28
Epinephelus adscencionis												
Scamp	0.143	21	999.7	19.257	0.126	-1.357	48	508.0	52	2.02E-05	2.9932	932.16
Mycteroperca phenax												
Snowy Grouper	0.130	15	1091.3	19.512	0.113	-0.916	48	508.0	67	2.45E-05	2.93	909.00
Epinephelus niveatus												
Speckled Hind	0.200	15	967.0	16.578	0.130	-1.010	48	508.0	58	1.11E-05	3.073	881.00
Epinephelus drummondhayi												
Warsaw Grouper	0.080	41	2394.0	244.863	0.054	-3.616	48	508.0	88	2.09E-05	2.9797	2328.00
Epinephelus nigritus												
Yellowedge Grouper	0.180	15	860.0	15.669	0.170	0.000	67	508.0	64	2.82E-05	2.98	960.00
Epinephelus flavolimbatus												
Yellowfin Grouper	0.180	15	860.0	15.669	0.170	0.000	67	508.0	64	2.82E-05	2.98	960.00
Mycteroperca venenosa												
Yellowmouth Grouper	0.180	17	881.8	8.601	0.063	-9.030	36	508.0	56	2.58E-05	2.89367	710.73
Mycteroperca interstitialis												

Table 4 (cont.)

4(B) SNAPPERS

Species	Population Parameters											
	M	t_λ	L_∞	W_∞	K	t_0	t_m	L'	t_c	α_{WL}	β_{WL}	L_λ
Black Snapper *Apsilus dentatus*	0.300	10	618.3	3.243	0.097	-1.728	29	203.2	30	4.52E-05	2.8146	418.35
Blackfin Snapper *Lutjanus buccanella*	0.230	9	729.7	2.413	0.084	-2.896	20	304.8	43	7.40E-06	2.9735	458.84
Cubera Snapper *Lutjanus cyanopterus*	0.150	20	1200.0	34.889	0.160	-0.300	28	304.8	19	1.32E-05	3.0601	910.00
Dog Snapper *Lutjanus jocu*	0.333	9	854.0	10.187	0.100	-2.000	28	304.8	30	4.28E-05	2.8574	790.00
Gray Snapper *Lutjanus griseus*	0.300	10	722.3	5.246	0.136	-0.863	24	254.0	29	3.05E-05	2.8809	556.16
Lane Snapper *Lutjanis synagris*	0.300	10	618.3	3.243	0.097	-1.728	29	203.2	30	4.52E-05	2.8146	418.35
Mahogony Snapper *Lutjanus mahogoni*	0.300	10	618.3	3.179	0.097	-1.728	29	304.8	64	8.18E-05	2.719	418.35
Mutton Snapper *Lutjanus analis*	0.214	14	938.7	14.058	0.129	-0.738	24	304.8	29	1.57E-05	3.0112	797.75
Red Snapper *Lutjanus campechanus*	0.190	16	975.0	13.682	0.162	-0.010	28	508.0	55	2.04E-05	2.953	955.00
Schoolmaster *Lutjanus apodus*	0.250	12	570.0	3.280	0.180	0.000	20	254.0	40	2.04E-05	2.9779	503.77
Silk Snapper *Lutjanus vivanus*	0.230	9	781.1	9.277	0.092	-2.309	37	304.8	38	1.00E-05	3.1	512.00
Vermillion Snapper *Rhomboplites aurorubens*	0.230	10	613.6	2.805	0.206	0.111	43	254.0	33	1.72E-05	2.9456	541.60
Yellowtail Snapper *Lutjanus chrysurus*	0.214	14	454.7	1.297	0.209	-0.712	24	304.8	56	7.75E-05	2.718	433.44
Hogfish *Lachnolaimus maximus*	0.25	12	566.0	3.823	0.190	-0.776	18	203.2	20	2.55E-05	2.97	439.00

Table 4 (cont.)

4(C) GRUNTS AND BARRACUDA

Species	M	t_λ	L_∞	W_∞	K	t_0	t_m	L'	t_c	α_{WL}	β_{WL}	L_λ
							Population Parameters					
Black Margate							33	203.2		2.39E-06	3.3916	
Anisotremus surinamensis												
Bluestriped Grunt	0.500	6	289.6	0.471	0.484	-0.011	12	203.2	31	1.94E-05	2.9996	273.54
Haemulon sciurus												
Caesar Grunt							27	203.2		1.29E-05	3.0559	
Haemulon carbonarium												
Cottonwick							27	203.2		2.52E-05	2.9527	
Haemulon melanurum												
French Grunt							18	203.2		9.06E-06	3.1581	
Haemulon flavolineatum												
Margate	0.374	8	752.6	8.566	0.174	-0.450	34	203.2	17	1.52E-05	3.0423	578.35
Haemulon album												
Porkfish							25	203.2		1.01E-05	3.1674	
Anisotremus virginicus												
Sailors Choice	0.428	7	400.2	1.243	0.220	-0.355	12	203.2	35	2.02E-05	2.9932	320.12
Haemulon parra												
Smallmouth Grunt							24	203.2		2.77E-03	2.1567	
Haemulon chrysargyreum												
Spanish Grunt							39	203.2		2.28E-05	3.0295	
Haemulon macrostomum												
Striped Grunt							21	203.2		1.39E-05	3.0988	
Haemulon striatum												
Tomtate	0.333	9	441.6	1.889	0.091	-2.095	24	203.2	57	6.19E-06	3.2077	279.89
Haemulon aurolineatum												
White Grunt	0.375	8	511.9	3.062	0.186	-0.776	18	203.2	24	8.35E-06	3.1612	410.25
Haemulon plumeri												
Barracuda	0.200	15	1238.3	14.033	0.172	-0.461	36	619.2	44	4.11E-06	3.0825	1151.54
Sphyraena barracuda												

Table 5: Spawning potential ratios for species of Florida Keys reef fish grouped by taxa targeted by commercial and recreational fisheries, and seen in the Florida Keys reef fish visual survey from 1979 to 1995, or headboat data from 1982 to 1995.

	Taxa							
	Groupers *Epinephelinae*	% SPR	**Snappers** *Lutjanidae*	% SPR	**Grunts** *Haemulidae*	% SPR	**Barracudas** *Sphyraenidae*	% SPR
1	Coney	37.36	Schoolmaster	10.09	Cottonwick		Great barracuda	66.94
2	Gag grouper	3.66	Black snapper	65.37	Bluestriped grunt	63.06		
3	Graysby	37.13	Blackfin snapper	41.62	French grunt			
4	Black grouper	5.05	Cubera snapper	3.42	White grunt	14.89		
5	Nassau grouper	13.16	Dog snapper	24.84	Sailors choice	91.73		
6	Red grouper	22.14	Gray snapper	22.70	Porkfish			
7	Snowy grouper	4.23	Lane snapper	71.20	Margate	17.46		
8	Warsaw grouper	15.00	Red snapper	30.86	Black margate			
9	Yellowedge grouper	10.00	Silk snapper	4.06	Ceasar grunt			
10	Yellowfin grouper	10.00	Vermillion snapper	2.43	Smallmouth grunt			
11	Yellowmouth grouper	19.25	Yellowtail snapper	44.94	Spanish grunt			
12	Red Hind	27.43	Mutton snapper	52.72	Striped grunt			
13	Rock Hind	35.51			Tomtate	39.67		
14	Speckled Hind	7.12	Hogfish (*Labridae*)	43.68				
15	Jewfish	15.00						
16	Scamp	1.74						

Appendix G. Response to Comments on DSEIS

One comment on the DSEIS was received from EPA. Comments received on items in Amendment 8 have been compiled into two documents: (1) Public comments from the Magnuson Act/NEPA scoping process, and (2) Informal review comments from the Magnuson-Stevens Act public hearing process including NEPA input. Copies of these two documents are available from the Council office. The Council addressed the comments received in finalizing Amendment 8.

Comment: "During the past several years EPA has reviewed numerous fishery management plans and environmental impact statements, each describing a precipitous decline in fishery stocks. This decline is in large part due to over-fishing and nonpoint source pollution. Contributing to nonpoint source pollution is continuing development of our coastal areas and encroachment upon estuarine wetland systems. The public should be made aware that because of deteriorating habitats and marine resources, projections of seafood availability in five, ten, and twenty years hence yield a profoundly disturbing picture. We recommend that the scope of the DSEIS be expanded to emphasize to the public that the problems of the American fishery industry are being exacerbated by nonpoint source pollution."

Response: All readily available information concerning nonpoint source pollution has been induded in Section 8. The Council is in the process of developing a "Habitat Plan" which will include any new information. In addition, the Council is developing a "Comprehensive Habitat Amendment" which will amend each fishery management plan and include recommendations about impacts on the habitat including nonpoint source and plastic pollution. These documents will be available for public review in late 1997 or early 1998.

UNITED STATES DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
SOUTHEAST REGION
9721 Executive Center Drive North
St. Petersburg, Florida 33702

FAX NUMBER:
(813) 570-5583

DATE: 4/28/97 NO. OF PAGES TO FOLLOW: 4

TO: Susan Buchanon

ROUTING: SAFMC

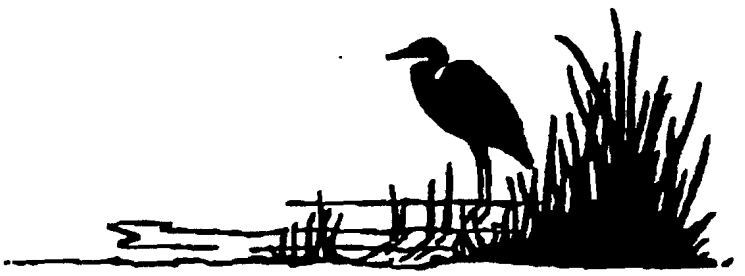
PHONE:

FROM: Pete Eldridge F/SEO1, 11, 12

PHONE: (813) 570-5305, 5325, 5326

COMMENTS:

Here is an EPA comment on DSEIS for Sm-Gn Amendment 8



NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Office of Policy and Strategic Planning

UNITED STATES DEPARTMENT OF COMMERCE
14th and Constitution, N.W., HCHB Room 6117
Washington, D.C. 20230

PHONE:(202) 482-5181 FAX:(202) 501-3024

TO: Mr. Davis Hays
301/713-0596

FROM: Ms. Donna S. Wieting

PAGES: 3
(with cover sheet)

MESSAGE:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
100 ALABAMA STREET, S.W.
ATLANTA, GEORGIA 30303-3104

FEB 18 1997

Donna Weiting, Acting Director,
Office of Ecology and Conservation
National Marine Fisheries Service
Room 5805, OPSP
U.S. Department of Commerce
Washington, DC 20230

RE: Draft Supplement Environmental Impact Statement for Amendment 8 to the Fisheries Management Plan (FMP) for the Snapper-Grouper Fishery of the South Atlantic Region (DSEIS)

Dear Ms. Weiting:

The U. S. Environmental Protection Agency (EPA) has reviewed the referenced document in accordance with EPA's responsibilities under Section 309 of the Clean Air Act and Section 102 (2) (c) of NEPA. The document described 17 regulatory actions designed to improve fisheries in the U.S. exclusive economic zone (EEZ) off the South Atlantic coastal states. An additional action (Action 18) considers a number of options to reduce fishing mortality that would close the snapper-grouper fishery for certain months of the year.

During the past several years EPA has reviewed numerous fishery management plans and environmental impact statements, each describing a precipitous decline in fishery stocks. This decline is in large part due to over-fishing and nonpoint source pollution. Contributing to nonpoint source pollution is continuing development of our coastal areas and encroachment upon estuarine wetland systems. The public should be made aware that because of deteriorating habitats and marine resources, projections of seafood availability in five, ten, and twenty years hence yield a profoundly disturbing picture. We recommend that the scope of the DSEIS be expanded to emphasize to the public that the problems of the American fishery industry are being exacerbated by nonpoint source pollution. The comments (Page 179) about EPA's having general responsibility for controlling air and water pollution were noted.

The comments about plastic pollution as persistent marine debris, in addition to the discarding of spent fishing gear such as lines, traps, nets, trawls and floats, were disturbing. What actions, if any, are being proposed to address marine debris in waters of the US EEZ?

This document is rated as "LO" - Lack of Objections, that is, the EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal.

FEB 25 1997

We appreciate the opportunity to review this document. If more information is required, please call me or John Hamilton at (404) 562-9617.

Sincerely,

Heinz J. Mueller, Chief
Office of Environmental
Assessment

Appendix H. Alternatives Eliminated From Detailed Consideration.

The following item (ACTION 2) was included in the December 1996 Public Hearing Draft of Amendment :

ACTION 2. Control effort by establishing trip limits for sub-units of the species in the snapper grouper management unit.

A. Deep Shelf (DS): Species included are snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish. Amberjack continue to be managed throughout the South Atlantic as a separate unit. Wreckfish continue under current individual transferable quota (ITQ) management regime.

In order to get a deep shelf endorsement (which would allow harvesters to land in excess of 100 pounds of a deep shelf species on any trip), harvesters would have to verify landings of deep shelf species of at least 500 pounds annually in two of the last three years (1993 – 1995).

Without a deep shelf endorsement, harvesters would be limited to a 100 pound trip limit (bycatch provision) for deep shelf species under applicable regulations.

B. Greater Amberjack: In order to get a greater amberjack endorsement (which would allow harvesters to land in excess of 100 pounds of greater amberjack on any trip), harvesters would have to verify landings of greater amberjack of at least 5,000 pounds annually in two of the last three years (1993 – 1995).

Without a greater amberjack endorsement, harvesters would be limited to a 100 pound trip limit (bycatch provision) for greater amberjack under applicable regulations.

C. Temperate Mid–Shelf Complex (TEMS): Species included are red porgy, vermilion snapper, red snapper, speckled hind, gag, scamp, red grouper, black sea bass, gray triggerfish, white grunt, and greater amberjack.

In order to get a TEMS endorsement (which would allow harvesters to land in excess of 100 pounds of TEMS species on any trip), harvesters would have to verify landings of TEMS species of at least 5,000 pounds annually in two of the last three years (1993 – 1995).

Without a TEMS endorsement, harvesters would be limited to a 100 pound trip limit (bycatch provision) for TEMS species under applicable regulations.

D. Tropical Complex (TROPS): Species included are yellowtail snapper, mutton snapper, gray snapper, lane snapper, black grouper, red grouper, and greater amberjack.

In order to get a TROPS endorsement (which would allow harvesters to land in excess of 100 pounds of a TROPS species on any trip), harvesters would have to verify landings of TROPS species of at least 1,000 pounds annually in two of the last three years (1993 – 1995).

Without a TROPS endorsement, harvesters would be limited to a 100 pound trip limit (bycatch provision) for TROPS species under applicable regulations.

E. Endorsements. Applications for endorsements must be made within 30 days after publication of the final rule in the Federal Register. Permits with endorsements are to be implemented 90 days after implementation of the final rule. It is the Council's intent that the permit year be the 12 month period following issuance of the permits. Permits with endorsements will be issued to the vessel. The possession of snapper grouper species in the management unit in excess of the bag limit for species with a bag limit aboard a vessel without a

permit and endorsement is prohibited; possession of species in excess of the quantity allowed by the endorsement is also prohibited.

To be eligible for an endorsement, snapper grouper species in the management unit must have been harvested within the South Atlantic Council's area of jurisdiction. Landings will be verified through logbooks received by NMFS as of August 20, 1996. Catches in Monroe County are in some instances difficult to separate into Gulf and South Atlantic Council area's of jurisdiction due in part to the way in which fishermen were requested to report landings in the Gulf reeffish and South Atlantic snapper grouper logbooks. Every effort will be made to ensure all catches from the South Atlantic Council's area of jurisdiction are properly assigned. The appeals process also provides an opportunity for fishermen to ensure their catches were properly credited.

If a vessel and/or the vessel's catch history have been sold, the individual(s) with documentation supporting their ownership of such vessel and/or catch history will be considered the owner and such landings will be included in qualifying under Action 1 and Action 2.

It is the Council's intent that the permit and endorsement remain linked such that the endorsement could not be sold separately from the permit.

F. Transferability:

(1) To immediate family members: Permits with endorsements can be transferred to immediate family members but can only be used in the category for which they were originally issued. The vessel's catch history must also be transferred.

(2) To new entrants in the snapper grouper fishery: To receive a new permit and endorsement, two existing snapper grouper permits with endorsements must be purchased and exchanged for one new permit and endorsement. The vessel's catch histories must also be transferred.

G. Appeals: An Application Oversight Committee will be established upon approval of Amendment 8 to assist the NMFS Regional Administrator in handling disputes over eligibility for permits or endorsements. The charge of the Committee is to make sure the criteria pertaining to eligibility or initial allocation were applied to an individual's application in a correct manner; the Committee will not evaluate "hardship" applications. The Committee is to be made up of one state director (or his designee) from each state in the South Atlantic Council's area of jurisdiction and the NMFS Regional Administrator, or his designee. NOAA General Counsel will have a non-voting advisory role on the Committee. One NMFS staff and one Council staff are to provide assistance.

Biological Impacts

The additional requirement of some level of landings between 1993 and 1995 would further reduce the number of qualifying vessels. The addition of trip limits would provide a slight reduction in fishing mortality in the short-term thereby contributing to solving some of the biological problems of overfishing. Any reduction in fishing mortality will be slight in the beginning but is expected to increase over time as the requirements for renewal further reduce the number of qualified vessels. The increase in voluntary compliance would also provide additional biological benefits.

Economic Impacts

Table 18 shows the number of vessels that would qualify for a deep shelf species endorsement based on reported landings of 500 pounds or greater of deep shelf species for 1993 to 1995. For an endorsement to land in excess of 100 pounds per trip preliminary analysis indicates that 139 vessels would qualify based on reported landings of 5,000 pounds or greater in two of the three years (1993 to 1995).

Table 18. Reported Landings of Deep Shelf Species as of August 20, 1996 (Source: Nelson Johnson, NMFS Beaufort Lab).

YEAR	≥ 500 Pounds		≥ 1,000 Pounds		Total Annual Landings
	# Vessels	# Pounds	# Vessels	# Pounds	
1993	152	1,496,347	118	1,471,738	1,518,960
1994	152	1,278,910	116	1,253,747	1,302,636
1995	159	1,268,363	126	1,245,000	1,289,692

Table 19 shows the number of vessels that would qualify for greater amberjack endorsement based on reported landings of 5,000 pounds or greater of greater amberjack for 1993 to 1995. For an endorsement to land in excess of 100 pounds per trip preliminary analysis indicates that 57 vessels would qualify based on reported landings of 5,000 pounds or greater in two of the three years (1993 to 1995).

Table 19. Reported Greater Amberjack Landings as of August 20, 1996 (Source: Nelson Johnson, NMFS Beaufort Lab).

YEAR	≥ 1,000 Pounds		≥ 5,000 Pounds		Total Annual Landings
	# Vessels	# Pounds	# Vessels	# Pounds	
1993	129	1,119,558	50	923,428	1,182,062
1994	156	1,392,932	67	1,179,839	1,463,138
1995	153	1,277,059	63	1,067,046	1,346,386

Table 20 shows the number of vessels that would qualify for temperate mid–shelf species (TEMS) endorsement based on reported landings of 5,000 pounds or greater of temperate mid–shelf species for 1993 to 1995. For an endorsement to land in excess of 100 pounds per trip preliminary analysis indicates that 209 vessels would qualify based on reported landings of 5,000 pounds or greater in two of the three years (1993 to 1995).

Table 20. Reported Landings of Temperate Mid-Shelf (TEMS) Species as of August 20, 1996. (Source: Nelson Johnson, NMFS Beaufort Lab).

YEAR	≥ 1,000 Pounds		≥ 5,000 Pounds		Total Annual Landings
	# Vessels	# Pounds	# Vessels	# Pounds	
1993	365	4,181,080	193	3,769,074	4,286,430
1994	405	5,149,571	230	4,718,839	5,272,219
1995	398	5,233,286	234	4,863,532	5,351,400

Table 21 shows the number of vessels that would qualify for tropical complex species (TROPS) endorsement based on reported landings of 1,000 pounds or greater of tropical complex species for 1993 to 1995. For an endorsement to land in excess of 100 pounds per trip preliminary analysis indicates that 418 vessels would qualify based on reported landings of 1,000 pounds or greater in two of the three years (1993 to 1995).

Table 21. Reported Landings of Tropical Species (TROPS) Complex as of August 20, 1996. (Source: Nelson Johnson, NMFS Beaufort Lab).

YEAR	≥ 1,000 Pounds		≥ 5,000 Pounds		Total Annual
	# Vessels	# Pounds	# Vessels	# Pounds	Landings
1993	451	2,773,843	146	2,039,020	2,918,015
1994	496	3,178,381	173	2,392,863	3,353,142
1995	489	3,079,738	172	2,322,701	3,263,696

Given the nature of the fishery, it is possible that most fishermen would qualify for all four endorsements. Those who do not qualify for any of the endorsements would be allowed to land up to 100 pounds per trip of species in any category. This action would not impose any financial hardship on fishermen. It essentially makes fishermen concentrate on the group of species that have made up the bulk of their landings over those three years, while allowing them to keep up to 100 pounds per trip of species in other categories as bycatch.

In some ways it allows fishermen to be creative and efficient in the harvesting of species in the sub–units. A fisherman would see the long-term benefits of rational exploitation of the resource since (s)he stands to share any economic rent accrued through management measures. There is also incentive to support the regulations and keep an eye on others participating in the fishery. This would increase net benefits to all participants in the fishery in the long-term.

Social Impacts

The effort controls in Action 2 are an additional method of limiting access by species sub-unit and will make movement within the fishery more restrictive. By establishing these sub-units the Council will create a more definable management unit by species and force specialization by fishermen. Fishermen already specialize to some extent within these species sub-units, however, movement between these sub-units will become more formalized through application of new permits and endorsements. Having included greater amberjack with both mid-shelf and the tropical complex allows amberjack fishermen to qualify for three of the four sub-units. This accommodates fishermen in several regions who may fish amberjack as part of their yearly fishing round, yet may consider that fishing part of mid-shelf complex fishing pattern in the northern region or part of a tropical complex fishing pattern in the southern regions.

Applying for permits becomes another aspect of effort reduction, as the provision for new permits requires two for one. This provision will certainly limit the freedom of movement to and from these species sub-units and over time will reduce the number of permits in the fishery. Fishermen who receive endorsements will also be separated based upon their landings history of 5,000 pounds annually and above. Those who had landings below that level would be limited to a 100 pound trip limit. The 500 pound annual landings requirement for a deep shelf endorsement is significantly less than the requirement for other endorsements. During discussions with the

Advisory Panel it became apparent that many fishermen from the northern areas might be excluded from this endorsement with the higher limit. The lowered requirement will likely make it possible that even those who have had even a passing interest in this fishery will qualify for the endorsement.

Most fishermen who are currently active in the fishery will likely qualify for their particular sub-unit endorsement and species complex and may qualify for all four. This action primarily affects those fishermen who have permits but have not been active in the fishery for the past few years. New participants in any of the sub-units will be allowed, but the cost of entry will increases. Transfer of permits among family members will allow family businesses to continue with no added costs and little disruption when a family member who has a permit leaves the fishery. An oversight committee will help mediate any disputes over permit eligibility that will likely arise.

Conclusion

The proposed action primarily addresses the economic and social problems associated with overcapacity. There are some biological benefits but additional measures are necessary to achieve the Council's long-term goal of 40% static SPR. The Council approved this action as a means to cap fishing mortality initially and assist in moving above the short-term goal of 20% transitional SPR.

Other Possible Options for Action 2:

Option 1. No Action. Do not limit effort in the snapper grouper fishery.

Biological Impacts

Fishing mortality would continue to increase which would result in continued overfishing.

Economic Impacts

Overcapitalization and excess capacity will continue to plague the fishery. This will result in decreased net benefits from the fishery in the long-term. In addition, any gains from current regulatory measures under open access would likely attract new entrants and provide incentives for those already in the fishery to increase harvest capacity.

Social Impacts

Without further limitations on effort in the fishery, the Council will continue to be faced with the problem of excess capacity in the fishery and few controls over the possibility of unlimited shifts in effort within the fishery.

Conclusion

The Council rejected this option because it would not cap fishing mortality, and because overcapitalization and excess capacity would continue.

Option 2. Those that can demonstrate at least 5,000 pounds landings of snapper grouper species annually in two of the last three years (1993-1995) would be limited to a 5,000 pound trip limit of snapper grouper species. Those who landed 1,000 pounds or greater, and who landed less than 5,000 pounds of snapper grouper species annually in two of the last three years (1993-1995) would be limited to a trip limit of 1,000 pounds. This would not replace trip limits presently in place.

Biological Impacts

The additional requirement of some level of landings between 1993 and 1995 would further reduce the number of qualifying vessels. The addition of trip limits would provide a slight reduction in fishing mortality in the short-term thereby contributing to solving some of the biological problems of overfishing. Any reduction in fishing mortality will be slight in the beginning but is expected to increase over time as the requirements for renewal further reduce the number of qualified vessels. The increase in voluntary compliance would also provide additional biological benefits.

Economic Impacts

Table 10 shows the number of vessels that would qualify for snapper grouper species endorsement based on reported landings of 5,000 pounds or greater of snapper grouper species for 1993 – 1995. For a 5,000 pound trip limit endorsement preliminary analysis indicates that 323 vessels would qualify based on reported landings of 5,000 pounds or greater in two of the three years (1993 to 1995). Also, for a 1,000 trip limit endorsement, preliminary analysis indicates that 323 vessels would qualify.

This option would group fishermen into two categories based on their landings of snapper grouper species in those three years. Essentially, all those who qualify for vessel permits will obtain endorsements since they would have demonstrated landings of at least 1,000 pounds of snapper grouper species in two of the three years (1993 – 1995) to obtain their vessel permits.

No financial hardship is expected on fishermen. They would be constrained to the level of landings they have made over those three years.

Social Impacts

This option would create two categories of snapper grouper fishermen and impose trip limits by landings history. Those who landed at least 5,000 pounds or greater are most likely the active fishermen presently in the fishery. The second category are those who fish snapper grouper sporadically, possibly seasonally, and depend upon the fishery less for their livelihood. According to the recently completed survey with a sample of snapper grouper fishermen slightly over half depend upon snapper grouper fishing for 25% or less of their total income. Restricting fishermen in the lower landing category to 1,000 pound trip limit may constrain any plans they have in the future of expanding their fishing effort within the snapper grouper complex.

Conclusion

The Council concluded the proposed action better addresses the economic and social problems, and rejected this option.

Option 3. Snapper Grouper Advisory Panel Proposal: Limit entry to the snapper grouper fishery to those that can demonstrate landings of snapper grouper species between 1993 and 1995:

I. Establish two categories of endorsements for those that qualify for permits:
A. Those that reported landings of 1,000 – 5,000 pounds of snapper grouper species in one of the last three years (1993 – 1995) would be given an endorsement to fish snapper grouper species under a 1,000 pound trip limit.
B. Those that reported landings of over 5,000 pounds of snapper grouper species in one of the last three years (1993 – 1995) would be given an endorsement to fish snapper grouper species under a 5,000 pound trip limit.

II. To qualify for permit renewal:
A. A permit holder must land the poundage requirement for his/her endorsement in one of the three years preceding the application for renewal of permit.
B. A permit will expire automatically if not renewed 60 days after the date that it was up for renewal.

III. Transferability:
A. Permits with endorsements can be transferred to other individuals, but can only be used in the categories that they were originally issued.
B. To receive a new permit to enter the 1,000 – 5,000 pounds category, two existing snapper grouper permits with endorsements in that category should be bought and one retired.
C. To receive a new permit to enter the over 5,000 pounds category, three existing snapper grouper permits in the 1,000 – 5,000 pounds category should be bought and two retired or two existing snapper grouper permits with endorsements in the over 5,000 pounds category should be bought and one retired.

Biological Impacts

The additional requirement of some level of landings between 1993 and 1995 would further reduce the number of qualifying vessels. The addition of trip limits would provide more of a reduction in fishing mortality in the short-term thereby contributing to solving some of the biological problems of overfishing. Any reduction in fishing mortality will be slight in the beginning but is expected to increase over time as the requirements for renewal further reduce the number of qualified vessels. The increase in voluntary compliance would also provide additional biological benefits.

Economic Impacts

For the entire South Atlantic region, Table 22 shows the estimated number of vessels that would qualify for endorsements based on logbook data. For the 1,000 pound trip limit endorsement approximately 756 vessels would qualify. These vessels accounted for practically the total reported landings of snapper grouper species. For a 5,000 pound trip limit endorsement, approximately 323 vessels would qualify.

Table 22. Number of South Atlantic Vessels Qualifying for Endorsements by year and size categories as of August 20, 1996 (Data Source: 1993 – 1995 Logbooks).

YEAR	Number of Vessels			Percentage of Vessels			Number of Vessels Reporting Only No-Fishing
	1,000 - 5,000 lb	>5,000 lb	Total Vessels	Reporting	Permitted	Landings	
1993	337	337	674	25%	26%	98.2	98%
1994	386	370	756	26.3%	27%	98.4	99%
1995	370	355	725	26.3%	25%	98.1	98%

Social Impacts

This option was proposed by the snapper grouper advisory panel and reflects their concern over the immediate impacts on fishermen currently in the fishery. The initial effect of this proposal will not reduce effort, although various aspects of this proposal will reduce effort over time and force fishermen to be active in the fishery or lose their endorsement. One impact of this option may be to artificially increase effort as fishermen attempt to maintain landings to retain their permits. This option also imposes trip limit categories based upon landings history and allows transfer within those categories. To gain a new permit in any of the landings categories one must trade multiple permits for one. This caveat will reduce effort over time and will be an added cost of shifting effort in the fishery.

Conclusion

The Council concluded the proposed action better addresses the economic and social problems, and rejected this option.

Option 4. Modified Snapper Grouper Advisory Panel Proposal:
Limit entry to the snapper grouper fishery to those that can demonstrate certain levels of landings (specified below) of snapper grouper species between 1993 and 1995:

I. Establish two categories of endorsements based on logbook landings:
A. Those that reported landings of 1,000 - 5,000 pounds OR 1,000 - 10,000 pounds (Council to specify) of snapper grouper species in one OR two OR three (Council to specify) of the last three years (1993-1995) would be given a permit to fish snapper grouper species under a 1,000 pound trip limit.
B. Those that reported landings of over 5,000 OR 10,000 pounds (Council to specify) of snapper grouper species in one OR two OR three (Council to specify) of the last three years (1993-1995) would be given a permit to fish snapper grouper species under a 5,000 pound trip limit.
C. Trip limits apply to individual vessels and cannot be combined. Permits are issued to the vessel and one vessel cannot have multiple permits.

II. To qualify for permit renewal:
A. A permit holder must land the poundage requirement for his/her endorsement in one of the three years preceding the application for permit renewal. New entrants will have the catch history of the original vessel which will be used to meet this requirement.

B. A permit will automatically expire if not renewed 60 days after the date that it was up for renewal.

III. Transferability:
A. To immediate family members: Permits with endorsements can be transferred to immediate family members but can only be used in the category for which they were originally issued. The vessel's catch history must also be transferred.
B. To new entrants in the snapper grouper fishery:
i. To receive a new permit to enter the 1,000 - 5,000 OR 1,000 - 10,000 pound category, two existing snapper grouper permits with endorsements in that category must be purchased and exchanged for one new permit. The vessel's catch history must also be purchased and only one of the catch histories may be assigned to the new permit.
ii. To receive a new permit to enter the over 5,000 OR 10,000 pound category, three existing snapper grouper permits in the 1,000 - 5,000 OR 1,000 - 10,000 pound category must be purchased and exchanged for one new permit or two existing snapper grouper permits with endorsements in the over 5,000 OR 10,000 pound category must be purchased and exchanged for one new permit. The vessel's catch history must also be purchased and only one of the catch histories may be assigned to the new permit.
C. To another qualified permit holder: In each case, the vessel's catch history must also be purchased and only one of the catch histories may be assigned to the new permit.
i. The holder of a "high" trip limit permit (5,000 pound trip limit) would be allowed to exchange one high trip limit permit for one "low" (1,000 pound trip limit) trip limit permit.
ii. The holder of a high trip limit permit would be allowed to purchase an additional high trip limit permit by purchasing and exchanging three low trip limit permits or two high trip limit permits for one new high trip limit permit.
iii. The holder of a high trip limit permit would be allowed to purchase a low trip limit permit (while retaining the high trip limit permit) by purchasing and exchanging two low trip limit permits for one new low trip limit permit.
iv. The holder of a low trip limit permit would be allowed to purchase an additional low trip limit permit (while retaining the low trip limit permit) by purchasing and exchanging two low trip limit permits for one new low trip limit permit.
v. The holder of a low trip limit permit would be allowed to purchase a high trip limit permit (while retaining the low trip limit permit) by purchasing and exchanging three low trip limit permits or two high trip limit permits for one new high trip limit permit.

IV. Application Oversight Committee: An Application Oversight Committee will be established upon approval of Amendment 8 to assist the NMFS Regional Director in handling disputes over eligibility for permits or endorsements. The charge of the Committee is to make sure that the criteria pertaining to eligibility or initial allocation were applied to an individual's application in a correct manner. The Committee is to be made up of one state director (or his designee) from each state in the South Atlantic Council's area of jurisdiction and the NMFS Regional Director, or his designee. NOAA General Counsel will have a non-voting advisory role on the Committee.

V. When the number of vessels is reduced to the optimum level (to be determined in the future), the requirement of exchanging 3/2 permits for 1 new permit will be dropped. These changes will be accomplished through a plan amendment.

Biological Impacts

The additional requirement of some level of landings between 1993 and 1995 would further reduce the number of qualifying vessels. The addition of trip limits would provide a slight reduction in fishing mortality in the short-term thereby contributing to solving some of the biological problems of overfishing. Any reduction in fishing mortality will be slight in the beginning but is expected to increase over time as the requirements for renewal further reduce the number of qualified vessels. The increase in voluntary compliance would also provide additional biological benefits.

Economic Impacts

The number that would qualify for endorsements would be the same as the AP proposal (around 756 for the 1,000 pound trip limit and around 370 for the 5,000 pound trip limit) if the council were to choose the 1,000 - 5,000 pound and over 5,000 pound categories in one of the three years (Table 22). Requiring fishermen meet the requirement in two of three years would reduce the numbers to around 718 for the 1,000 pound trip limit and around 354 for the 5,000 pound trip limit. If the requirement had to be met each year the numbers would be around 674 for the 1,000 pound trip limit and 337 for the 5,000 pound trip limit.

Increasing the landings requirement to 1,000 - 10,000 pounds and over 10,000 pounds would decrease the number qualifying for the 5,000 pound trip limit as shown in Table 23. The effects from specifying one of three, two or three or each year are also shown in Table 23. If the requirement is one of the three years up to 756 vessels would qualify for 1,000 pound trip limit and up to 239 for the 5,000 pound trip limit. Changing it to two of three years would qualify up to 725 and 238 for the 1,000 and 5,000 pound trip limits respectively. For all three years, around 718 and 227 vessels would qualify for the 1,000 pound and 5,000 pound trip limits respectively.

Table 23. Number of South Atlantic Vessels Qualifying for Endorsements (1,000 – 10,000 lb. and > 10,000 lb.) (Data Source: 1993 – 1995 Logbooks).

YEAR	Number of Vessels			Percentage of Vessels			Number of Vessels Reporting Only No-Fishing
	1,000 - 10,000 lb	>10,000 lb	Total Vessels	Reporting	Permitted	Landings	
1993	469	205	674	25%	74.4	98.2	960
1994	518	238	756	26.3%	86.0	98.4	1305
1995	486	239	725	26.3%	94.6	98.1	1420

Social Impacts

This option is slightly more restrictive than the previous by requiring verification of landings through logbook reporting and allowing normal transfer to family members only. Others must trade multiple permits to gain entry into the same or other landing limit categories.

Conclusion

The Council concluded the proposed action better addresses the economic and social problems, and rejected this option.