FINAL

AMENDMENT 6, REGULATORY IMPACT REVIEW, INITIAL REGULATORY FLEXIBILITY ANALYSIS AND ENVIRONMENTAL ASSESSMENT

FOR THE

SNAPPER GROUPER FISHERY OF THE SOUTH ATLANTIC REGION

DECEMBER 1993

South Atlantic Fishery Management Council
1 Southpark Circle, Suite 306
Charleston, South Carolina 29407-4699
(803) 571-4366
FAX (803) 769-4520

A publication of the South Atlantic Fishery Management Council pursuant to National Oceanic and Atmospheric Administration Award Number NA47FC0006

FINAL

AMENDMENT 6,
REGULATORY IMPACT REVIEW,
INITIAL REGULATORY FLEXIBILITY DETERMINATION
AND
ENVIRONMENTAL ASSESSMENT

FOR THE

SNAPPER GROUPER FISHERY
OF THE SOUTH ATLANTIC REGION

prepared by the
South Atlantic Fishery Management Council

DECEMBER 1993

Financial assistance for producing this Amendment was provided by grant funds from the National Marine Fisheries Service, National Oceanic and Atmospheric Administration, under Public Law 94-265, the Magnuson Fishery Conservation and Management Act.

TABLE OF CONTENTS

1.0 PURPOSE AND NEED

Amendment 6 to the Snapper Grouper Fishery Management Plan was developed to rebuild the snowy grouper, golden tilefish, speckled hind, warsaw grouper, misty grouper, and yellowedge grouper resources. The South Atlantic Fishery Management Council is concerned about the overfished status of these resources, and is proposing to phase-in quotas over a three year period beginning January 1994. Commercial trip limits, recreational bag limits, and an experimental closed area are 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.

The deep water fishery targets primarily snowy grouper or golden tilefish using bottom longlines and vertical hook-and-line (bandit) gear. Incidental catches of speckled hind and warsaw, misty, and yellowedge groupers occur in this fishery.

The stock status of some of these species, and the interactions of fishermen among these and other fisheries, is poorly understood due to severely limited data. The Council has evaluated all readily available information in designing the management measures contained in this amendment. The framework procedure contained in the fishery management plan will be used to monitor and adjust management as necessary.

The original management plan (SAFMC, 1983a) included a Final Environmental Impact Statement. Amendments 4 and 5 included Environmental Assessments.

Management Objectives

Objectives addressed in this amendment are presented below. See Appendix A for a complete listing of objectives from the Snapper Grouper Fishery Management Plan.

- Prevent overfishing in all species.
- Collect necessary data.
- Promote orderly utilization of the resource.
- Provide for a flexible management system.
- Minimize habitat damage.
- Promote voluntary compliance.

Issues/Problems to be Considered

Issues/problems addressed in this amendment are as follows. See Appendix A for a complete listing of issues/problems from the Snapper Grouper Fishery Management Plan.

Overfishing

- What is the best approach to prevent overfishing of target species?
- What should be done to manage minor species?

Data

- What base year(s) should be used to calculate quotas?
- How should the quotas be monitored?
- How will potential shifts in effort be documented?
- How will research conducted on an experimental closed area aid in management?

Orderly Utilization (includes Socio-Economic Impacts)

- Should the quotas be phased in?
- When should the fishing year(s) begin?
- What should be done about potential shifts in effort?
- Should action be taken to avoid a "derby" fishery?
- What provisions should be made for the recreational fishery?

Flexible Management

- Should the quotas be modified during the phase-in?
- What is the duration of the experimental closed area?

Habitat Damage

- What should be done to protect habitat?
- What are the ecological relationships between reef species and bottom habitat in an unfished, experimental closed area?

Compliance

- What approach will ensure voluntary compliance?

History of Management

The Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region was prepared by the South Atlantic Fishery Management Council (SAFMC, 1983a) to address overfishing in 13 species and to establish a procedure for preventing overfishing in other species. Amendment 1 (SAFMC, 1988) prohibited use of trawl gear in the snapper grouper fishery to prevent habitat damage and overfishing. Amendment 2 (SAFMC, 1990a) protected jewfish and Amendment 3 (SAFMC, 1990b) established a management program for wreckfish. A comprehensive expansion of the snapper grouper management program was accomplished in Amendment 4 (SAFMC, 1991a) and wreckfish individual transferable quotas (ITQs) were implemented in Amendment 5 (SAFMC, 1991b). Other management adjustments and details for prior amendments are found in
Appendix B.

Issues/Problems Requiring Amendment 6

Species in a documented state of overfishing, that is with spawning stock ratios (SSR) less than 30%, include the following:

- **Snowy Grouper**
- **Golden Tilefish**
- **Speckled Hind**
- **Warsaw Grouper**

Spawning stock ratio is a measure of the reproductive potential of a fish stock and can be thought of as the ratio of the spawning stock in an exploited fishery compared to the spawning stock in an unfished state. Experience indicates that, for most species that have been studied, resource problems occur when the ratio decreases below 30%.

Species thought to be overfished but for which data are insufficient to calculate SSRs include:

- **Misty Grouper**
- **Yellowedge Grouper**

The original Snapper Grouper Fishery Management Plan (SAFMC, 1983a) established a management program for the snapper grouper resource in the south Atlantic which included minimum sizes for six species identified as being overfished. The first assessment (1990) of the status of species in the snapper grouper fishery was prepared by the National Marine Fisheries Service, Beaufort Laboratory, with input from the South Atlantic Council's Plan Development Team (PDT), and presented to the Council in August 1990. This assessment became the basis for Amendment 4 (SAFMC, 1991a).

The 1991 assessment prepared by the National Marine Fisheries Service was presented to the Council in June 1991 and consisted of the following: (1) Survival of released reef fish: A summary of available data (Parker, 1991); (2) The relationship between spawning season and landings of selected reef fishes (Burton, 1991) ; and (3) South Atlantic snapper grouper assessment 1991 (NMFS, 1991). This assessment confirmed the status of the stocks as indicated in the 1990 report and represents the biological information supporting Amendment 6. The 1991 assessment concluded that:

> "For most species, overall regional estimates of SSR and present Y/R predominantly reflect values resulting from recreational fishing as reported in the 1990 assessment. The estimates are of course affected more by numbers of fish caught than by weight caught and given that recreational fisheries, by and large, take smaller fish of a species, a recreational fishery of less poundage than a simultaneous commercial fishery can influence SSR and Y/R values more. In particular, inclusion of the MRFSS data, with the associated very large, non-headboat recreational catches, often had a dramatic effect on region wide estimates of SBR.
>
> Overall, nine of 19 species have SSR values of less than 0.30, the criterion value designating overfishing. Another four species have values of from 0.34 to 0.30, very close to the criterion level, while 16 of 19 species have SSR values at 0.38 or less. Of the remaining three species the SSR value for greater amberjack, 0.79, is highly suspect because of the unusual distribution of samples sizes."

The level of overfishing and need for management are supported by the 1990 conclusions of the NMFS/Plan Development Team report. Based on the overfished status of many species in the management unit, the PDT recommended establishment of reef fish reserves equal in area to 20% of the "live bottom" along the southeastern United States in conjunction with the 20% spawning stock ratio. If the level of spawning stock ratio was increased or decreased, then the corresponding percentage of area in the reserve would change accordingly (PDT, 1990). The Council conducted scoping meetings on the concept and use of reserves in fisheries management. The Council reviewed comments received during the scoping meetings and requested NMFS convene a scientific panel to evaluate this concept.

The National Marine Fisheries Service presented a stock assessment (Huntsman et al., 1992) to the Council in June 1992 and confirmed the status of the stocks as indicated in the 1991 report, with several species having different spawning stock ratio values. This assessment represents further biological information supporting Amendment 6. The 1992 assessment concluded that:

> "SSR increased for eight of the 19 species studied, decreased for nine, and remained the same for two. Five species apparently changed state relative to overfishing: black sea bass, yellowtail snapper, gray triggerfish and tilefish displayed SSR values less than 0.3 in the new analysis, and the SSR for gray snapper now appears greater than 0.30."

Amendment 6 originally contained 35 actions addressing gear regulations, minimum size limits, bag limits, and other management adjustments. The Council was concerned about the deep water species and red porgy, given their severely overfished stock status. At the August 1993 meeting, the Council separated management of the deep water component and red porgy into Amendment 6 and the balance of proposed measures as Amendment 7.

Additional red porgy information was reviewed at the November 1993 meeting. The SSR increased from 8%, based on the 1992 stock assessment, to 22% based on using more recent maturity schedule information. The quota proposed for red porgy would have been 671,417 pounds and it was anticipated that this quantity would have been caught by early September, assuming that 1994 monthly catches were similar to 1992. Amendment 6 did not include a trip limit and it is possible that there may have been some targeting of red porgy which would have resulted in an earlier closure. Once the quota was filled, commercial fishermen would not have been able to possess red porgy. Fishermen would probably have continued to fish but targeting vermilion and discarding red porgy, the majority of which would have been dead. Given the uncertainty about the stock status of red porgy and the potential for high discards, the Council decided to remove consideration of red porgy management from Amendment 6. Red porgy management options will be included in the Amendment 7.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

Section 2.0 summarizes Section 4.0 Environmental Consequences. Matrices are used to contrast each of the management alternatives with the issues/problems. It is hoped that each matrix will provide the reader with an overview of the alternatives considered and resulting impacts for each management measure.

The Council's objective of "orderly utilization" includes social and economic considerations. The objective "flexible management" is not included in the matrices as it only applies to the quota phase-in, experimental closed area, and ongoing monitoring.

Management measures (proposed actions) are intended to address the management objectives and issues discussed above. Each management measure has a number of alternatives that have been considered by the Council. The following tables summarize the alternatives and how they address the problems/issues identified by the Council. Management alternatives are presented in the rows and issues/problems in the columns.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES
(Effects of Alternatives on the Issues/Problems)

ACTION 1. QUOTA MANAGEMENT

ISSUES/PROBLEMS

Alternatives	Overfishing	Data	Socioeconomic Impacts	Compliance	Habitat Impacts
Quota System	Solves over-fishing problem	No effect	Short-term revenue loss Long-term positive	Dockside enforcement	Reduces damage
Size Limits	Increases mortality	No effect	Decrease revenue	Low due to wastage	No effect
Prohibit Harvest	Solves the problem	No effect	Decrease revenue	Low due to wastage	Eliminates gear damage
Closed Area	Solves the problem	No effect	Localized revenue decrease	Difficult to enforce	Eliminates gear damage
ITQ/SMZ/ Trip Limits	Solves the problem	Unavailable Collection costs	Some adverse effects	Difficult to enforce	Benefits some areas (SMZ)
TAC/No Fishing	Solves for some species	No effect	Decrease revenue	Difficult to enforce	May reduce damage
Gear Prohibition	Effects unknown	Unavailable	Large effects on prohibited gear	Difficult to enforce	May reduce damage
Tile Size Limit	Effects unknown	Unavailable	May reduce short-term revenue	Dockside enforcement	No effect
TAC by Species	Solves the problem	Unavailable	Large adverse effects	Difficult to enforce	May reduce damage
Gear/ Area	Effects unknown	No effect	Adverse effects on longliners	Difficult to enforce	Reduces damage
Exempt Fishermen/ Area	No effect	No effect	Benefits some fishermen	Fair	No effects

SUMMARY OF ENVIRONMENTAL CONSEQUENCES
(Effects of Alternatives on the Issues/Problems)

ACTION 2. REDUCTION BASE YEAR:

ISSUES/PROBLEMS

Alternatives	Overfishing	Data	Socioeconomic Impacts	Compliance	Habitat Impacts
Use 1992 logbook data	No effect	Best available	Minimizes effects	Better compliance	No effect
Use 1992 data	No effect	Preliminary data	Adverse effects	Less compliance	No effect
Avg. 90-92 without unclassified groupers	No effect	Not accurate	Adverse effects	Less compliance	No effect
1992 without unclassified groupers	No effect	Not accurate	Adverse effects	Less compliance	No effect
Unclassified based on logbook	No effect	Not accurate	Adverse effects	Less compliance	No effect
1990-92 with unclassified groupers	No effect	Not accurate	Some adverse effects	Less compliance	No effect

ACTION 3. PHASE-IN:

ISSUES/PROBLEMS

Alternatives	Overfishing	Data	Socioeconomic Impacts	Compliance	Habitat Impacts
Equally over three years	No effect	No effect	Minimizes effects	Better compliance	Reduces damage
15%, 15% & 10%	No effect	Potential problem	More immediate effects	Better compliance	Reduces damage
100% in year one	No effect	No effect	Large immediate effects	Less compliance	Reduces damage

SUMMARY OF ENVIRONMENTAL CONSEQUENCES
(Effects of Alternatives on the Issues/Problems)

ACTION 4. FISHING YEAR:

ISSUES/PROBLEMS

Alternatives	Overfishing	Data	Socioeconomic Impacts	Compliance	Habitat Impacts
January 1- December 31	No effect	Minimizes costs	Minimizes effects	Better compliance	No effect
April 16 - April 15	No effect	Increases difficulty	Adverse effects	Less compliance	No effect
February 15 - February 14	No effect	Increases difficulty	Adverse effects	Less compliance	No effect
Other start	No effect	Unknown	Unknown effect	Unknown	No effect
Two: Jan 1 & July 1	No effect	Increases costs	Minimizes effects	Unknown	No effect

ACTION 5. SPECKLED HIND AND WARSAW GROUPER:

ISSUES/PROBLEMS

Alternatives	Overfishing	Data	Socioeconomic Impacts	Compliance	Habitat Impacts
One of each species/trip but prohibit sale	Helps solve the problem	No effect	Minimal adverse effect	Good compliance	No effect
No action	Does not eliminate problem	No effect	No effect	No effect	No effect
No retention/SMZ & size limit	May solve the problem	No effect	Some adverse effect	Less compliance	No effect
Allow 1 of either species/person but prohibit sale	Does not eliminate problem	No effect	Some adverse effect	Less compliance	No effect
Prohibit retention	May solve the problem	No effect	Some adverse effect	Less compliance	No effect

SUMMARY OF ENVIRONMENTAL CONSEQUENCES
(Effects of Alternatives on the Issues/Problems)

ACTION 6. MINOR SPECIES/EFFORT SHIFTS:

ISSUES/PROBLEMS

Alternatives	Overfishing	Data	Socioeconomic Impacts	Compliance	Habitat Impacts
Allow retention/ 100% logbook	May allow in short-term	Collect needed data	Minimizes effects	Increases compliance	No effect
Quotas based on bycatch target levels	Solves problem	High costs	Major adverse effects	Difficult to enforce	Reduces damage
Prohibit retention	Increases mortality	Lose data Difficult	Adverse effects	Less compliance	No effect
Acknowledge some species overfished	Allows over long-term	No effect	Minimizes short-term effects	No effect	No effect
Gear regulations	Unknown	High cost	Some adverse effects	No effect	May reduce damage
Effort limitation	May solve problem	Data not available	Maximize efficiency	Unknown	Reduces damage

ACTION 7. *OCULINA* HAPC AS AN EXPERIMENTAL CLOSED AREA:

ISSUES/PROBLEMS

Alternatives	Overfishing	Data	Socioeconomic Impacts	Compliance	Habitat Impacts
Establish experimental closed area	May solve some of the problem	Data & research costs	Limited localized effects	Moderate enforcement costs	Eliminates gear damage in area
No action	Does not eliminate problem	No effect	No short-term effect	No effect	Continues habitat damage
Establish other experimental closed areas	Better solve the problem	Data & research costs	Increase short-term effects locally	Moderate enforcement costs	Eliminates gear damage in area
Close portion of *Oculina* bank	Minor effects	Data & research costs	Lessens short-term effects	Moderate enforcement costs	Eliminates gear damage in area

SUMMARY OF ENVIRONMENTAL CONSEQUENCES
(Effects of Alternatives on the Issues/Problems)

ACTION 8. COMMERCIAL BYCATCH:

ISSUES/PROBLEMS

Alternatives	Overfishing	Data	Socioeconomic Impacts	Compliance	Habitat Impacts
Bycatch of 300 lb each	No effect	Data collection costs	Positive effects	Better compliance	No effect
100 lb each	No effect	Data collection costs	Large adverse effects	Less compliance	No effect
1-fish limit in other fisheries	No effect	No effect	Large adverse effects	Less compliance	No effect
Prohibit retention in other fisheries	No effect	No effect	Large adverse effects	Difficult to enforce	No effect
Number of fish equivalent to 200 lb/trip	No effect	No effect	Large adverse effects	Easier to enforce	No effect

ACTION 9. SNOWY GROUPER COMMERCIAL TRIP LIMIT:

ISSUES/PROBLEMS

Alternatives	Overfishing	Data	Socioeconomic Impacts	Compliance	Habitat Impacts
Trip limit of 2,500 pounds	No effect	No effect	Positive effects	Better compliance	No effect
No trip limit	No effect	No effect	Large negative effects	No effect	No effect
1,000 lb trip limit	No effect	No effect	Adverse effects	Less compliance	No effect
Endorsement system like Gulf red snapper	No effect	Increases costs	Effects unknown	Effects unknown	No effect
Variable trip limit by area	No effect	No effect	Effects unknown	Effects unknown	No effect

SUMMARY OF ENVIRONMENTAL CONSEQUENCES
(Effects of Alternatives on the Issues/Problems)

ACTION 10. GOLDEN TILEFISH COMMERCIAL TRIP LIMIT:

ISSUES/PROBLEMS

Alternatives	Overfishing	Data	Socioeconomic Impacts	Compliance	Habitat Impacts
Trip limit of 5,000 pounds	No effect	No effect	Positive effects	Better compliance	No effect
No trip limit	No effect	No effect	Large negative effects	No effect	No effect
2,000 lb trip limit	No effect	No effect	Adverse effects	Less compliance	No effect
3,000 lb trip limit	No effect	No effect	Adverse effects	Less compliance	No effect

ACTION 11. RECREATIONAL BAG LIMIT:

ISSUES/PROBLEMS

Alternatives	Overfishing	Data	Socioeconomic Impacts	Compliance	Habitat Impacts
Bag limit-include all tilefish	May solve the problem	No effect	Minimizes effects	Voluntary compliance	No effect
No action	Does not solve problem	No effect	No short-term effect	No effect	No effect
Prohibit retention	Increases mortality	No effect	Large negative effect	Difficult to enforce	No effect
Allow 200 lb/trip	May solve the problem	No effect	Some negative effect	Difficult to enforce	No effect
Allow 1-fish/person	May solve the problem	No effect	Large negative effect	Less compliance	No effect
Include all tilefish, 1 snowy grouper & 1 golden tilefish	May solve the problem	No effect	Large negative effect	Less compliance	No effect

SUMMARY OF ENVIRONMENTAL CONSEQUENCES
(Effects of Alternatives on the Issues/Problems)

ACTION 12. TRACKING TOTAL QUOTAS BY SPECIES:

ISSUES/PROBLEMS

Alternatives	Overfishing	Data	Socioeconomic Impacts	Compliance	Habitat Impacts
Monitor quotas with 100% logbook coverage	Solves the problem	High data costs	Minimizes effects	Apply to all commercial users	No effect
Use existing data collection system	Will not solve problem	High data costs	May result in negative effects	No effect	No effect
Use a receipt system	May solve problem	High data costs	Minimal costs	May impact small users	No effect
Use a fish tag system	May solve problem	Minimal data costs	High cost to fishermen	May impact small users	No effect

3.0 AFFECTED ENVIRONMENT

The following information contains a description of the existing environment for the snapper grouper fishery. The original Fishery Management Plan (SAFMC, 1983a), original Source Document (SAFMC, 1983b), Amendment 4 (SAFMC, 1991a), and the draft update of the Source Document (SAFMC, in prep.) contain additional information on the fishery and utilization patterns. Appendix D contains the Council's habitat concerns. Table 1 (Section 11.0) lists species in the management unit according to our knowledge about their spawning stock ratios and Table 2 (Section 11.0) shows the actual SSR values.

A. 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 a 30% spawning stock biomass per recruit (SSBR; equivalent to SSR) population level, relative to the SSBR that would occur with no fishing (SAFMC, 1990b).

B. 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.

(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 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.

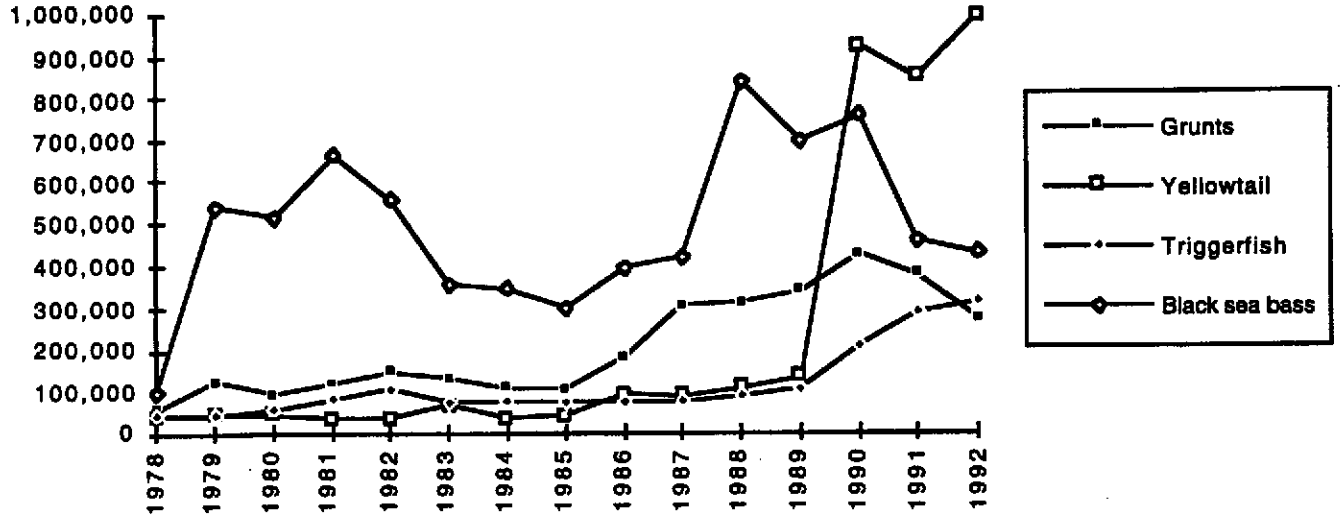
C. Commercial Fishery

In general, total landings, mean size of fish captured, and nominal catch per trip in the commercial snapper grouper fishery have declined as indicated in the charts that follow. Also, the commercial sector has shifted offshore and changed target species as traditional species became less abundant. In addition, the

commercial fishery developed with relatively inefficient hook-and-line gear and then switched to more efficient longline and trap gear in order to catch enough fish to operate profitably. In a relatively unexploited fishery, the fish population is high, and use of relatively inefficient hook-and-line gear can result in a sufficient harvest to make a trip economically feasible. However, as exploitation continues, the fish population declines and the poundage produced by hook-and-line gear becomes uneconomical. Fishermen switch to gear that is more efficient at harvesting sufficient pounds when the fish population is reduced such as longlines and trap gear. This switch in gear is an indication of high exploitation.

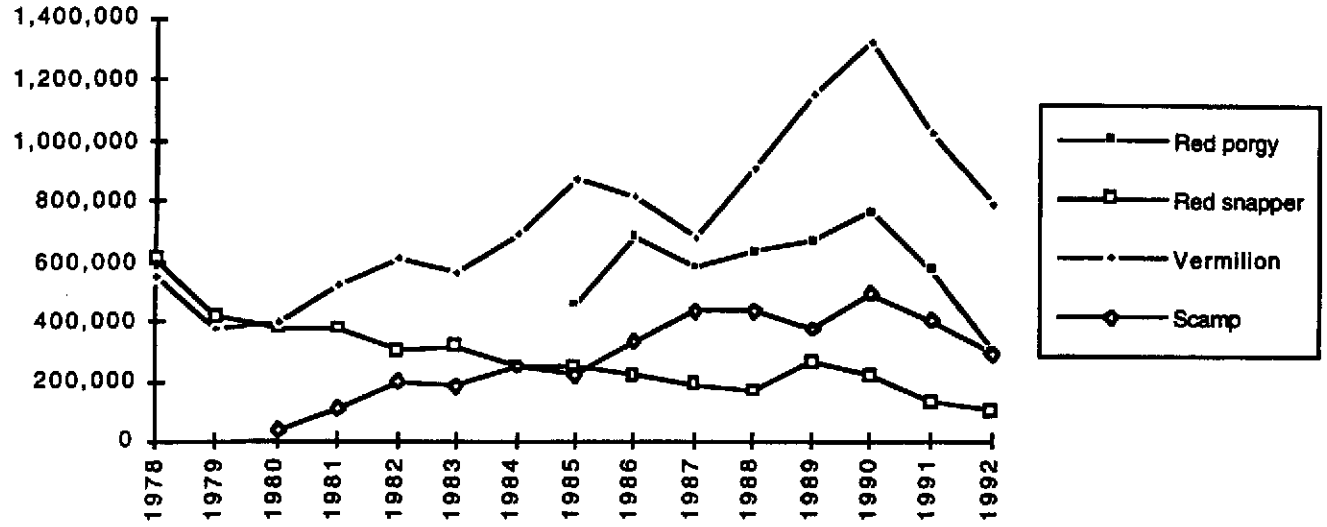
Catches (in pounds) of shallow depth species from 1978 through 1992 are shown below (Source: NMFS & States; see Appendix F). While yellowtail snapper and triggerfish catches have increased since 1989, catches of black sea bass and grunts have declined. Triggerfish were not targeted until recently, and are an example of a species shift due to declines in abundance of more popular species. Yellowtail snapper also increased in 1990 resulting from a redirection of effort.

COMMERCIAL HARVEST (POUNDS) OF SHALLOW DEPTH SPECIES



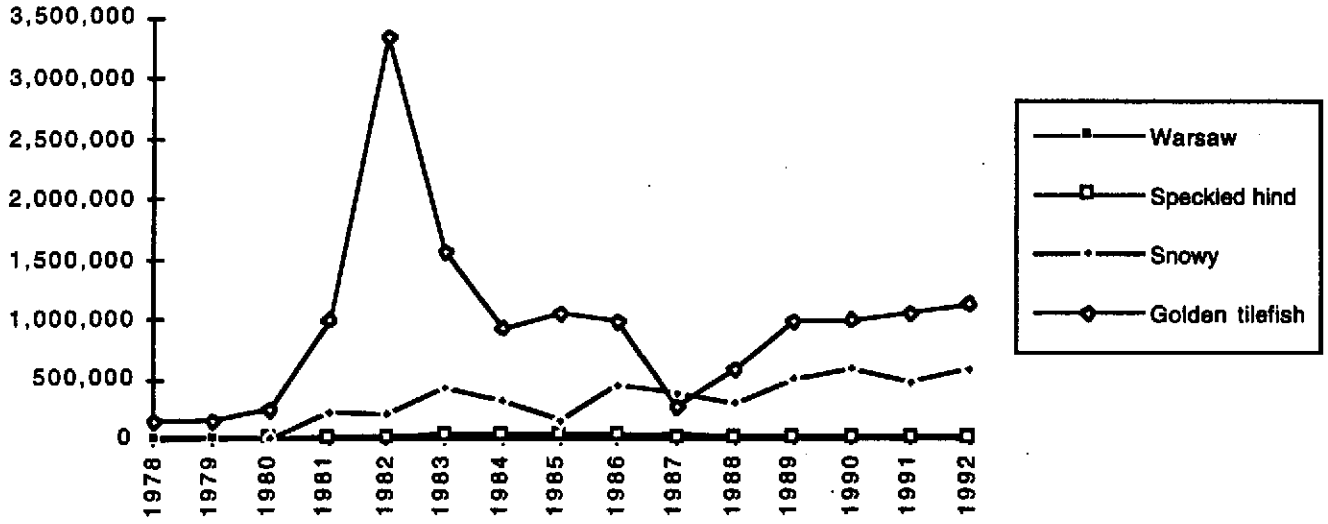
Catches (in pounds) of mid/shallow depth species from 1978 through 1992 are shown on the next page (Source: NMFS & States; see Appendix F). Catches of red porgy, red snapper, vermilion snapper, and scamp grouper have all declined in recent years.

COMMERCIAL HARVEST (POUNDS) OF MID/SHALLOW DEPTH SPECIES



Catches (in pounds) of deep water species from 1978 through 1992 are shown below (Source: NMFS & States; see Appendix F). Catches of golden tilefish peaked in 1982 at almost 3.5 million pounds but have remained around 1 million pounds in recent years. Snowy grouper catches have fluctuated around one-half million pounds recently, and catches of warsaw and speckled hind are rare.

COMMERCIAL HARVEST (POUNDS) OF DEEP WATER SPECIES



Commercial landings and value for 1978 through 1992 are available by state but contain confidential data. Council members and staff have access to confidential data and have viewed this detailed information.

Such detailed information cannot be included in this amendment, but the tables in Appendix F show a summary of landings and value for all states in the south Atlantic region.

D. Recreational Fishery

Recreational total catches and catch rates for traditional snapper grouper species, such as red snapper, vermilion snapper, and several of the groupers, have declined substantially during the 1980s. The average size of vermilion snappers, black sea bass, and groupers is quite small in recreational catches. The small average size of recreational fish is partly due to the habit of some species to stratify in size by depth. Another important reason is that total inshore fishing pressure is so high that fish are not allowed to grow to optimum size before capture. As soon as fish reach legal size they are caught. This is an example of growth overfishing.

Recreational catches from 1991 are shown in Table 3 (Section 11.0). Data on recreational catches and impacts of size limits from Amendment 4 are shown in Table 4 (Section 11.0). A comparison of recreational and commercial catches appears as Table 5 (Section 11.0). The following table compares the proportion of total catch harvested by recreational and commercial fishermen for two time periods for North Carolina, South Carolina, and Georgia combined, and for Florida separately:

COMPARISON OF RECREATIONAL & COMMERCIAL CATCHES

	1988/89		1990/91	
	Million Pounds	Percentage	Million Pounds	Percentage
Commercial				
NC/SC/GA	7.6	62%	8.0	50%
Florida	4.6	38%	8.0	50%
Total	12.2	59%	16.0	77%
Recreational				
MRFSS	6.7	78%	3.6	73%
Headboat	1.9	22%	1.3	27%
Total	8.6	41%	4.9	23%
Grand Total	20.8		20.9	

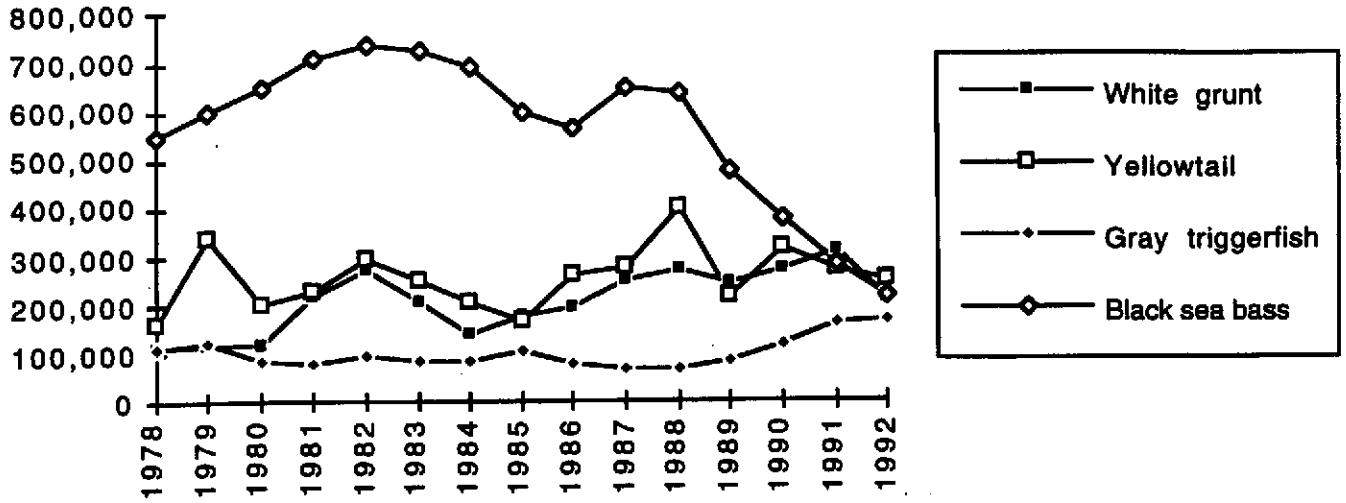
MRFSS (Marine Recreational Fishing Statistical Survey conducted by the NMFS) data are 1986 numbers of fish multiplied by 1989 headboat average weight of fish. Pounds in 1990/91 are millions of pounds commercial for 1990 (latest year available for catches by gear); MRFSS figures are 1991 catches.

Landings and average weight from the headboat fishery are shown over the next several pages (Data supplied by R. Dixon, NMFS Beaufort Lab). Data from 1978-80 for warsaw grouper, scamp, speckled hind, and snowy grouper are not available; black sea bass includes minor amounts (<5%) of bank sea bass

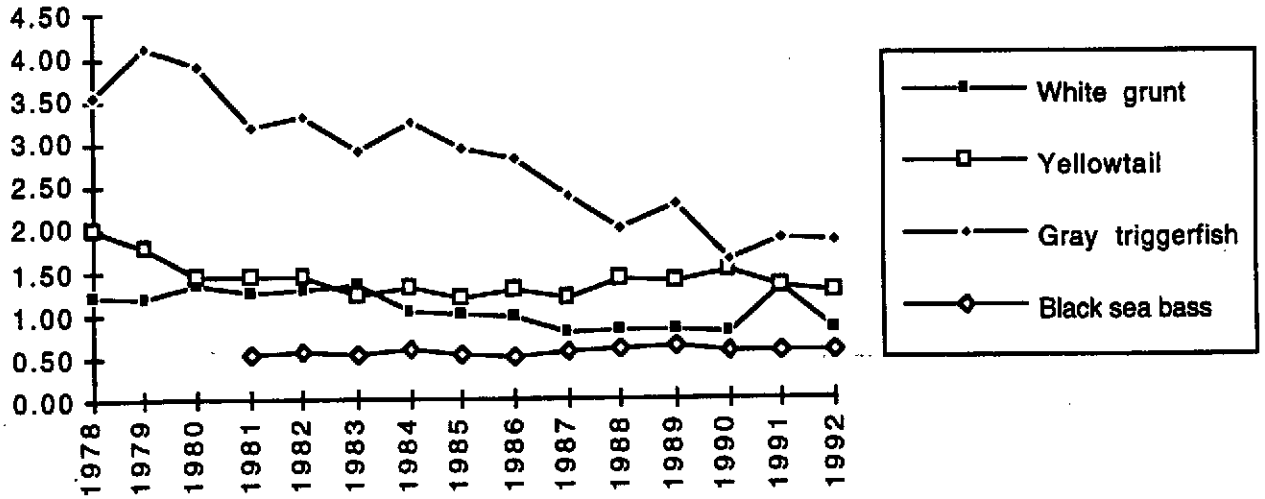
in 1978, 1979, and 1980; and yellowtail catches north of Fort Pierce, Florida were not included in 1978-1980.

Headboat catches of black sea bass have declined from 1982 through 1992 while the average weight declined slightly. Catches for the remaining species have fluctuated but remained relatively constant. The average weight of gray triggerfish has declined from a little over 4 pounds in 1979 to less than 2 pounds in 1992. The average weight of yellowtail declined slightly, while the average weight of black sea bass remained relatively constant.

HEADBOAT HARVEST (POUNDS) OF SHALLOW DEPTH SPECIES

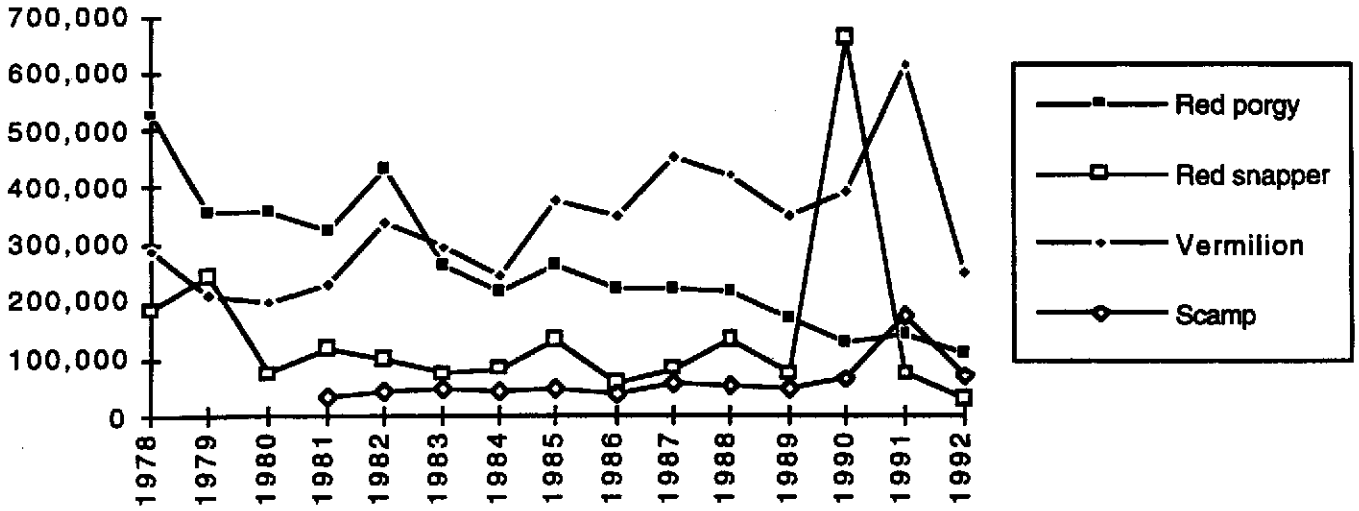


AVERAGE WEIGHT (POUNDS) OF SHALLOW DEPTH SPECIES IN HEADBOAT CATCHES

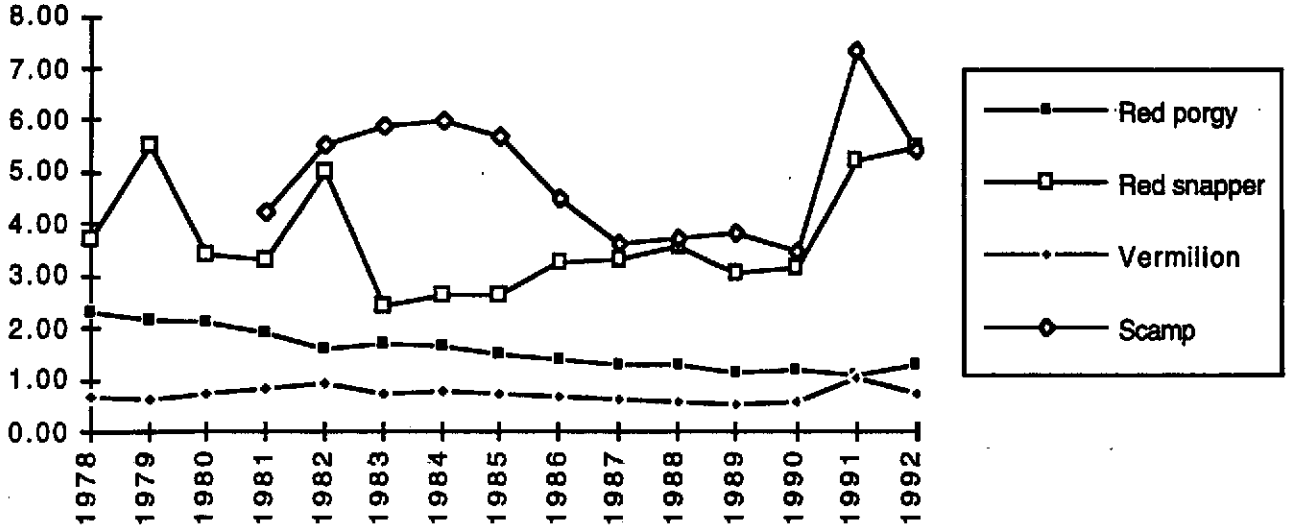


Headboat catches and average weight of red porgy have declined over time. Catches of vermilion snapper increased through 1991 but, declined significantly in 1992; average size has been relatively constant, with a slight increase in 1991. Red snapper catches have been relatively constant with the exception of a large increase in 1990; average weight has varied between 2.5 and 5.5 pounds. Catches of scamp have been constant with a slight increase in 1991; average weight has been variable.

HEADBOAT HARVEST (POUNDS) OF MID-DEPTH SPECIES

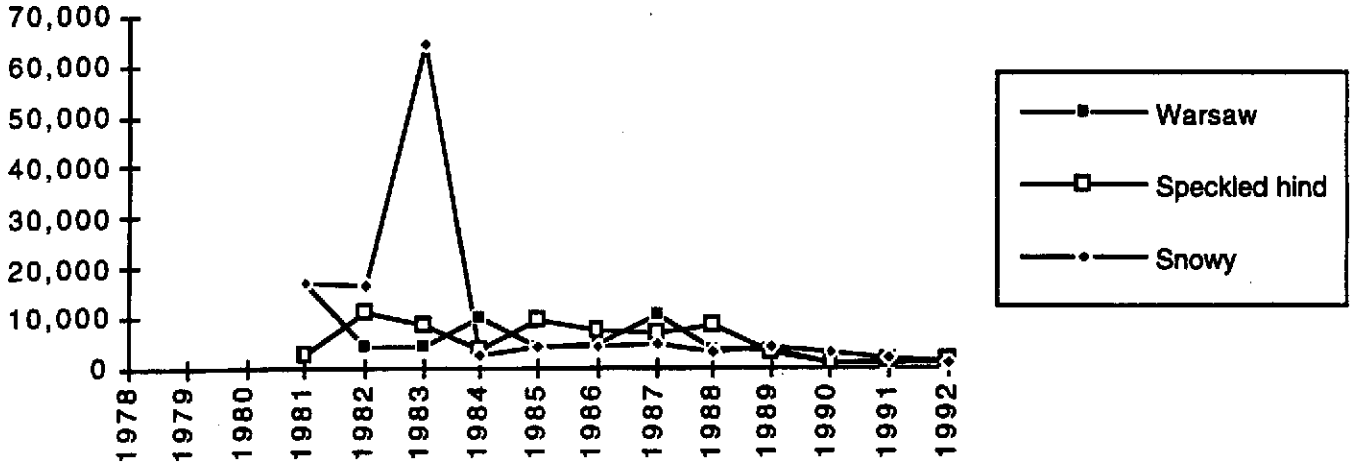


AVERAGE WEIGHT (POUNDS) OF MID-DEPTH SPECIES IN HEADBOAT CATCHES

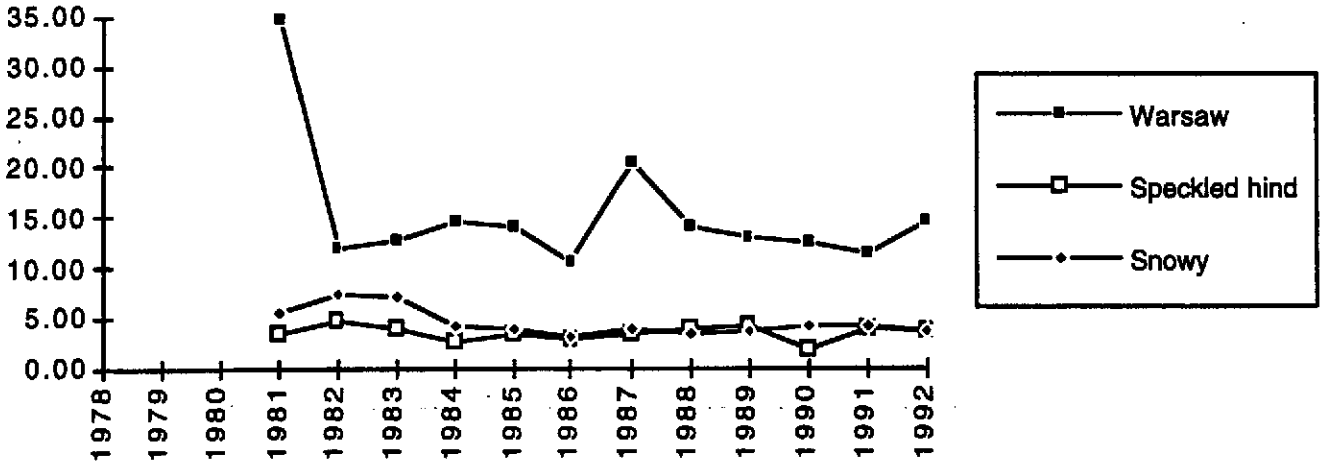


Headboat catches of speckled hind and warsaw grouper have been constant and for the most part less than 10,000 pounds. Average weight of warsaw grouper declined from a high of 35 pounds in 1981 to about 15 pounds in 1992, while the average weight of speckled hind has been relatively constant. Snowy grouper catches increased from less than 20,000 pounds in 1982 to approximately 65,000 pounds in 1983, and then declined to less than 5,000 pounds annually. Average weight declined from slightly above 5 pounds in 1982/83 to between 4 and 5 pounds annually.

HEADBOAT HARVEST (POUNDS) OF DEEP WATER SPECIES



AVERAGE WEIGHT (POUNDS) OF DEEP WATER SPECIES IN HEADBOAT CATCHES



E. Status of the Stocks

Table 2 (Section 11.0) shows SSRs, where estimates are available, for key species in the management unit from each of the three stock assessments. (See discussion under "Problems Requiring Amendment 6" for more information on status of the stocks.) Many highly prized species in the snapper grouper complex are overfished as indicated by their SSRs. Examples include red snapper, vermilion snapper, black sea bass, and several groupers.

Spawning stock ratios (SSRs) from the 1992 assessment which includes data through 1990, show that 12 of 19 species have SSR values of less than 30%; five species have values between 30% and 51%; two have SSR values of 58% and 61% (Table 2; Section 11.0). SSR values for species included in this amendment are as follows:

Snowy Grouper	15%
Golden Tilefish	21%
Speckled Hind	12%
Warsaw Grouper	6%

Presently, 12 species (Table 2; Section 11.0) are in a documented state of overfishing. Fifteen other species are thought to be overfished. Recreational fishing pressure by private boats will likely continue to increase as the coastal population continues to grow in the south Atlantic.

The virtual absence of larger fish in the near shore waters of the management unit as well as the shifting of target species by both recreational and commercial sectors are other indicators that many, especially the highly prized, traditional species (red snapper, gag grouper, scamp, etc.) are under intense fishing pressure and require management.

4.0 ENVIRONMENTAL CONSEQUENCES

A. Introduction

This section is divided into two major parts. The first part addresses management of the deep water complex and presents management measures and alternatives considered by the Council. The second depicts the consequences of management which include items C through F.

B. Management of the Deep Water Complex

In Amendment 4 the Council considered a number of options for managing the deep water complex, ranging from a total closure for one generation time (approximately 20 years), to allowing a small directed fishery for snowy grouper with some bycatch allowance for other deep water groupers and tilefish. The deep water fishery consists of speckled hind (SSR=12%), warsaw grouper (SSR=6%), snowy grouper (SSR=15%), misty grouper (SSR unknown), yellowedge grouper (SSR unknown), and golden tilefish (SSR=21%). In this amendment, the Council evaluates quota management and area/time closures due to the continued low SSR values; ITQ management will be evaluated in a future amendment. (See Amendment 4, pages 32-36 and 40-41 for background on non-limited entry options).

ACTION 1. ESTABLISH A QUOTA MANAGEMENT SYSTEM

Regulate the deep water complex by setting up separate total allowable catch (TAC) levels for golden tilefish and snowy grouper. Adjust the annual TACs downward by reserving a portion of each based on the best estimate of the bycatch in the golden tilefish and snowy grouper fisheries. Phase in the necessary golden tilefish and snowy grouper reductions over three years with Year 1 being the 1994 fishing year. See Action 3 for a discussion of the phase-in and Action 8 for a discussion of the bycatch allowance.

Discussion

Separate TAC levels will be established for golden tilefish and snowy grouper. An estimate of the incidental catch or mixed catch not in a directed fishery for golden tilefish or snowy grouper will be calculated and deducted from the TAC prior to the start of the fishing year. The best estimate of the snowy grouper incidental catch is 96,000 pounds and the best estimate of the golden tilefish catch is 65,000 pounds (See Action 8). Once the directed quotas are filled, continued landings would be permitted under the bycatch allowances established by Action 8 limits even if the harvest exceeds TAC. The Council will evaluate the bycatch estimate annually and adjust the directed quota to prevent exceeding TAC.

Establishing a quota management system for golden tilefish and snowy grouper and reducing mortality by 40% will achieve a 30% spawning stock ratio. This will result in rebuilding these two valuable resources from an overfished to non-overfished status, thereby ensuring long-term recruitment and production. This will provide a stable fishery for recreational and commercial fishermen and maintain optimum yield from this common property resource. The Council chose to take this action after determining it was the most beneficial management option for the deep water complex and the users of the resource.

The following are proposed options to Action 1 that were rejected.

Rejected Options For Action 1

Rejected Option 1. Establish size limits.

Discussion

This option was rejected because survival of released fish in the deep water complex is expected to be very low due to mortality from the pressure difference as fish are brought to the surface. Thus, establishment of minimum size limits would not result in any reduction in fishing mortality. In fact, fishing mortality and wastage would increase due to mortality induced by culling undersized fish.

Rejected Option 2. The harvest or possession of the following species is prohibited: speckled hind, warsaw grouper, snowy grouper, misty grouper, yellowedge grouper, and golden tilefish. Include blueline tilefish and sand tilefish for enforcement purposes.

Discussion

This option was recommended by the plan development team/NMFS stock assessment (Amendment 4: Tables 2 and 3). Any of these species that were caught incidentally to other fisheries were to be returned to the water immediately in a manner that minimized injury to the fish. These fish form what is known as the deep water grouper fishery, and it was the Council's intent that there would have been no targeting on these species. The Council considered having this prohibition in place for one generation time (approximately 20 years), which would have allowed these species to rebuild. A framework procedure was included in Amendment 4 whereby the zero quota and zero bag limit could be changed if the status of the stock improved above the overfishing level. These species were to be assessed on a periodic basis.

The Council rejected this option because the anticipated economic impacts were unacceptable.

Rejected Option 3. Establish an area delineated by loran that covers the known distribution of speckled hind, warsaw grouper, snowy grouper, misty grouper, yellowedge grouper, and golden tilefish and close it to fishing for species in the snapper grouper fishery for 20 years.

Discussion

Rejected option 3 was based on the plan development team/NMFS stock assessment and would have combined the no retention recommendation and the closed area recommendation. The Council rejected this option because the anticipated economic impacts were unacceptable.

Rejected Option 4. The plan development team discussion with the advisory panel concerning quota systems resulted in the following option for the Council's consideration.

1. Quotas:

A. Future/Past - use a combination of some past (historical) level of participation combined with future participation under open access to determine initial allocation formula for ITQ management, should the Council choose to develop an ITQ program.

B. Special Management Zones to provide areas for the population to exist in a non-harvested state which will serve as a regeneration zone for the rest of the fishery.

C. SMZ's with or without a quota. The basic idea was to manage the snowy grouper/golden tilefish component with only SMZ's or some combination of SMZ and quota. The areas were to have been percentages of productive bottom habitat for these species. Public comments would have been solicited for choosing the sites. Criteria would have been that they have been productive in the past and contain suitable habitat. This would have allowed fishermen to suggest the least productive fishing areas at present, thereby

minimizing the impact to their fishing. Depending on the percentage set aside as SMZ's, there would have been no quota or a very low quota, all depending on the Council's decision after having considered public testimony. It was anticipated that these areas would have been 60 fathoms and deeper which would have provided some protection for warsaw and speckled hind.

2. Trip limits - trip limits during the open access time period would have spread out harvest and provided an equalizing affect between large and small operations. If trip limits were proposed, the effect on the initial allocation establishment period would need to have been addressed.

Snowy Grouper			%Reduction	%Reduction
% In Reserve	Quota (kg)	Quota (lb)	from 1988-91	from 1990
0	94,400	208,114	50%	64%
5	125,587	276,869	33%	52%
10	137,139	302,337	27%	47%
20	162,606	358,481	13%	38%
30	187,334	412,997	0%	28%
Golden Tilefish			%Reduction	%Reduction
% In Reserve	Quota (kg)	Quota (lb)	from 1988-91	from 1990
0	300,124	661,653	20%	32%
5	312,880	689,775	17%	29%
10	324,885	716,241	13%	26%
20	350,170	771,985	7%	21%
30	375,155	827,067	0%	15%
Warsaw Grouper				%Reduction
% In Reserve	Quota (kg)	Quota (lb)		from 1990
0	4,258	9,387		75%
5	6,430	14,176		62%
10	8,474	18,682		50%
20	12,817	28,256		25%
30	17,032	37,549		0%

Discussion

The Council's Controlled Access Committee will evaluate the future/past portion of this option in their consideration of limited access management. Evaluation of SMZ's with or without quotas is presented below. (Note: snowy grouper SSR=15%, golden tilefish SSR=21%, and warsaw grouper SSR=6%.)

The quotas shown above were calculated by Huntsman (1993). Figure 1 in Section 10.0 (Source: Pete Parker, NMFS Beaufort) shows the area of catch for these species. Issues to have been determined included:

1. Whether a bycatch allowance for mid-water fishing (e.g., 200 lb or ____ fish) and for head/charter boats would be calculated and deducted prior to setting the commercial quota.

2. If a quota of some level was set for snowy grouper and golden tilefish (and warsaw grouper??), should the Council have allowed retention of all species caught while fishing for golden tilefish and snowy grouper (and warsaw grouper??)?

3. If the golden tilefish and snowy grouper (and warsaw grouper??) TACs were met, would the Council have then prohibited any fishing that resulted in a bycatch of these species.

The Council rejected this option as being too complicated and the benefits of reserves remains unsettled. Also, the Council will evaluate some form of effort management in a future amendment.

Rejected Option 5. Regulate the deep water complex by setting up separate total allowable catch (TAC) levels for golden tilefish and snowy grouper, and allow the retention of all species caught while fishing for golden tilefish and snowy grouper. Once the golden tilefish and snowy grouper quotas were met, then no fishing that resulted in a bycatch of these species would have been allowed.

Discussion

There is more information available for golden tilefish and snowy grouper, and fisheries actively targeting these species. Therefore, it would be easier to establish TACs for these species. However, the Council rejected this option because the anticipated economic impacts were unacceptable and because any fishing that would have had an incidental catch of golden tilefish and snowy grouper would have been prohibited. This would include speckled hind, misty grouper, yellowedge grouper, and other species of tilefish.

Rejected Option 6. Allow use of bottom longlines only in the directed fishery for tilefish.

Discussion

This option would have prevented fishermen using bottom longlines from targeting species other than tilefish. This would have been difficult to enforce on trips that employed both bottom longlines and vertical hook and line gear. The Council rejected this option because the anticipated economic impacts were unacceptable and because it would be unfair to fishermen using bottom longlines.

Rejected Option 7. Establish a size limit for golden tilefish.

Discussion

Based on testimony from fishermen during the January 1993 Council meeting, there appears to be a price break for golden tilefish (Dixon Harper, personal communication):

less than 4 pounds	small	$0.80/lb
4 to 7 pounds	medium	$1.50/lb
over 7 pounds	large	$2.40/lb

This option recognized that release mortality would have been near 100%. However, input from fishermen indicated that golden tilefish stratify by size along depth contours. This implied that it would have been possible to target selectively by size with some bycatch allowance. Mr. Harper stated that a minimum size of around 18-20" would roughly correspond to the small category, thereby removing any economic incentive to catch these small fish. This option would have required convincing fishermen of the importance of moving when they began to catch small fish and not continue to fish and discard small fish. The Council rejected this option because the ability of fishermen to target fish by size remained unproven.

Rejected Option 8. Set individual total allowable catch by species.

Discussion

This would have been difficult to do for many of the species and almost impossible for others due to the lack of biological information. There was information available for golden tilefish and snowy grouper. The Council rejected this option given the severe lack of information and high cost of tracking the required number of individual quotas.

Rejected Option 9. Establish a boundary line at 33° N latitude and allow bottom longlines south to Cape Canaveral, Florida. Only vertical hook and line gear would have been allowed north of 33°.

Discussion

This option would have divided the fishing grounds north and south of 33°, recognizing that the hard bottom areas north of 33° were best fished with vertical hook and line gear. The area south of 33° contained more of the mud habitat suitable for bottom longline gear targeting tilefish. Fishermen stated that they were able to target either snowy grouper or tilefish in the southern area. The Council rejected this option because of the distributional impacts whereby bottom longline fishermen would be prevented from fishing in a large area.

Rejected Option 10. Exempt fishermen south of Cape Canaveral, Florida from the golden tilefish quota program, limit them to 200 pounds per trip, and back out their estimated catch from the quota.

Discussion

This option was suggested by an advisory panel member anticipating that the Council would be developing an ITQ for golden tilefish. This option would have allowed these fishermen to harvest fish all year in south Florida during the rebuilding time. The Council rejected this option as being unfair to fishermen included in the quota program. The Council concluded that the 300 pound incidental catch allowance (Action 8) addressed the needs of fishermen south of Cape Canaveral, Florida.

ACTION 2. REDUCTION BASE YEAR

Use the catch figures from the 1992 logbook data for calculating the snowy grouper and golden tilefish quotas.

1992 Logbook Landings (Pounds)	
Snowy grouper	734,180
Golden tilefish	1,777,772

Discussion

The Council compared the average landings from 1990-92 (with and without including all unclassified groupers as snowy grouper) with the estimate of landings from the 1992 logbook report (Harris et al., 1993). The Council's Scientific and Statistical Committee concluded that the logbook survey was more accurate than existing data collection programs and recommended using the same data base for setting and monitoring the quotas.

The Council concluded that the 1992 logbook catch estimates represent the best available information and used these figures to calculate the quotas for snowy grouper and golden tilefish. The estimate for snowy grouper was slightly below the estimate of the average of the 1990-92 landings data assuming all "unclassified groupers" were snowy grouper. The logbook estimate for golden tilefish is over 700,000 pounds higher, presumably representing fish that were not marketed through dealers in the south Atlantic subject to the general canvass data collection program. The Council has also concluded that using the 1992 logbook data is more appropriate because the fishermen have supplied this information and they should more readily accept a management program based on data they provided and that they feel is accurate. Public comments supported using the logbook data.

The following are proposed options to Action 2 that were rejected.

Rejected Options for Action 2

Rejected Option 1. Calculate the quota using landings data from 1992.

Discussion

The Council rejected this option because they concluded that the 1992 logbook catches more accurately reflected recent catches. Catches for 1992 are shown in Tables 6, 7A, and 9 (Section 11.0). The regulatory impact review (Appendix C) includes additional discussion.

Rejected Option 2. Calculate the quota using the average of landings data from 1990-92 and do not include all "unclassified groupers" as snowy grouper.

Discussion

The Council rejected this option because the landings data were not sufficiently accurate (due to inadequate species identification) to adequately credit fishermen for all catches. Proposed management measures in this amendment will correct this problem. "Unclassified groupers" represented between 191,000 and 308,000 pounds for the 1990-92 fishing years (Table 7A; Section 11.0). Some portion of these "unclassified groupers" were snowy groupers but the Council had no way of determining how much. If this option were approved, initial TAC would have been set artificially low because of underreporting in the official landings data. The Council concluded that this would have imposed unnecessary negative impacts on fishermen and rejected this option. The regulatory impact review (Appendix C) includes additional discussion.

Rejected Option 3. Calculate the quota using the landings data from 1992 and do not include all "unclassified groupers" as snowy grouper.

Discussion

The Council rejected this option because the landings data were not sufficiently accurate (due to inadequate species identification) to adequately credit fishermen for all catches. Proposed management measures in this amendment will correct this problem. "Unclassified groupers" represented between 191,000 and 308,000 pounds for the 1990-92 fishing years (Table 7A; Section 11.0). Some portion of

these "unclassified groupers" were snowy groupers but the Council had no way of determining how much. If this option were approved, initial TAC would have been set artificially low because of underreporting in the official landings data. The Council concluded that this would have imposed unnecessary negative impacts on fishermen and rejected this option. The regulatory impact review (Appendix C) includes additional discussion.

Rejected Option 4. Separate the "unclassified groupers" based on logbook data and only include that portion that is snowy grouper for calculating the reduction base year figure.

Discussion

The Council rejected this option because the logbook analysis reported a small quantity of "unclassified groupers" which could not be separated to species. Any separation of "unclassified groupers" based on the logbook data would have been difficult at best. The Council rejected this option in favor of the more accepted logbook estimates of landings of snowy grouper.

Rejected Option 5. Calculate the snowy grouper and golden tilefish quotas using the average of landings data from 1990-92. Include all "unclassified groupers" as snowy grouper.

1990-92 Landings* (Pounds)	
Snowy grouper	769,639
Golden tilefish	1,022,197

*includes all "unclassified groupers" as snowy grouper

Discussion

The Council examined the catch data which showed no declining trend that would argue for using the most recent year as the base year. Catches for 1989 decreased and indicated that it may have been advisable to have used as many years as possible. Care should be exercised in selecting the number of years to be sure that there is some reduction in actual catches. Failure to do so may result in the quotas trailing declining catches as the resources continues to decline.

The current stock assessment included data through 1990. If the Council had used the average of landings data from 1990 to 1992, this would have included the stock status based on the latest assessment and would have attempted to incorporate the affects of fishing during the 1991 and 1992 fishing years. The 1992 data represented the most recent data available. Landings data for the 1990-92 fishing years for snowy grouper and golden tilefish are shown in Tables 6, 7A, and 9 (Section 11.0). The regulatory impact review (Appendix C) includes additional discussion.

"Unclassified groupers" represented between 191,000 and 308,000 pounds for the 1990-92 fishing years (Table 7A; Section 11.0). Some portion of these unclassified groupers were snowy groupers but the Council had no way of determining the amount. The Council rejected this option because they concluded that the 1992 logbook catches more accurately reflected recent catches.

ACTION 3. PHASE-IN

Phase in the snowy grouper and golden tilefish quotas (based on 1992 logbook data; see Action 2) using a 13.33% reduction in year one, 13.33% in year two, and 13.33% in year three. Year 1 is the 1994 fishing year.

Fishery	1992 Logbook (Pounds)	Annual TAC (lb) (1994, 1995, & 1996)	%Reduction from 1992 Logbook
Snowy grouper	734,180	636,314	13.33%
		538,448	26.66%
		440,508	39.99%
Golden tilefish	1,777,772	1,540,795	13.33%
		1,303,818	26.66%
		1,066,663	39.99%

Discussion

The 1992 stock assessment indicated that a 40% reduction in the fishing mortality rate is necessary for snowy grouper, and a 42% reduction is necessary for golden tilefish. These reductions are necessary to attain a spawning stock ratio of 30%, the level at which the stocks are no longer considered overfished. Use of quota management makes the assumption that a similar reduction in catch (quota) will effect the necessary reduction in fishing mortality rate. Progress towards attaining 30% SSR will be monitored through future assessments. The Council has, for simplicity, concluded that a 40% reduction in catch of both snowy grouper and golden tilefish will rebuild these two species to a SSR of 30%.

The Council approved a phase-in because the initial percent reduction would be less and would allow time to collect better estimates of catch by species. The phase-in would also lessen the impacts on fishermen which may result in greater support for such a reduction, especially given that there is some uncertainty about current catches. Support from fishermen will promote voluntary compliance with the quota management program (Objective 6 of the Snapper Grouper Fishery Management Plan).

The Council preferred an equal phase-in so that the reductions are lower in year one (13.33% versus 15%), so that future reductions are distributed equally over three years, and so that future assessments could more easily account for rebuilding.

The following are proposed options to Action 3 that were rejected.

Rejected Options for Action 3

Rejected Option 1. Phase the quota in using a 15% reduction in year one, 15% in year two, and 10% in year three.

Discussion

The Council rejected this option because the first year reductions would have been larger and because of potential complications within future assessments where the impacts of unequal reductions in catch would have been addressed. The regulatory impact review (Appendix C) contains additional discussion.

Rejected Option 2. Phase in the quota 100% in year one.

Discussion

The Council rejected this option because the first year reductions would have resulted in an immediate 40% reduction in catch. This would have resulted in large, negative impacts to fishermen that could have been moderated through a phase-in. The regulatory impact review (Appendix C) contains additional discussion.

Rejected Option 3. Phase in the quotas equally using the average of landings data from 1990-92.

Fishery	Base Year (Pounds)	Annual TAC (lb) (1994, 1995, & 1996)	%Reduction from Base	%Reduction from 1992
Snowy grouper	769,639	667,046	13.3%	13.9%
		564,453	26.7%	27.1%
		461,783	40.0%	40.4%
Golden tilefish	1,022,197	885,938	13.3%	18.8%
		749,679	26.7%	31.2%
		613,318	40.0%	43.8%

Discussion

Comparisons with the base year (average of 1990-92 under this option) and the 1992 fishing year were shown to give a relative indication of the impact of this alternative. The Council rejected this option because they concluded that the 1992 logbook catches more accurately reflected current catches.

ACTION 4. FISHING YEAR

Use the current fishing year (January 1 - December 31). This applies to all species except wreckfish. Landings of snowy grouper and golden tilefish will be counted towards the quota beginning January 1.

Discussion

Establishing a quota will have different impact on fishermen in each state depending on when the fishing year begins. The current fishing year is January 1 through December 31. Average monthly landings for snowy grouper and golden tilefish are shown by state in Figure 2 (Section 10.0).

The Council concluded that a January 1 opening was preferred because fishermen receive higher prices during this time period (see regulatory impact review discussion in Appendix C). Fishermen supported this fishing year during public hearings and in written comments. The Council recognizes that beginning the fishing year in the winter may put fishermen in North and South Carolina at a disadvantage due to poor weather conditions; however the public supported beginning the fishing year January 1. An economic concern is that the fishing year not correspond to when supplies of grouper, grouper substitutes, or tilefish from the mid-Atlantic are high. The regulatory impact review (Appendix C) contains additional discussion.

The following are proposed options to Action 4 that were rejected.

Rejected Options for Action 4

Rejected Option 1. Use the wreckfish fishing year (April 16 - April 15).

Discussion

These dates would have coincided with the tracking time period for wreckfish but would have precluded some of the wreckfish fishermen from fishing for snowy grouper and golden tilefish because the abundance of wreckfish is usually high when that season opens. This would have resulted in lower exvessel prices as snowy grouper and golden tilefish landings would have coincided with wreckfish landings. The regulatory impact review (Appendix C) contains additional discussion.

Enforcement of the wreckfish closure may have been improved if there was no fishing prior to April 16, which would have been the case if the snowy grouper and golden tilefish quotas had been met and the fishery were closed.

Rejected Option 2. Begin the fishing year February 15.

Discussion

This option would have coincided with a high seasonal price reported for Gulf red snapper (Andy Kemmerer, NMFS Southeast Regional Director; personal communication) but was rejected by the Council because no data was available to support this option. No new information surfaced during the public hearing process that resulted in the Council reconsidering the beginning date for the fishing year. The regulatory impact review (Appendix C) contains additional discussion.

Rejected Option 3. Use some other specified fishing year (_____ - _____).

Discussion

The Council took this option to public hearings to consider other dates and supporting rationale if any alternative suggestions for fishing years were proposed. No other dates with supporting rationale were proposed that would cause the Council to change the preferred option.

Rejected Option 4. Split the quota equally into two 6-month seasons beginning January 1 and July 1.

Discussion

This option was suggested during public hearings. The Council considered this option but concluded that the impacts had not been considered or presented to the public by the Council; therefore the resulting comments received during the public hearing process might be different had the public known such an option was under consideration. The Council rejected this option in favor of the calendar year because additional public hearings would have been necessary, thereby delaying implementation which would have resulted in continued overfishing.

ACTION 5. SPECKLED HIND AND WARSAW GROUPER

Allow retention of one warsaw grouper and one speckled hind per vessel (recreational and commercial) per trip, both of which count towards the five grouper aggregate bag limit. See Action 11 which includes all tilefish species in the grouper aggregate bag limit. Sale of speckled hind and warsaw grouper is prohibited and fishermen are encouraged to donate these fish to "good causes," such as charitable organizations.

Discussion

Speckled hind and warsaw grouper have been separated from other minor species because more information was available for them. Action 6 presents the Council's actions for other minor species. This measure applies to both recreational and commercial fishermen. Recreational fishermen would be allowed one warsaw grouper and one speckled hind per vessel and these fish would apply towards one of the recreational fishermen's aggregate bag limit.

Release survival rate is expected to be low but there will be some contribution to the spawning stock from fish that are released. Warsaw grouper and speckled hind are a bycatch in the commercial snowy grouper fishery and the quota to implement a 40% reduction for snowy grouper will also provide some reduction in mortality of warsaw grouper and speckled hind.

The following are proposed options to Action 5 that were rejected.

Rejected Options for Action 5

Rejected Option 1. No action.

Discussion

The aggregate grouper recreational bag limit of 5 fish per person includes warsaw grouper and speckled hind. No other management measures are in place for these two species. The Council rejected this option because it would not aid in preventing overfishing.

Rejected Option 2. The plan development team recommended the following options be evaluated:

A. No retention of speckled hind and warsaw grouper.
B. SMZ in mid-depth zone which would help warsaw grouper, red porgy, and white grunt.
C. Size limit of 20" TL but since survival is around 10%, this would have resulted in few benefits.

Discussion

The Council rejected consideration of a size limit because of high release mortality and instructed staff to evaluate options A and B. The Council approved an area closure for the deep water complex, which will reduce mortality on speckled hind, warsaw grouper, and the other minor species. See the discussion of Action 6 dealing with retention of minor species and Action 7 which discusses the experimental closed area.

Rejected Option 3. Allow retention of one warsaw grouper or speckled hind but do not allow sale of these fish.

Discussion

This option was incorporated into the proposed action with further clarification on possession (one of each per trip), applicability towards the 5-grouper aggregate bag limit, and disposition of the fish.

Rejected Option 4. Prohibit all retention of speckled hind and warsaw grouper by recreational and commercial fishermen.

Discussion

The SSR for speckled hind is 12% and is 6% for warsaw grouper. This option was suggested by the plan development team to provide some protection for these species. There is some probability that smaller speckled hind, if released, will live based on experience at the NMFS Beaufort Laboratory where speckled hind were kept alive in tanks for well over a year (Dr. Gene Huntsman, NMFS Beaufort Laboratory; personal communication).

Commercial 1992 of warsaw grouper was 22,780 pounds and harvest of speckled hind was 21,108 pounds (Appendix F). A representative of the headboat fishery on the advisory panel stated that they caught so few speckled hind and whether they retained one or zero was not important, and he would not object if the Council said not to retain speckled hind. The same applies for warsaw grouper because they are so rare. Input from a commercial fisherman indicated that warsaw grouper and speckled hind have a low market value and that there would be few people hurt by no retention (Dixon Harper, personal communication).

The Council rejected this option due to the wastage of already dead fish. Although a small percentage of these fish would have survived when released, the majority would have been released dead

and fishermen objected to such wastage. The Council concluded that the proposed actions allowing retention of one of each species, reductions in the snowy grouper and golden tilefish quotas, and the experimental closure will provide sufficient protection at this time. The status of these two species will be monitored and additional measures proposed through the framework provisions as necessary.

ACTION 6. MANAGEMENT OF MINOR SPECIES AND POTENTIAL IMPLICATIONS OF EFFORT SHIFTS RESULTING FROM IMPLEMENTATION OF QUOTAS

Allow all retention of minor species (except speckled hind and warsaw grouper; see Action 5) and gather information via 100% logbook coverage during 1994 and other years as necessary. Minor species with known SSRs include speckled hind and warsaw grouper. Those with unknown SSRs, but suspected to be severely overfished, are yellowedge and misty groupers. Yellowedge and misty groupers can be sold; speckled hind and warsaw grouper cannot be sold (see Action 5).

Discussion

Fishermen shift fishing effort within the shark, snowy grouper/golden tilefish, wreckfish, and king mackerel fisheries. It is expected that some effort will shift into the mid-depth zone if the snowy grouper/golden tilefish quotas are met. No data exist to evaluate these impacts, but such analyses will be possible after 1994 data become available.

Initial protection will be provided within the experimental closed area (*Oculina* HAPC; Action 7) and the one fish vessel trip limit for speckled hind and warsaw grouper established by Action 5.

Allowing retention, but not sale, of speckled hind and warsaw grouper will allow the fish to be landed for the fisherman's own consumption, which would presumably limit mortality by not encouraging targeting for a commercial market. The status of yellowedge and misty groupers are not precisely known. The Council is permitting sale of these two species at this time given the lack of data and precise knowledge. This option carries the specific intent to review the information collected and make a determination in one to two years about how to manage these minor species and/or the effort shift.

At the January 1993 Council meeting, staff was requested to evaluate proposed management actions and estimate the benefits for rebuilding minor species. This analysis was to include evaluation of a no sale provision. In developing these options it became apparent that there will likely be an effort shift after the snowy grouper and golden tilefish quotas are met. This effort will probably target the mid-depth and shallow water species, many of which are currently overfished. Given the data available, our knowledge is insufficient to evaluate realistically the likely impacts on minor species and/or impacts from a shift in effort. The species composition of catches is unknown, the status of some of these species is unknown, and the likely benefits from proposed management measures are unknown.

Upon renewal of permits on the permit holder's birth date (during 1993), all permit holders were required to maintain logbooks. This will continue during the 1994 fishing year (Action 12). Permitting retention would allow data collection (size and bioprofile data) that will be valuable for stock assessment purposes.

This leads one to the conclusion that the most reasonable approach, weighing potential biological and fishery impacts, would be to propose the most defensible management measures and allow retention of incidentally caught species while requiring documentation via the logbooks. This information and "area fished" information from the logbooks will allow the Council to evaluate the impacts to the resource and determine whether management is necessary. Future regulations can be implemented through the framework procedure outlined in Amendment 4.

The following are proposed options to Action 6 that were rejected.

Rejected Options for Action 6

Rejected Option 1. Set the snowy grouper and golden tilefish quotas based on catch levels that correspond to suitable target levels for the incidentally caught species.

Discussion

The snowy grouper and golden tilefish quotas would be set lower than would be biologically necessary to protect minor species because these species are more overfished. Also, they are a bycatch in the snowy grouper and golden tilefish fisheries. The Council rejected this option because suitable target levels for the other species are unknown in most cases.

Rejected Option 2. Prohibit any retention of incidentally caught species.

Discussion

Under this option all retention would have been prohibited or the Council could have chosen only to have prohibited retention of the overfished species (and species suspected of being overfished). Documentation of the discarded species would have been required on the logbook so that the magnitude would have been determined for stock assessment purposes.

This option would have required an education/information outreach program to convey information about species distribution/associations so that fishermen would have been able to move if species were encountered that could not have been retained. This option alone would probably have not been sufficient to protect these species (because they will be dead when caught) and to address the effort shift and was rejected by the Council.

Rejected Option 3. Allow some species to be overfished.

Discussion

One might have been able to argue that the 40% reduction in catch of snowy grouper and golden tilefish was expected to reduce catch of incidental species by a similar percentage. If this were the case, then Council's actions would have provided some protection for these species. However, this option would not have addressed the effort shift that is likely to occur.

The Magnuson Act does provide for overfishing of minor species in a multispecies fishery but requires that no species be at risk of becoming endangered and that allowing such overfishing results in net

benefits to the nation. This option alone would not have been sufficient to protect these species and to have addressed the effort shift, and was rejected by the Council.

Rejected Option 4. Gear specifications that release larger individuals.

Discussion

Under this option, gear restrictions, such as lighter monofilament leaders that would have released larger individuals of a species, would have been implemented. While this might have worked for larger individuals, it would not have provided protection for smaller individuals or species and was rejected by the Council.

Rejected Option 5. Effort limitation.

Discussion

Some form of effort limitation and/or ITQ program would have provided a mechanism to limit overall effort which would provide some protection for incidental species. The Council rejected this option at this time due to lack of sufficient information but will examine some form of effort control in a future amendment.

ACTION 7. ESTABLISH THE *OCULINA* HAPC AS AN EXPERIMENTAL CLOSED AREA

Establish the *Oculina* "Habitat Area of Particular Concern" (HAPC) as a closed area where no fishing will be allowed for species in the snapper grouper management unit, including amberjack. Fishing for coastal migratory pelagics (mackerels), tunas, swordfish, billfish, and pelagic sharks would not be restricted, although any species in the snapper grouper management unit caught must be released without removal from the water. This area measures 4 by 23 nautical miles and the water depth is between 30 and 75 fathoms. Anchoring within the closed area is prohibited to aid in enforcement of the no bottom fishing oriented nature of the closure. The *Oculina* HAPC will "sunset" after 10 years if not reauthorized. This will encourage establishment of the proper research and evaluation program. NMFS is to report to the Council on the area's effectiveness as soon as results become available, but no later than the end of year 7 (2000).

Discussion

Information from the Coral Fishery Management Plan (GMFMC and SAFMC, 1982; p. 6-32) on the *Oculina* bank is as follows (Note: figures and references are contained in the coral plan):

> "A 90-mile shelf-edge strip of coral reefs is located off central eastern Florida and is composed of banks, thickets, and rubble zones of the scleractnian Oculina varicosa (ivory tree coral). This fragile, branching stony coral forms massive contiguous colonies in deeper water (70 to 100 m) where in shallow water it forms only small, discrete colonies (Reed, 1980b).
>
> The shelf-edge Oculina reefs are a unique ecosystem. They are monospecific, comprised of a single species of colonial coral, and form delicately branched bushes 1.5 m in height, hundreds of feet long, and covering hills and pinnacles with 25 m relief. These are the only known banks composed of monospecific colonial coral that occur on the continental shelf (200 m depth) anywhere in the United States (Reed, 1982).

This bank or reef system has only recently been discovered. Dense and diverse populations of fishes and invertebrates (Reed, et al., in press) are associated with the Oculina. The area supports a substantial but unquantified recreational and commercial fishery for grouper, sea bass, snapper, and other fishes (Reed, 1982).

The HAPC is a 23 by 4 nm strip located approximately 15 nm off shore at its nearest point (see Figure 6-10). Its depth ranges from approximately 30 fathoms to 75 fathoms. This 92 nm^2 area is bounded by latitude 27° 53' N to latitude 27° 30' N and longitude 79° 56' W to longitude 80° 00' W and contains representative shelf-edge Oculina banks, major Oculina thickets, and coral rubble pinnacles.

In a relatively new fishery for bottom reef fish, trawlers are utilizing roller trawls to take fish off rough bottoms. Although such trawls are subject to damage and loss if used in high relief areas, they are apparently being used in close proximity to the banks and can damage the habitat and corals in hard bottoms.

In order to protect the corals the use of all bottom trawls, bottom longlines, dredges and fish traps and pots is prohibited within the HAPC."

The *Oculina* HAPC is shown in Figure 3 (Section 10.0). The area has been found to contain species in the deep water snapper grouper complex (Gilmore and Jones, 1992). The Council's intent is to prohibit all fishing for species in the snapper grouper management unit. Surface fishing (i.e., surface trolling) for species in the coastal migratory pelagics management unit, fishing for pelagic sharks, fishing for swordfish, fishing for billfish, and fishing for tunas would be allowed.

Establishment of a closed area will enhance stock stability and increase recruitment by providing an area where deep water species can grow and reproduce without being subjected to fishing mortality. This will help to rebuild the SSR values of overfished species and aid in preventing overfishing. The scientific justification for use of closed areas was presented to the Council by the Snapper Grouper Plan Development Team (PDT, 1990).

The Council will encourage the NMFS to explore all opportunities to have a team study this site so that the abundance of snapper grouper species can be continually monitored. Changes in abundance or size of individuals will be useful in evaluating the utility of such area closures to preserve the long-term survival of species in the snapper grouper management unit. A monitoring program will be established as a high priority in the snapper grouper operations plan. Results of the monitoring program will assist the Council in its review of the marine fishery reserve concept.

The following are proposed options to Action 7 that were rejected.

Rejected Option for Action 7

Rejected Option 1. No action.

Discussion

This option would not have provided the opportunity to evaluate use of deep water marine fishery reserves and would not have provided any additional protection for species in the deep water complex and was rejected by the Council. The Council has deferred further consideration of marine fishery reserves pending receipt of a scientific review by the National Marine Fisheries Service.

Rejected Option 2. Establish experimental closed area(s) for the deep water snapper grouper complex.

Discussion

This option would have provided an opportunity to research whether the reserve concept would work. Experimental closed areas would have been relatively small (perhaps on the scale of 10 square kilometers) thereby not having displaced a large number of fishermen. Experimental closed areas would have provided some rebuilding for species in the deep water complex.

This option was rejected by the Council in favor of proposing one specific site. Legal advice provided by NOAA General Counsel indicated that additional public hearings would have been necessary under this option. In addition, the Council has requested the NMFS to conduct a scientific review of the deep water closed area concept.

Rejected Option 3. Establish a portion (one-quarter, one-third, one-half, other?) of the *Oculina* HAPC as a closed area.

Discussion

This option would not have provided as much protection as the full area provides. There are concerns about fish migrating out of the closed area and fishermen fishing the edge and/or fishing within the closed area. The NMFS suggested establishing a buffer zone around the closed area in order to provide effective enforcement. The Council rejected establishing a portion of the HAPC due to its decreased effectiveness and increased enforcement difficulties. Also the current boundary of the HAPC is indicated on the latest nautical charts.

ACTION 8. COMMERCIAL BYCATCH

Allow retention of no more than 300 pounds of snowy grouper when the directed snowy grouper quota is filled and 300 pounds of golden tilefish when the directed golden tilefish quota is filled. Set the snowy grouper incidental catch at 96,000 pounds and deduct it from the quota as a set-aside for after the directed quota is filled. Set the golden tilefish incidental catch at 65,000 pounds and deduct it from the quota as a set-aside for after the directed quota is filled.

Fishery	TAC (Pounds) (Action 3)	Bycatch Set-Aside (Pounds)	Directed Quota (Pounds)
Snowy Grouper	636,314	96,000	540,314
Golden Tilefish	1,540,795	65,000	1,475,795

Discussion

These levels were set to allow retention of a legitimate bycatch while not encouraging directed harvest. The Council recognized that there are small catches of golden tilefish harvested incidentally in other fisheries. However, incidental harvest is a greater problem with snowy grouper because of the risk of

overrunning the quota. Fishermen fishing mid-depth waters for red porgy and vermilion snapper may run offshore and catch some snowy grouper if the conditions are good. The Council has attempted to set the bycatch level low enough to discourage directed fishing but allow retention of fish caught in other legal fisheries. A similar measure is used in the mackerel fishery.

Public testimony at the January 1993 snapper grouper committee meeting, and during public hearings, indicated that there would be a minimal bycatch of snowy grouper in any fishery from Charleston, South Carolina southward through Florida. Golden tilefish are found in waters deeper than 95 fathoms; snowy grouper occur in waters shallower than 80 fathoms. Snowy grouper could be caught by bandit gear while fishing for black grouper and red snapper if the gear was fished deep enough, but no snowy grouper would be caught any shallower than 40 fathoms because they live from 40-80 fathoms unless they occur on a wreck. Wrecks in 100-120 fathom depths have resident snowy groupers but these are small wrecks and are found on the tilefish grounds. If gear is set over a wreck with a tilefish bottom longline, the line is likely to be lost. Most people try to avoid the wrecks with their longlines and fish wrecks with vertical bandit gear. In the area north of Charleston, SC there is a mixture of blueline and golden tilefish and snowy grouper from the longline fishery on hard bottom.

For snowy grouper, 96,000 pounds would be deducted from the quota at the start of the fishing year and "set aside" to account for the 300 pound bycatch allowance. The 96,000 pounds corresponds to the bycatch estimate from applying the percentage of catch under 300 pounds for each state to the average catch per state from 1990-92 (Tables 11-16; Section 11.0). See the regulatory impact review discussion (Appendix C) for further details.

For golden tilefish, the 65,000 pound "set aside" was estimated by increasing the 41,000 pounds from Florida trips reporting less than 300 pounds (Tables 20 and 21; Section 11.0) by 59.5% which represents the difference in reported landings of golden tilefish in 1992 versus the 1992 logbook estimate (1992 catch=1,114,368; 1992 logbook=1,777,772; 59.5% higher). These figures, and the resulting catches under the 300 pound bycatch limit, will be adjusted if necessary during annual TAC setting procedures.

The following are proposed options to Action 8 that were rejected.

Rejected Options for Action 8

Rejected Option 1. Allow retention of no more than 100 pounds of snowy grouper when the snowy grouper directed quota is filled and 100 pounds of golden tilefish when the golden tilefish directed quota is filled.

Discussion

The Council rejected this option as being wasteful because it would unduly restrict trip revenues and because, as indicated from the catch per trip information, either species would have been discarded or a trip terminated upon catching 100 pounds of bycatch. See the regulatory impact review (Appendix C) for further discussion.

Rejected Option 2. Allow a one fish bag limit of these species (including wreckfish) as a bycatch in other fisheries.

Discussion

This option would have allowed fisheries like the directed vermilion/red porgy fishery to have continued and would have reduced wastage due to the incidental catch. It would have also allowed retention of wreckfish caught in the deep water complex fishery. The Council rejected this option as being wasteful and/or overly restrictive because, as indicated from the catch per trip information, either species would have been discarded or a trip terminated upon reaching this limit. See the regulatory impact review (Appendix C) for further discussion.

Rejected Option 3. Prohibit retention of deep water complex species in other fisheries.

Discussion

This option would have resulted in some wastage in other fisheries that had a bycatch of these species. The extent of bycatch in other fisheries was unknown. The Council rejected this option as being wasteful. See the regulatory impact review (Appendix C) for further discussion.

Rejected Option 4. Allow retention of no more than _____ fish (equivalent to 200 pounds) per trip until the quota is filled. This would have applied to snowy grouper (15% SSR), yellowedge grouper (SSR unknown), warsaw grouper (6% SSR), and tilefish (golden tilefish 21% SSR).

Discussion

The average weight of fish in 1990 was:

Snowy Grouper	5.0 pounds
Golden Tilefish	7.4 pounds
Warsaw Grouper	14.8 pounds

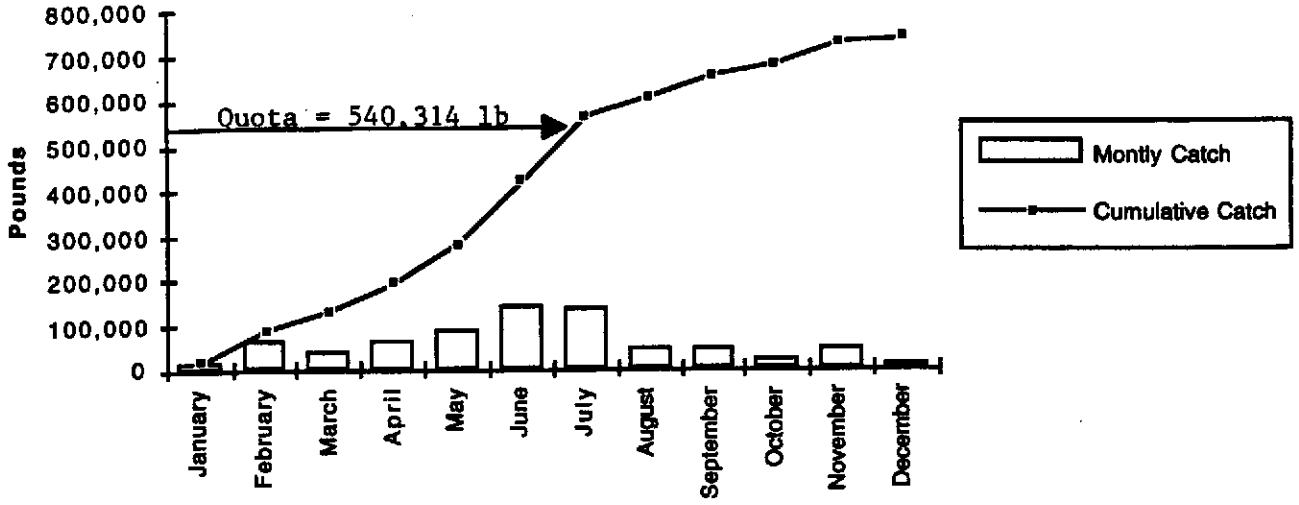
A 200 pound trip limit would have been comparable to 40 snowy groupers or 27 golden tilefish. If the catch was a mixture of snowy grouper and golden tilefish, 200 pounds would have been roughly 32 fish. If the catch was a mixture of snowy grouper , golden tilefish, and warsaw grouper , 200 pounds would have been approximately 22 fish.

The law enforcement advisory panel indicated that a limit in numbers of fish is enforceable at sea, whereas a poundage limit requires dockside enforcement. The Council rejected this option as being wasteful (fishermen would cull by size), because it would unduly restrict trip revenues, and because, as indicated from the catch per trip information, either species would be discarded or a trip terminated upon reaching the limit. See the regulatory impact review (Appendix C) for further discussion.

ACTION 9. SNOWY GROUPER COMMERCIAL TRIP LIMIT

Establish a 2,500 pound (gutted weight) snowy grouper trip limit while the directed snowy grouper quota is open.

MONTHLY & CUMULATIVE MONTHLY SNOWY GROUPER CATCHES (1992 LOGBOOK DATA)



Discussion

This trip limit attempts to spread out the harvest over the season and preclude some of the negative aspects of a derby fishery such as market gluts resulting in depressed prices received by fishermen. The 2,500 pound trip limit will affect 6% of trips and 35% of the catch in North Carolina (Table 11; Section 11.0). For South Carolina none of the trips will be affected (Table 12 and 13; Section 11.0). In Georgia 1% of the trips will be affected (Table 14; Section 11.0). On the Florida Atlantic coast 1% of the trips and 16% of the catch will be affected (Table 15; Section 11.0) while none of the trips will be affected in Monroe County, Florida (Table 16; Section 11.0). The percentage of trips and catch that will be affected by the trip limits do not represent trips and catches that will be foregone. Rather trips that would have exceeded the trip limit will be limited to 2,500 pounds for snowy grouper. The actual reduction in catches would be less than the percentages shown above.

In the chart above, the arrow indicates that the directed quota of 540,314 pounds would be met in July during the first year based on 1992 logbook monthly catches. The trip limit will extend the season past this date if the fishing pattern remains similar to that of 1992.

The proposed trip limit will impact larger bottom longline vessels in North Carolina and spread the catch more evenly among participants. At the same time, the trip limit will not restructure the fishery such that use of bottom longlines will not be feasible. Presently most of the snowy grouper catch is harvested

by bottom longlines. The regulatory impact review (Appendix C) contains more discussion. The Council concluded that this trip limit would be equitable to the different types of snowy grouper fishermen.

The following are proposed options to Action 9 that were rejected.

Rejected Options for Action 9

Rejected Option 1. Do not establish a trip limit for snowy grouper.

Discussion

The Council rejected this option because of the negative impacts that would have occurred under a derby fishery without some type of trip limit.

Rejected Option 2. Establish a 1,000 pound (gutted weight) snowy grouper trip limit.

Discussion

The Council rejected this option because this trip limit would have been too low and would have resulted in large negative impacts for the bottom longline fishery. The regulatory impact review (Appendix C) contains more discussion.

Rejected Option 3. Establish an endorsement system, similar to red snapper in the Gulf of Mexico, based on catches during 1990-1992.

Discussion

The Council rejected this option because there was no information available to evaluate the impacts. Fishermen were encouraged to comment if they supported such a system but did not provide any input. The regulatory impact review (Appendix C) contains more discussion.

Rejected Option 4. Establish a lower trip limit south of Cape Canaveral, Florida and a higher trip limit north of Cape Canaveral, Florida for snowy grouper.

Discussion

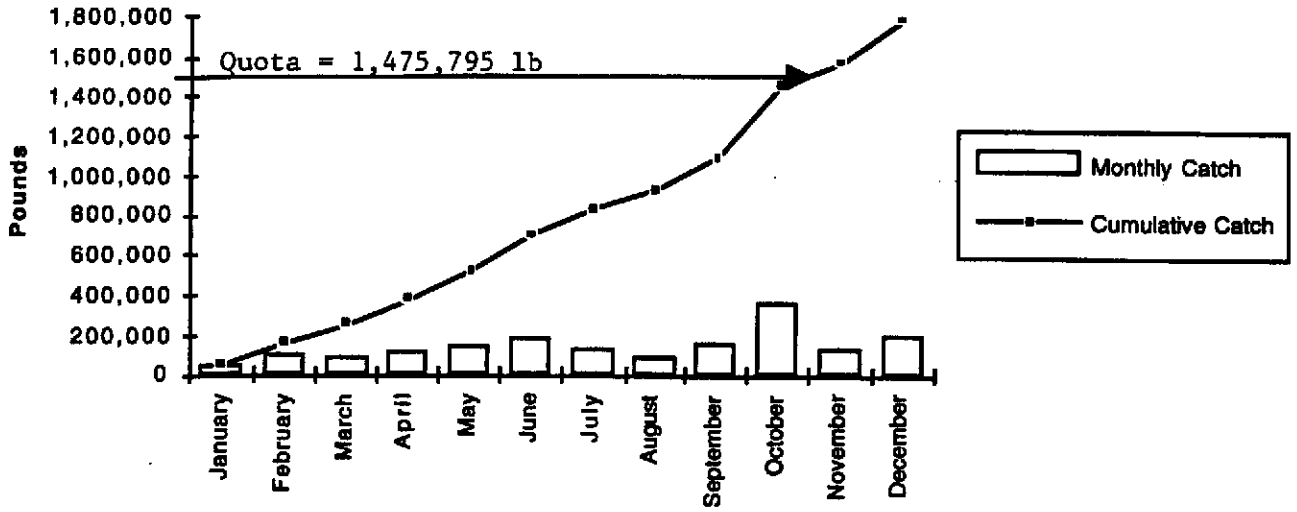
This option was suggested by an advisory panel member since the fishery is more overfished in the southern area. Greater fishing effort in the southern area is due, in part, to the greater ease of access to the resource given the shorter travel distance and better weather conditions. A 100 pound limit was discussed as a level that would have restricted fishing but it would have helped to rebuild the resource in the southern range.

The Council rejected this option due to enforcement (higher costs and confusion among fishermen) and equity considerations. The regulatory impact review (Appendix C) contains more discussion.

ACTION 10. GOLDEN TILEFISH COMMERCIAL TRIP LIMIT

Establish a 5,000 pound (gutted weight) golden tilefish trip limit while the directed golden tilefish quota is open.

MONTHLY & CUMULATIVE MONTHLY GOLDEN TILEFISH CATCHES (1992 LOGBOOK DATA)



Discussion

This level of catch is an attempt to spread out harvest over the season and preclude some of the negative aspects of a derby fishery such as market gluts resulting in depressed prices received by fishermen. The potential for a fishing derby under the TAC for golden tilefish appears less likely than for snowy grouper given the higher quota and fewer vessels fishing for golden tilefish. The 5,000 pound trip limit will impact fishing practices to some degree and will serve to spread out the catches over more of the fishing year. The 5,000 pound trip limit will affect 14% of trips and 30% of the catch in North Carolina (Table 17; Section 11.0). For South Carolina, 7% of the trips and 26% of the catch will be affected (Table 18; Section 11.0). None of the catch in Georgia on Monroe County (Florida) will be affected (Tables 19 and 21; Section 11.0). Only 0.2% of the trips and 2% of the catch will be affected on the Florida Atlantic Coast (Table 20; Section 11.0). The percentage of trips and catch that will be affected by the trip limits do not represent trips and catches that will be foregone. Rather trips that would have exceeded the trip limit will be limited to 5,000 pounds for golden tilefish. The actual reduction in catches would be less than the percentages shown above.

In the chart above; the arrow indicates that the directed quota of 1,475,795 pounds would be met in early November during the first year based on 1992 logbook monthly catches. The trip limit will extend the season past this date if the fishing pattern remains similar to that of 1992.

The Council approved the 5,000 pound trip limit based on public input suggesting that 5,000 pounds would be more economical than a 3,000 pound trip limit. Fishermen indicated that a 5,000 pound trip limit will allow for economically feasible trips (Dixon Harper, personal communication). Also, a number of

speakers at public hearings expressed concern about being able to fish economically under a 3,000 pound trip limit.

The following are proposed options to Action 10 that were rejected.

Rejected Options for Action 10

Rejected Option 1. Do not establish a trip limit for golden tilefish.

Discussion

The Council rejected this option because of the negative aspects (market glut, low prices, etc.) of a derby fishery that would exist without some form of trip limit.

Rejected Option 2. Set a 2,000 pound trip limit for golden tilefish.

Discussion

Setting a trip limit is an attempt to stretch the quota over more of the fishing year. The average variable cost of a golden tilefish trip (as reported to the Council by one firm which may or may not be representative of the entire fishery) is about $2,000 with golden tilefish selling for under $2.00 per pound (Dixon Harper, personal communication). A trip limit of 2,000 pounds would cover costs but not be sufficient for full-time tilefish fishermen to make adequate returns on an individual trip. A fisherman indicated that a 2,000 pound trip would be a bad trip because there would be no way to make any money; 5,000 pounds would be a decent trip and there have been many 7,000 - 8,000 pound trips (Dixon Harper, personal communication). Further, the biggest expense is bait and they use 800-900 pounds of squid per trip at $0.75 per pound. On a 30 foot boat, 2,000 pounds might be feasible because there is only one crew member; with two crew members and $2,000 in expenses, the trip may not break even. The Council rejected this option because the anticipated economic impacts were unacceptable.

Rejected Option 3. Set a 3,000 pound trip limit for golden tilefish.

Discussion

The 3,000 pound trip limit would have impacted fishing practices more, particularly in North Carolina where some golden tilefish trips are as high as 10,000 pounds per trip. Public comments supported a higher trip limit and as a result of this input and the impacts of a 3,000 pound trip limit, the Council rejected this option because it would unduly restrict trip revenues.

ACTION 11. RECREATIONAL BAG LIMIT

Include all tilefish species in the current five grouper aggregate bag limit. (Note: Possession of Nassau grouper and jewfish is currently prohibited.)

Discussion

A representative of the headboat fishery on the advisory panel indicated that the objective of a successful headboat trip is to try and get an aggregate catch of at least five fish; they caught a number of

blueline or gray tilefish and suggested an aggregate of five deep water complex fish per person, per trip (Tom Swatzel, personal communication). This option would provide additional protection for the deep water complex by including all species of tilefish in the existing five grouper aggregate bag limit. Other tilefish species are included because it is expected that these species are or will be overfished due to their life history characteristics (long-lived, slow growing, etc.) and to assist in enforcement/voluntary compliance. The Council concluded that the proposed action would aid in providing sufficient management to prevent overfishing at this time. Ongoing data collection programs will need to be expanded to provide data necessary to quantify the degree of protection provided by including all species of tilefish in the 5-grouper aggregate bag limit. The status of golden tilefish and the other deep water species will be monitored and additional action specified through the framework procedures, as necessary.

Wreckfish are excluded from the grouper bag limit because it is illegal to "fish for wreckfish in the EEZ, possess wreckfish in or from the EEZ, off-load wreckfish from the EEZ, or sell wreckfish in or from the EEZ aboard a vessel that does not have a vessel permit for wreckfish" [Source: snapper grouper regulations, Section 646.7 (b)].

The following are proposed options to Action 11 that were rejected.

Rejected Options for Action 11

Rejected Option 1. No action.

Discussion

This option would not have provided any protection for tilefish that are targeted by headboats in the recreational sector and was rejected by the Council.

Rejected Option 2. Prohibit retention of deep water complex species in other fisheries.

Discussion

This option would have resulted in some wastage in other fisheries that have a bycatch of these species. The Council rejected this option because it would have prevented the recreational sector from harvesting some of the species they harvested in the past and it would have resulted in wastage from releasing already dead fish.

Rejected Option 3. Allow retention of no more than 200 pounds per trip until the quota is filled.

Discussion

The Council rejected this option because it applied more to commercial fishing than recreational fishing and because it would have allowed more recreational catch than the Council concluded was appropriate. However, headboats and charterboats would have been impacted by such a limit.

Rejected Option 4. Allow a one fish bag limit per person per species (snowy grouper, warsaw grouper and golden tilefish; speckled hind, misty and yellowedge groupers; and wreckfish) as a bycatch in the recreational and head/charter boat fisheries.

Discussion

This option would have allowed the recreational, charter and headboat fisheries to have continued all year long and reduce wastage. It would also have allowed retention of wreckfish. This issue was raised during the advisory panel meeting and the charter and headboat representatives indicated a desire to continue such fishing in the future. The Council rejected this option because it would have unduly reduced revenue for the recreational sector and because it would have liberalized possession requirements for wreckfish.

The headboat fishery would have likely only targeted snowy grouper, based on comments from fishermen. Testimony at the October 1992 Council meeting indicated that headboats in South Carolina may make 10 to 12 trips per year for snowy grouper. All recreational fishermen, including charter and headboats, are currently limited to the aggregate 5-grouper bag limit and indicated that this was appropriate for headboats.

Information from the latest assessment indicated from 1988 through 1990, the region-wide recreational catch of snowy grouper was virtually zero. However, during the early 1970s, the snowy grouper recreational fishery was important.

This option was rejected because it would have limited the historical headboat catch more than the Council concluded was necessary at this time; catches of two fish per line-pull would not be unrealistic when fishing was very good. The Council concluded that the existing five fish aggregate bag limit provided adequate protection given the low number of trips targeting the deep water complex. Further, by including all tilefish in the aggregate bag limit, protection is established for tilefish and for the other deep water species due to the reduction in catch by including all species of tilefish.

Rejected Option 5. Include all tilefish species in the current five grouper aggregate bag limit. The recreational bag limit may include no more than one snowy grouper and one golden tilefish. (Note: Possession of Nassau grouper and jewfish is currently prohibited.)

Discussion

The Council rejected this option based on extensive public comments indicating that restricting the recreational sector to no more than one snowy grouper and one golden tilefish would have made their fishing trip uneconomical. The Council concluded that the preferred option of including all tilefish in the 5-grouper aggregate bag limit provided sufficient management to prevent overfishing.

ACTION 12. TRACKING TOTAL QUOTAS BY SPECIES

Track and monitor total quotas by species to ensure that TAC is not exceeded and to document production by species by individual fishermen. Require 100% logbook coverage and some form of verification with information from dealers. This in effect requires the Science and Research Director to select and analyze mandatory logbooks for all snapper grouper permitted vessels. The catch by divers is to be separated by gear (powerheads, spearing, etc.).

Discussion

This system will allow for verification of logbook and dealer reporting. Logbook coverage applies to fishermen targeting species in the snapper grouper management unit. Catches of snowy grouper and golden tilefish and will be monitored for quota purposes. Catches of other species will be reviewed by the Council to monitor the Snapper Grouper Fishery Management Plan and for future evaluation of ITQ management. The logbook information also will be utilized for stock assessment purposes. It should be made clear to all fishermen that the Council is considering development of a ITQ-type management program and that violations of reporting requirements may result in a fisherman being denied participation should such a system be developed in the future. The Science and Research Director made the decision to select all fishermen for logbook coverage during 1993. The Council is requesting continuation of this level of selection.

The following are proposed options to Action 12 that were rejected.

Rejected Options for Action 12

Rejected Option 1. Track individual quotas with the existing data collection system.

Discussion

The Council rejected this option because the existing data collection system was not designed for tracking landings at the individual vessel level and would have been inappropriate for tracking individual quotas. The existing data collection system would not have been adequate for preventing fishermen from exceeding their individual quotas or determining that a fisherman had done so and would have diminished the potential for attaining the objectives of an ITQ program had one been proposed. The existing system also would not have provided the necessary information to evaluate effort shifts.

Rejected Option 2. Track individual quotas by a receipt system (paper trail).

Discussion

The coupon system used for wreckfish is one form of paper trail or receipt system. Usually, receipt systems are dual-entry recording systems that are audited at the end of the fishing year to determine if fishermen have exceeded their individual quotas. This system is the principal tracking device used for ITQ programs in Australia and New Zealand and for the wreckfish fishery. The main difference between standard receipt systems and the coupon system is that enforcement agents cannot immediately determine that a fisherman has exceeded his quota with the receipt system because there is no method for on-site verification. With a receipt system, an enforcement agent has to wait for an audit to determine whether a fisherman has exceeded or "busted" his individual quota. With the coupon system, if a fisherman does not possess an adequate quantity of coupons for the fish in his possession, he is in violation and it is assumed that he has exceeded his individual quota. In addition, separable coupons with a portion to follow the fish that is purchased by a fish house can be used to verify that all the fish at a fish house were purchased from fishermen in the ITQ program and were properly recorded in the dual entry system. Receipt systems do not

have any means of instant verification and records on a dealer's premises can sometimes be readily fabricated.

An on-line debit card computer system could be envisioned as a variation of the paper trail wherein fishermen would have magnetic credit cards and dealers would have terminals such as those used by retail merchants. The quantity of catch would have been instantly deducted from the fisherman's individual quota upon landing, and enforcement agents would be able to call up a fisherman's account to verify that he has a positive quota balance. This system had some positive aspects but appeared to be prohibitively expensive for fish houses. In addition, non-reporting may have been much easier with a debit card system. The Council rejected this option because individual quotas were not proposed in the final amendment and because the preferred alternative will prevent quota overruns.

Rejected Option 3. Track individual quotas by a fish tag system.

Discussion

Requiring that all fish be tagged with plastic tags that ratchet in one direction, or a similar device that could not be opened and placed on another fish without being broken, was another system that allows instant verification. Fish tags would have strongly discouraged non-reporting of catch because tagging fish would have been time-consuming and could not have been done quickly at dockside if the fisherman were approached by an enforcement agent. The main disadvantage of tags was that they involve time-consuming and tedious work for fishermen. In addition, large numbers of tags would have been required, which would have meant additional costs to fishermen and management. The Council rejected this approach for these reasons and because they did not establish individual quotas.

C. Unavoidable Adverse Effects

Without management catches in the snapper grouper fishery would decline. The SSR values for a number of species have declined between the times of the 1990 and 1992 assessments (Table 2; Section 11.0). In the absence of additional management measures limiting fishing mortality rates, such declines would be expected to continue and could reach such a low level that the snapper grouper fishery would no longer be economically feasible. If this situation were allowed to continue, the fishery would ultimately collapse.

Implementation of quotas for snowy grouper and golden tilefish will reduce catches by 40% over three years. These catch reductions will have an impact on the commercial sector, however, the Council chose to phase in the reductions and to use the 1992 logbook data as the base year to minimize the impact. In addition, it is expected that fishermen will shift to other species/areas to replace lost income. The trip limits will extend the harvest and minimize the possibility of a closure and subsequent market interruptions. Annual monitoring will evaluate the need for each of the reductions over the three year phase-in period.

Implementation of bag limits will have an impact on the recreational sector but the Council chose to implement bag limits that best moderate impacts.

Implementation of the experimental closed area will impact recreational and commercial fishermen. The Council chose to establish a small area and to specify an initial "sunset" provision, such that the closed area will reopen in 10 years unless reauthorized by the Council. Research and monitoring results will be evaluated by the Council to determine whether the closure should continue.

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

Short-term uses will be impacted by the 40% reduction in catch over three years for snowy grouper and golden tilefish. This level of reduction is necessary to rebuild these severely overfished stocks to non-overfished status to ensure the long-term productivity of these important species. Without such reductions, the long-term yield would be jeopardized and, indeed, the future existence of an economically viable fishery would be unlikely.

The information necessary to generate yield streams to specify the time frame for rebuilding is not available. The time frame for recovery of snowy grouper and golden tilefish is the year 2005 (see discussion under Overfishing in Section 3.0 for additional background). The reductions will begin in 1994 and be fully implemented in 1996. The Council will monitor the recovery of these species and if additional management regulations are necessary to ensure that the SSR increases above 30%, action will be taken through the framework provision of the snapper grouper plan, as amended.

Minor species may be rebuilt to such levels that additional harvest may be allowed in the future. The short-term yield from these minor species is below their full potential.

The Council weighed the short-term losses to fishermen against the long-term yield and stability of these species and concluded that the proposed action would result in net benefits to society.

E. Irreversible and Irretrievable Commitments of Resources

There are no irreversible or irretrievable commitments of resources associated with the proposed actions. If the Council had not taken action to reduce fishing mortality on these severely overfished species and to establish the closed area and other regulations to protect the minor species, recruitment failure would have resulted in substantial reductions in catches and future revenues. Speckled hind and warsaw grouper may have had the potential to become threatened species without management.

F. Effects of the Fishery on the Environment

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. Habitat concerns are included in Appendix D.

Trawling for snapper grouper species was prohibited in Amendment 1 (SAFMC, 1988) and bottom longline gear for wreckfish was prohibited by emergency action effective April 19, 1991 and subsequently in Amendment 5 (SAFMC, 1991b) because of habitat damage. Bottom longline gear was restricted to waters deeper than 50 fathoms in Amendment 4 (SAFMC, 1991a) to protect the live bottom habitat. Part of

the rationale for the fish trap prohibition was habitat damage caused by deployment and retrieval of traps (SAFMC, 1991a).

Regulations within the existing *Oculina* Habitat of Particular Concern (HAPC) will be strengthened with the proposal to close the area to all bottom fishing and to prohibit anchoring within the HAPC. Although aimed at reducing violations in the closed area, the no anchoring provision will reduce damage to the fragile *Oculina* coral.

The fishery, as presently prosecuted, does not substantially impact the live bottom habitat that is essential to the reef species under Council management. The *Oculina* HAPC is discussed in Action 7. The Council will continue to monitor the fishery and if it becomes apparent that a particular gear or fishing practice results in habitat damage, action will be proposed through the framework procedures to mitigate or minimize damage.

Public Health and Safety

The proposed actions, and their alternatives, are not expected to have any substantial adverse impact on public health or safety. Starting the fishing year January 1 was supported by fishermen. Fishermen currently fish during this time of year when prices are high. Public testimony indicated that beginning the fishing year January 1 would not result in any additional safety concerns.

Endangered Species and Marine Mammals

The proposed actions, and their alternatives, are not expected to affect adversely any endangered or threatened species or marine mammal population.

Potential Effort Shift

The proposed actions will likely result in some effort shift from the deep water snowy grouper/golden tilefish fishery into other fisheries/areas as fishermen attempt to replace lost income. Other fisheries likely to see increased effort include the shark and swordfish fisheries, the mid to inshore snapper grouper fishery, and the mackerel fishery. The Council is concerned about these potential impacts and has requested the Science and Research Director maintain the 100% logbook coverage to gather information for evaluating the actual shift in effort. If additional management becomes necessary, action will be taken through the framework procedures.

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 sea turtles. In fact, the proposed measures will improve status of stocks and minimize habitat damage because overall fishing mortality will decrease.

5.0 LIST OF PREPARERS

Gregg T. Waugh, Deputy Executive Director, South Atlantic Fishery Management Council
John R. Gauvin, Fishery Economist, South Atlantic Fishery Management Council
Jane DiCosimo, Fishery Biologist, South Atlantic Fishery Management Council
Roger Pugliese, Fishery Biologist, South Atlantic Fishery Management Council
Dr. Theophilus R. Brainerd, Fishery Economist, South Atlantic Fishery Management Council

The following individuals assisted by reviewing this amendment:

Robert K. Mahood, South Atlantic Fishery Management Council
Dr. Peter J. Eldridge, National Marine Fisheries Service, Southeast Regional Office
Georgia Cranmore, National Marine Fisheries Service, Southeast Regional Office
Richard C. Raulerson, National Marine Fisheries Service, Southeast Regional Office

The work of the Council's Snapper Grouper Plan Development Team is recognized. Members are:

Dr. Charles Barans, South Carolina Wildlife & Marine Resources Department
Dr. Jim Bohnsack, NMFS SEFSC Miami Laboratory
Dr. Gene Huntsman, NMFS SEFSC, Beaufort Laboratory
Dr. Chuck Manooch, NMFS SEFSC, Beaufort Laboratory
Fritz Rohde, North Carolina Division Marine Resources
Dr. George Sedberry, South Carolina Wildlife & Marine Resources Department
Glenn Ulrich, South Carolina Wildlife & Marine Resources Department
Dr. Jim Waters, NMFS SEFSC, Beaufort Laboratory
Dr. John Witzig, NMFS, Marine Recreational Fishing Statistics Survey, Washington
Dr. Jim Zwiefel, NMFS SEFSC, Miami Laboratory

The following individuals helped during development of this amendment by providing assistance with landings data and by providing snowy grouper and golden tilefish catch by trip information:

Fritz Rohde, North Carolina Division of Marine Fisheries
Joe Moran, South Carolina Wildlife & Marine Resources Department
Gina Gore, Georgia Department of Natural Resources
Dr. Joe O'Hop, Florida Marine Research Institute

The work of the NMFS Beaufort Laboratory is acknowledged. In particular Dr. Gene Huntsman, Dr. John Merriner, Robert Dixon, Mike Burton, Dr. Pete Parker and Nelson Johnson.

The 1992 logbook program and final report was extremely useful. Thanks are due many persons, including the fishermen completing the logbooks, the NMFS SERO for issuing permits, the NMFS SEFSC for issuing the logbooks and in particular Ken Harris and Alex Chester for their work in developing the 1992 logbook report.

Special thanks are due Daniel Basta, Mike Shelby, and Tom LaPointe of the Strategic Environmental Assessment Division for their assistance with the desktop information system and geographic boundary files. Figure 3 was produced by Roger Pugliese with their assistance.

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)

List of Agencies and Persons Consulted:
Atlantic Coast Conservation Association
Atlantic States Marine Fisheries Commission
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 Natural Resources
Florida Marine Fisheries Commission
Georgia Department of Natural Resources
South Carolina Wildlife and Marine Resources Department
Marine Fish Conservation Network
North Carolina Department of Environment, Health, and Natural Resources
National Marine Fisheries Service
- Southeast Region
- Southeast Center

United States Coast Guard
United States Environmental Protection Agency, Region IV
Center for Marine Conservation
Gulf of Mexico & Mid-Atlantic Fishery Management Councils
Florida League of Anglers
South Atlantic Fisheries Development Foundation
Marine Advisory Agents
National Coalition for Marine Conservation
North Carolina Fisheries Association, Inc.
Southeastern NC Waterman's Association
Organized Fishermen of Florida
Southeastern Fisheries Association
Sportfishing Institute

7.0 APPLICABLE LAW

A. VESSEL SAFETY CONSIDERATIONS

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 to the Snapper Grouper Fishery Management Plan. Therefore, no management adjustments for fishery access will be provided. The fishing year begins January 1, and extensive public input indicated that this would not present a vessel safety problem as fishermen currently fish during the winter.

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.

B. 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 that this amendment is an improvement to the federal management measures for the deep water complex fishery.

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

This determination was 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. Florida responded that "the project is in accord with State plans, programs, procedures and objectives." South Carolina "certified that the above referenced project is consistent with the Coastal Zone Management Program." The State of North Carolina responded that we

"cannot disagree with your determination that the proposed amendment is consistent with the North Carolina Coastal Management Program." They further stated that the Council give the comments from the North Carolina Division of Marine Fisheries full consideration and that the recommendations therein be incorporated into the final amendment. The Council's final position does reflect suggestions from the Division of Marine Fisheries.

C. ENDANGERED SPECIES AND MARINE MAMMAL ACTS

The proposed actions have no anticipated impact on threatened or endangered species or on marine mammals. A Section 7 consultation was conducted with the NMFS Southeast Regional Office. A biological assessment was prepared which concluded that the proposed actions will have no anticipated impact on threatened or endangered species or marine mammals. In addition, a Section 7 consultation was conducted for the original fishery management plan and for Amendment 4, and it was determined the fishery management plan was not likely to jeopardize the continued existence of threatened or endangered animals or result in the destruction or adverse modification of habitat that may be critical to those species.

D. 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 does not propose any additional permit or data collection programs within this amendment. The Council has requested that the Science and Research Director continue selection of all snapper grouper permit holders to maintain logbooks. The logbook data collection program was established under Amendment 4 to the Snapper Grouper Fishery Management Plan (SAFMC, 1991a).

E. 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.

F. NATIONAL ENVIRONMENTAL POLICY ACT — FINDINGS OF NO SIGNIFICANT IMPACT (FONSI)

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/environmental assessment. A description of the affected environment is contained in Section 3.0.

The proposed amendment is not a major action having significant impact on the quality of the marine or human environment of the South Atlantic. The proposed action is an adjustment of the original regulations of the fishery management plan to protect the snapper grouper resource from depletion. The proposed action should not result in impacts significantly different in context or intensity from those described in the Environmental Impact Statement (EIS) published with the initial regulations implementing the approved fishery management plan. The preparation of a formal Supplemental Environmental Impact Statement (SEIS) is not required for this amendment by Section 102(2)(c)(c) of the National Environmental Policy Act or its implementation regulations.

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 protect the resource from depletion, better achieve the objectives of the fisheries management plan, and lessen the environmental impacts of the fishery. Overall, the benefits to the nation resulting from implementation of this amendment are greater than management costs.

Finding of No Significant Environmental Impact (FONSI)

The Council's preferred action is to manage the deep water component with quotas, trip limits, bycatch limits, and bag limits. Minor species and the potential of a shift in effort are addressed. An experimental closed area will be established to prevent overfishing of species in the deep water component. 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. Impacts of these actions are relative to the individuals that will be required to forego catches in the short-term and to the individuals, and society, in the long-term, because higher and more stable catches will be maintained. The analyses presented below are based on the detailed information contained in Section 4.0 Environmental Consequences and Appendix C. Regulatory Impact Review and Regulatory Flexibility Determination.

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. Overall, the adverse impacts of the snowy grouper and golden tilefish quotas are estimated to be approximately $1.15 million dollars over three years. Adverse impacts associated with the HAPC are unquantifiable but are expected to be low. Beneficial impacts are unquantifiable but preventing overfishing will ensure the long-term economic viability of the recreational and commercial fisheries.

The beneficial and adverse impacts as analyzed in Section 4.0 are not significant.

Public Health or Safety

The proposed actions are not expected to have any significant adverse impact on public health or safety. Fishermen support the fishing year and indicated that beginning the fishing year January 1 would not result in any additional safety concerns.

Unique Characteristics

The proposed actions are not expected to have any significant adverse impact on unique characteristics of the area such as proximity to historic or cultural resources, park lands, wetlands or ecologically critical areas. Appendix D contains information on habitat concerns. The Council's positions on a number of habitat related issues are presented in this appendix. The fishery, as presently prosecuted, does not significantly impact the live bottom habitat that is essential to the reef species under Council management. Regulations within the existing *Oculina* HAPC will be strengthened with the proposal to close the area to all bottom fishing and to prohibit anchoring within the HAPC.

Controversial Effects

The proposed actions are not expected to have any significant controversial issues. The Council has provided for extensive input by the public through committee and Council meetings that are open to the public, by providing copies of the amendment to the list of agencies and organizations listed in Section 6.0, through meetings with the snapper grouper advisory panel, by holding nine public hearings, and by providing the opportunity for interested persons to provide written comments. Appendix E contains a summary of public hearing and written comments received by the Council. During development of this amendment, the Council has incorporated suggestions from the public, and the final document addresses all comments and suggestions received.

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 economic viability of the deep water complex.

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 wreckfish fishery is managed under an ITQ program and the mackerel fishery is managed with an open access quota program. The experimental closed area is similar to areas proposed for inclusion in the Florida Keys National Marine Sanctuary.

Relationship/Cumulative Impact

The proposed actions are not expected to have any significant cumulative impacts that could have a substantial effect on the snapper grouper resource or any related stocks, including sea turtles. In fact, the proposed measures will improve status of stocks and minimize habitat damage because overall fishing mortality will decrease.

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. The experimental closed area will provide an area to study the snapper grouper resources in their natural state, without them being subjected to fishing mortality.

Endangered/Threatened Impacts

The proposed actions are not expected to have any significant effects on any endangered or threatened species or marine mammal population. A Section 7 consultation was conducted with the NMFS Southeast Regional Office. A biological assessment was prepared which concluded that the proposed actions will have no anticipated impact on threatened or endangered species or marine mammals.

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 Council has adopted a number of positions that protect the habitat supporting the snapper grouper resources. These positions are contained in Appendix D. Habitat Concerns. In fact, the proposed measures will minimize habitat damage because overall fishing effort will decrease and additional habitat protection will be provided in the existing *Oculina* HAPC by prohibiting all bottom fishing and anchoring within the HAPC.

Having reviewed the environmental assessment and the available information relating to the proposed actions, I have determined that there will be no significant environmental impact resulting from the proposed actions.

Approved: _____

Assistant Administrator for Fisheries Date

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▶ 2

To Gregg Waugh From Pete Eldridge

Dept./Agency Phone #

Fax # Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

2/2/94

Draft Addendum

Addendum to Environmental Assessment (EA) for Amendment 6 to the Snapper-Grouper FMP for the South Atlantic

Recent assessments have identified snowy grouper, golden tilefish, speckled hind and warsaw grouper as being overfished. Misty grouper and yellowedge grouper are thought to be overfished, but insufficient data exist to calculate spawning stock ratios (SSRs). The Council intends to manage golden tilefish and the deep-water groupers as a unit and to begin rebuilding these species in 1994. Because of lack of information for minor species in the management unit, the Council requests mandatory logbook coverage to obtain additional information, specifically designed to provide information for assessment purposes; to document any effort shifts that may occur when quotas are reached; and to serve as a basis for determining initial allocation of ITQ shares, which are proposed for deep-water species in Amendment 8.

Bycatch

Quotas are proposed for snowy grouper and golden tilefish, which could result in catch reductions of 40 percent for these species over a three-year period beginning in 1994. The quotas will also reduce fishing mortality of minor deep-water groupers, such as misty grouper and yellowedge grouper. Thus, the bycatch of minor deep-water groupers, and other species associated with the snowy grouper and golden tilefish fishery, is expected to be reduced by the proposed quotas. Presently, there is no data base to quantify expected reduction in bycatch; however, the mandatory logbook requirement proposed by the Council is expected to provide this type of information in the future.

In addition to quotas, the proposed area closure (Oculina "Habitat Area of Particular Concern") is designed to provide protection to overfished stocks and will reduce bycatch of vulnerable species. Gear restrictions contained in earlier measures under the Snapper-Grouper FMP have already reduced bycatch and bycatch mortality in this fishery. For example, fish traps, trawls, bottom longlines for wreckfish, and entanglement nets have already been banned.

Effort Shifts

The Council has noted that fishermen may shift effort to other species when quotas are filled. Since quotas have not previously been used in the south Atlantic, there are no data available to estimate this potential impact. Although it is not possible to accurately determine the biological impacts of deep-water fishermen shifting effort to other species at this point, it can be stated that if they target sharks, wreckfish, amberjack, shrimp, swordfish, triggerfish, grunts, mackerels, tunas, and

bothids--the most likely species to target--the impacts should be minimal because these species are either not overfished or are subject to management measures under state and other Federal FMPs. There is some concern by the Council that additional effort could be shifted to red porgy. However, the Council is waiting for an assessment on red porgy, which should be completed in June 1994 before it addresses this issue.

Bottom longlines are prohibited in depths less that 50 fathoms in the south Atlantic, and most potential new target species are found in shallower depths. Thus, there would be virtually no impact on shallow-water species by longline fishermen because it is illegal to use longlines in shallow water. Vertical hook-and-line gear could be used, however, this gear causes minimal damage to the environment. Also, bycatch mortality would be significantly reduced because most target species are located in relatively shallow depths. Release mortality is directly proportional to depth; hence, fishing in shallower water substantially reduces release mortality. Further, vertical hook-and-line gear has less bycatch because of the small number of hooks.

In summary, one cannot determine precisely the impact of fishermen shifting effort to shallow-water species at this time because this has never occurred and there is no data base to analyze. However, the impacts of such a shift should be minimal because (1) most species are already under management; (2) longline gear cannot be used in depths shallower than 50 fathoms; (3) vertical hook-and-line gear has less bycatch because of the small number of hooks; and (4) bycatch mortality is reduced because of decreased depths. NMFS requires each vessel to fill out logbooks, and these data will be used to evaluate any shifts of fishing effort that may occur. Also, the South Carolina Wildlife & Marine Resources Department is collecting costs-and-returns data for this fishery. That data will be given to the NMFS in February 1995 and will be available for analysis. It is clear that the quotas will rebuild the snowy grouper and golden tilefish stocks, reduce bycatch, and be beneficial to fishermen; because catches will increase as stocks are rebuilt. Bycatch, especially that associated with longlines, should be reduced, which will contribute to safeguarding the biological integrity of those species.

February _994
NMFS

8.0 REFERENCES

Adams, C.M. and F.J. Lawlor, III. 1990. Trends in the importation of selected fresh and frozen seafood products into the southeastern United States. Technical Paper 59, FL Sea Grant College Prog., Univ. of Florida, Gainesville, FL. 70 pp.

Burton, M. 1991. The relationship between spawning season and landings of selected reef fishes. NMFS/SEFSC Beaufort Laboratory. 19 pp. plus 49 figures.

Gilmore, R. G. and R.S. Jones. 1992. Color variation and associated behavior in the epinepheline groupers, *Mycteroperca microlepis* (Goode and Bean) and *M. phenax* (Jordan and Swain). Bulletin of Marine Science, 51(1):83-103.

GMFMC and SAFMC. 1982. Gulf of Mexico and South Atlantic Fishery Management Council. Fishery Management Plan and Final Environmental Impact Statement for Coral and Coral Reefs. April 1982.

Harris, K.C., A.J. Chester, G.N. Johnson, and C.W. Krouse. 1993. The 1992 south Atlantic snapper-grouper logbook survey. NMFS/SEFSC Beaufort Laboratory, 101 Pivers Island Road, Beaufort, NC 28516. June 1993. 27 pp. plus tables.

Huntsman, G. R. 1993. Development of management options combining quotas and marine reserves for deep reef species in the jurisdiction of the South Atlantic Fishery Management Council. DOC/NOAA/NMFS/SEFSC. Beaufort Lab, 101 Pivers Island Road, Beaufort, NC 28516. unpubl. ms. 5 pp.

Huntsman, G. R., J. Potts, R. Mays, R. L. Dixon, P. W. Willis, M. Burton, and B. W. Harvey. 1992. A stock assessment of the snapper-grouper complex in the U.S. South Atlantic based on fish caught in 1990. DOC/NOAA/NMFS/SEFSC. Beaufort Lab, 101 Pivers Island Road, Beaufort, NC 28516. unpubl. ms. 102 pp.

Keithly, W.R. and F.J. Prochaska. 1985. The demand for major reef fish species in the Gulf and South Atlantic regions of the United States. Proceedings of the Tenth Annual Tropical and Subtropical Fisheries Technologies Conference of the Americas, Texas A & M Sea Grant TAMU-SG-86-102, pages 59-72.

NMFS. 1991. South Atlantic snapper grouper assessment 1991. DOC/NOAA/NMFS/SEFSC. Staff report by NMFS Beaufort Lab, 101 Pivers Island Road, Beaufort, NC 28516. unpubl. ms.

NMFS. 1991. Operational guidelines: fishery management plan process. October 1992.

Parker, R.O. Jr. 1991. Survival of released reef fish -- A summary of available data. DOC/NOAA/NMFS/SEFSC. Beaufort Lab, 101 Pivers Island Road, Beaufort, NC 28516. unpubl. ms. 6 pp.

PDT. 1990. The potential of marine fishery reserves for reef fish management in the U.S. Southeastern Atlantic. USDOC/NOAA Tech. Memo. NMFS-SEFC-261. 45 p.

Poffenberger, J.R. Jr. 1985. Operational and financial characteristics of reeffish vessels in the South Atlantic and Gulf of Mexico areas. N. Am. J. Fish. Man. 5:379-388.

SAFMC. 1983a. South Atlantic Fishery Management Council. Fishery Management Plan, Regulatory Impact Review and Final Environmental Impact Statement for the Snapper Grouper Fishery of the South Atlantic Region.

SAFMC. 1983b. South Atlantic Fishery Management Council. Source Document for the Snapper Grouper Fishery of the South Atlantic Region.

SAFMC. 1988. South Atlantic Fishery Management Council. Amendment Number 1 and Environmental Assessment and Regulatory Impact Review to the Fishery Management Plan, for the Snapper Grouper Fishery of the South Atlantic Region.

SAFMC. 1990a. South Atlantic Fishery Management Council. Amendment 2 (Jewfish), Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region.

SAFMC. 1990b. South Atlantic Fishery Management Council. Amendment Number 3 (Wreckfish), Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region.

SAFMC. 1991a. South Atlantic Fishery Management Council. Amendment Number 4, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region.

SAFMC. 1991b. South Atlantic Fishery Management Council. Amendment Number 5, Regulatory Impact Review, Initial Regulatory Flexibility Determination and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region.

SAFMC. in prep. South Atlantic Fishery Management Council. Updated Source Document for the Snapper Grouper Fishery of the South Atlantic Region.

9.0 APPENDIXES

Appendix A. Existing FMP Problems (Issues) & Objectives

The problems (issues) of the Snapper Grouper Fishery Management Plan as modified by Amendment 4 (SAFMC, 1991) are:

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 thought the 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 the SSR is unknown. Fifth, additional species may be overfished or likely to experience overfishing in the near future.

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 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.

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).

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 were added in Amendment 5 (SAFMC, 1991):

1. Excess Capacity: The size and capacity of the wreckfish fleet exceeds that needed for present TAC as well as the range of TACs the Council is likely to approve in the foreseeable future. Additional vessels in the future would exacerbate this situation since the derby nature of an open access fishery encourages fishermen to add harvest capacity even when gains in production are marginal or when economies of scale are not necessarily realized.

2. Inefficiency: Past and present measures to control harvest (TAC, gear restrictions, trip limits) and future measures that would likely be needed under continued open access, increase fishing costs and decrease potential consumer and producer benefits from the fishery.

3. Low Conservation and Compliance Incentives: Under open access, incentives to promote conservation and voluntary compliance with regulations are low because the benefits from doing so may be appropriated by other fishermen or new entrants.

4. Potential Conflicts: Competitive fishing conditions may eventually lead to gear and area conflicts as a large number of vessels compete for available TAC.

5. High Regulatory Costs: Management and enforcement costs are unnecessarily high and are expected to increase under open access as the number of vessels increases and stricter management measures are needed to control excess fishing effort.

6. Low Marketing Incentives: Efforts by fish dealers to augment consumer acceptance of wreckfish have been thwarted by short-run oversupply and lack of product continuity. The likelihood of additional harvest restrictions under open access increases uncertainty and instability and discourages long-run planning and investment by dealers.

The management objectives of the Snapper Grouper Fishery Management Plan as modified by Amendment 4 (SAFMC, 1991) are:

1. Prevent overfishing in all species by maintaining the spawning stock ratio (SSR) at or above target levels.
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.
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.
6. Promote public comprehension of, voluntary compliance with, and enforcement of the management measures.

The following limited entry objectives were added in Amendment 5 (SAFMC, 1991) and now become numbers seven through 12:

7. Develop a mechanism to vest fishermen in the wreckfish fishery and create incentives for conservation and regulatory compliance whereby fishermen can realize potential long-run benefits from efforts to conserve and manage the wreckfish resource.
8. Provide a management regime which promotes stability and facilitates long-range planning and investment by harvesters and fish dealers while avoiding, where possible, the necessity for more stringent management measures and increasing management costs over time.
9. Develop a mechanism that allows the marketplace to drive harvest strategies and product forms in order to maintain product continuity and increase total producer and consumer benefits from the fishery.
10. Promote management regimes that minimize gear and area conflicts among fishermen.
11. Minimize the tendency for over-capitalization in the harvesting and processing/distribution sectors.
12. Provide a reasonable opportunity for fishermen to make adequate returns from commercial fishing by controlling entry so that returns are not regularly dissipated by open access, while also providing avenues for fishermen not initially included in the limited entry program to enter the program.

Although not an explicit objective at this time, the Council believes that portions or all of management and administrative costs should be recovered from those who hold individual quota shares in the wreckfish fishery, should recovery of those costs become permissible under future Magnuson Act (MFCMA) revisions. Those costs, or portions of them, would be recovered through such means as transfer fees or ad valorem taxes or other means available.

Appendix B. History of Management

The Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC, 1983a) 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 Fishery Management Plan 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 Fishery Management Plan established a 12" total length minimum size for red snapper, yellowtail snapper, red grouper and Nassau grouper; an 8" total length minimum size for black sea bass; and a four inch 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, 1990a) prohibited the harvest or possession of jewfish in or from the exclusive economic zone (EEZ) in the South Atlantic due to its overfished status and defined overfishing for jewfish and other snapper grouper species according to the 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, 1990b) 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 also would 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 30° 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, 1991) 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 fisherman, and to gather the data necessary for management. Amendment 4 prohibits: (1) use of fish traps in the 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 and 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 bycatches 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 where 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% 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 a 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 the 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 prohibit 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, 1991) established an 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. The wreckfish fishery is currently under a 2 million pound TAC for fishing year 1993/94.

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 in the federal register 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 in the federal register on July 2, 1993 [58 Federal Register 35895] with an effective date of July 31, 1993.

Appendix C. Regulatory Impact Review & Regulatory Flexibility Analysis

A. Introduction

The Regulatory Impact Review (RIR) is part of the process of developing and reviewing fishery management plans and amendments and is prepared by the Regional Fishery Management Councils with assistance from the National Marine Fisheries Service, 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 regulatory impact review also serves as the basis for determining if the proposed regulations are major under Executive Order 12866. If the proposed regulations are deemed to have a significant impact on a substantial number of small entities, then an Initial Regulatory Flexibility Analysis (IRFA) must be prepared and incorporated into a joint document that meets the requirements of the Regulatory Flexibility Act (RFA). 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. In as much as Executive Order 12866 encompasses the RFA requirements, the regulatory impact review usually meets the requirements of both.

B. Management of the Deep Water Complex

ACTION 1. ESTABLISH A QUOTA MANAGEMENT SYSTEM

Regulate the deep water complex by setting up separate total allowable catch (TAC) levels for golden tilefish and snowy grouper. Adjust the annual TACs downward by reserving a portion of each based on the best estimate of the bycatch in the golden tilefish and snowy grouper fisheries. Phase in the necessary golden tilefish and snowy grouper reductions over three years with Year 1 being the 1994 fishing year. See Action 3 for a discussion of the phase-in and Action 8 for a discussion of the bycatch allowance.

Discussion

Total allowable catch (TAC) management for snowy grouper and golden tilefish is preferable to indirect controls on removals such as the Council is using for the inshore snapper grouper fishery since it has a higher probability for reversing overfishing. Therefore, the short run economic impacts, are perhaps more justifiable under TAC management because, provided the assessment is correct and fishermen abide by the regulations, stock improvements should create increases in biomass and increased revenues for fishermen in the future. Efforts by the Council to develop a controlled access regime for the deep water complex could ultimately mean increases in net benefits from the effort to rebuild snowy grouper and golden tilefish stocks. Not moving to controlled access will mean that increased producer benefits following rebuilding will likely be dissipated by entry and increased fishing effort, as occurs in nearly every fishery managed under open access.

Although TAC management involves a higher probability of meeting rebuilding objectives, a growing body of experience with TAC management in this country and abroad suggests that TAC management can exaggerate the fundamental economic problems with open access management. Competition among harvesters can increase fishing costs and decrease dockside revenues by flooding markets. Intensive fishing can also lead to decreased product quality. It typically increases incentives for "capital stuffing" where fishing firms add catch capacity to their vessels in order to catch fish faster regardless of whether there are true efficiency gains from additional gear and fishing capacity. In addition to decreasing net benefits to producers through inefficiencies stemming from TAC management, restrictive TACs and intensive fishing (sometimes called "fishing derbies") can even involve potentially dangerous fishing practices as fishermen fish despite unsafe conditions in order to garner more of the available TAC.

Another effect of TAC management is during the period when the catch of snowy grouper and golden tilefish will be reduced and rebuilding is occurring, fishermen who presently target snowy grouper and golden tilefish will attempt to make up for forfeited revenues in other regional fisheries. This will probably mean increased pressure on inshore snapper grouper stocks. All snapper grouper species of the south Atlantic save wreckfish are managed by open access.

The potential significance of a shift in effort was realized by the Council. Because the vessels presently most active in the deep water fishery are, for the most part, the largest vessels with the most experienced captains and the most effective fish-finding and harvesting gear, the significance of this shift will be monitored.

Preliminary evaluation of the wreckfish ITQ program suggests that although the program may have stabilized that fishery and improved net benefits derived from the wreckfish resource, it has definitely shifted fishing effort into the deep water complex and the inshore snapper grouper fishery. According to available evidence from discussions with former and present wreckfish fishermen, those who have opted to exit the wreckfish fishery have entered other snapper grouper fisheries. Although the extent of egress from the wreckfish fishery was predicted by available cost and earnings data which suggested that the wreckfish fishery could support far fewer vessels than were involved in the fishery, the pace of selling out and switching to other fishing opportunities exceeded prior expectation. This suggests that costs to switch between fisheries in the south Atlantic are relatively low.

Switching activity can be significant in terms of shifts of fishing effort of a greater magnitude than was previously understood and substantial egress from the deep water fishery is definitely possible. For the deep water fishery, the magnitude and direction of effort shifts will ultimately depend on factors that are highly unpredictable such as relative differences in economic opportunities, stock abundance, and elements of human decision making behavior. Thus the exact direction of shifts in fishing patterns cannot be known at this time although to the extent that the wreckfish example is relevant, deep water fishermen will enter the inshore snapper grouper fishery to recover foregone revenues as a result of reduced snowy grouper and golden tilefish harvest. The three year phase-in period, however, should allow most of the more probable switching scenarios to unfold and should allow managers to anticipate problems and devise solutions. Thus

the Council's decision to phase-in catch reductions for the deep water complex is beneficial in terms of decreasing short run impacts on fishermen and addressing the potential problem of effort shifts.

Evaluating the Economic Effects of Deep Water TACs

Biologists responsible for the annual snapper grouper stock assessment have indicated that there are not sufficient data and other necessary information to model the pace of recovery and potential yield streams associated with rebuilding. Yield streams are analytically helpful to evaluate how catch forfeited under rebuilding quotas will result in larger yields and revenues after rebuilding. That information is essential to even a rudimentary quantitative cost/benefit analysis of the TAC management alternative compared to no action. For this reason, the brief discussion of regulatory impacts that follows quantifies only the revenue losses associated with the scheduled decreases in catch from TACs that are percentage decreases from the baseline catch (see below) for the first, second and third years for snowy grouper and golden tilefish. Lacking any information on yields following rebuilding or even the time that will be required to attain the biological goals of rebuilding objectives, little can be said about even the trade-off of discounted revenue of the preferred alternative compared to no action.

Further, consumer and producer welfare measures to gauge discounted net benefit losses or gains in a cost/benefit framework are not attempted because both yield stream information and appropriately estimated supply and demand equations for the species in question are not available. For Snapper Grouper Amendment 4 (SAFMC, 1991a), producer net benefit changes (profits in that context were revenues after subtraction of variable costs or net returns to captain, crew, and vessel owner) were estimated to evaluate the economic effects of size limit measures on the inshore fishery. Similar estimates are not undertaken here for deep water TACs because cost and earnings data used for Snapper Grouper Amendment 4 were deemed unsuitable for evaluating the effects of deep water TACs. That cost and earnings data used to provide baseline information in Amendment 5 (Poffenberger, 1985) contained only a few observations on firms using bottom longline gear which accounts for most of the catch of snowy grouper and golden tilefish.

Impacts on Revenues From Snowy Grouper TACs

Tables 6 and 7A provide estimates of snowy grouper landings 1990-1992. NMFS general canvass and state data collection systems are ordinarily used to estimate snapper grouper landings by species. These traditional data collection systems, however, frequently list large quantities of grouper of unknown species in categories such as "unclassified grouper" or "grouper and scamp." Fishermen attending Council sessions commented that landings reported in the "snowy grouper" category cannot represent total snowy grouper landings for those years. Those fishermen believe they sold quantities of snowy grouper that amount to a large percentage of what was reported as "snowy grouper" that year which indicates that the reported "snowy grouper" landings underestimated the actual harvest. In addition to fishermen, a state biologist pointed out that some of the snowy grouper landings in North Carolina have been placed in the "unclassified grouper" category (Fritz Rhode, North Carolina Division of Marine Resources; personal communication).

For this reason, 1992 total landings estimated from logbooks expanded to account for sampling coverage and non-reporting (Harris et al., 1993), were used. Revenues were generated by taking price (value divided by pounds) from NMFS general canvass data for 1992. Logbook data are thought to be the best available information on deep water catches due to the problems associated with general canvass data mentioned above. According to logbook data, total south Atlantic snowy grouper and golden tilefish landings for fishing year 1992 are 734,180 and 1,777,772 pounds respectively. Revenues for fishing year 1992 are estimated to be $1,255,448 and $2,702,213 using 1992 logbook landings and general canvass price ($1.71/lb for snowy grouper; $1.52/lb for golden tilefish).

Revenue changes with TAC management were arrived at using the same methodology used in the regulatory impact review for Snapper Grouper Amendment 4 (SAFMC, 1991a). The price flexibility coefficient estimated in Keithly and Prochaska (1985) for south Atlantic grouper (-0.4614) was used to model the relative increase in exvessel price from a percentage decrease in quantity supplied under the TAC scenarios. The estimated price flexibility coefficient suggests that a ten percent reduction in landings of a given grouper species will result in a 4.614% increase in exvessel price, all other relevant parameters held constant.

The following table presents each year's estimated value for snowy grouper and golden tilefish.

Fishery		Estimated Annual Value		
	1992 Value ($)	1994	1995	1996
Snowy Grouper	$1,255,448	$1,156,693	$1,035,500	$893,543
$ Decrease		$98,755	$121,193	$141,957
% Decrease		7.9%	10.5%	13.7%
Golden Tilefish	$2,702,213	$2,480,040	$2,220,192	$1,915,826
$ Decrease		$222,173	$259,848	$304,366
% Decrease		8.2%	10.5%	13.7%

Because no study has estimated the exvessel demand function for golden tilefish, revenue changes were calculated using the estimated price flexibility coefficient (-0.4614) for snowy grouper (Keithly and Prochaska, 1985). This is the best available estimation for depicting the relationship between price and quantity supplied. It assumes that snowy grouper and golden tilefish are sold under similar market conditions.

Economic tradeoffs for the proposed rebuilding plan for snowy grouper and golden tilefish cannot be evaluated because of lack of data on expected yield streams under this plan. Assuming that the rebuilding plan will increase yield streams, the sum of the discounted revenues should exceed that under the no action scenario.

The following are proposed options to Action 1 that were rejected.

Rejected Options For Action 1

Rejected Option 1. Establish size limits.

Discussion

Size limits would not have been effective for rebuilding deep water species because the rate of survival after release would have been very low and fishermen can rarely target larger fish exclusively. Thus fishermen's catches and revenues would have been impacted in the short run while they would have received little or no increases in catch and revenue from rebuilding if the survival rate for most of the released catch was low.

Rejected Option 2. The harvest or possession of the following species is prohibited: speckled hind, warsaw grouper, snowy grouper, misty grouper, yellowedge grouper, and golden tilefish. Include blueline tilefish and sand tilefish for enforcement purposes.

Discussion

This option would have severely impacted fishermen who counted on the deep water species for some or all of their annual revenues and would likely have induced large effort shifts into already stressed inshore snapper grouper fisheries. There is no information available on yield streams to evaluate the tradeoff in terms of economic benefits between smaller reductions in fishing mortality that are phased in (the preferred alternative) and shutting the fishery down until rebuilding occurs, it is impossible to compare this alternative to the preferred alternative at this time. The relevant comparison would have been whether the increased rate of recovery under this alternative would have more than compensated for the additional economic hardship and increases in fishing effort on inshore reef fish stocks that would have occurred if the deep water fishery were closed for a period of time.

Rejected Option 3. Establish an area delineated by loran that covers the known distribution of speckled hind, warsaw grouper, snowy grouper, misty grouper, yellowedge grouper, and golden tilefish and close it to fishing for species in the snapper grouper fishery for 20 years.

Discussion

The economic benefits to this alternative compared to the preferred alternative could not be described quantitatively or qualitatively at this time because the biological benefits of closed areas have not been proven. If in fact closed areas could have increased overall sustainable harvest from areas that would not have been closed via increases in egg production and additional protection to deep water species, then the additional fishing (fuel costs from having to fish in adjacent waters, etc.) and enforcement costs associated with closed areas may have been more than compensated for by additional production. Enforcement costs would have been expected to have been high unless managers could have required commercial vessels to carry transponders that reveal vessel positions effectively at all times. If, however, the closed area had failed to increase available biomass in the fishery overall and stock conditions in adjacent areas decline as fishing effort increases outside the closed area by virtue of being concentrated, then the costs of closed area would

likely have exceeded the benefits. The only value of the closed areas under that scenario would have been genetic protection to the stock by allowing a number of fish to attain sizes akin to stock conditions in the absence of fishing mortality.

Rejected Option 4. The plan development team discussion with the advisory panel concerning quota systems resulted in the following option for the committee's consideration.

1. Quotas:
   A. Future/Past - use a combination of some past (historical) level of participation combined with future participation under open access to determine initial allocation formula for ITQ management, should the Council choose to develop an ITQ program.
   B. Special Management Zones to provide areas for the population to exist in a non-harvested state which will serve as a regeneration zone for the rest of the fishery.
   C. SMZ's with or without a quota. The basic idea was to manage the snowy grouper/golden tilefish component with only SMZ's or some combination of SMZ and quota. The areas were to have been percentages of productive bottom habitat for these species. Public comments would have been solicited for choosing the sites. Criteria would have been that they have been productive in the past and contain suitable habitat. This would have allowed fishermen to suggest the least productive fishing areas at present, thereby minimizing the impact to their fishing. Depending on the percentage set aside as SMZ's, there would have been no quota or a very low quota, all depending on the Council's decision after having considered public testimony. It was anticipated that these areas would have been 60 fathoms and deeper which would have provided some protection for warsaw and speckled hind.
2. Trip limits - trip limits during the open access time period would have spread out harvest and provide an equalizing affect between large and small operations. If trip limits were proposed, the effect on the initial allocation establishment period would need to have been addressed.

Discussion

Most of the key features of the Plan Development Team's proposal were described under Rejected Alternatives 4 and 5 and under the discussion of trip limits for snowy grouper and golden tilefish. The combined effects of a management program that includes TACs, schemes to determine the allocation of future fishing rights, trip limits, and deep water SMZs were difficult to evaluate. Overall, this proposal would likely have involved higher short run costs on the industry.

Rejected Option 5. Regulate the deep water complex by setting up separate total allowable catch (TAC) levels for golden tilefish and snowy grouper, and allow the retention of all species caught while fishing for golden tilefish and snowy grouper. Once the golden tilefish and snowy grouper quotas were met, then no fishing that resulted in a bycatch of these species would have been allowed.

Discussion

This alternative was similar but less restrictive than the preferred alternative in that it would have advocated TAC management for the deep water fishery. It would have been less restrictive than the preferred alternative because there would have been no further restrictions on harvest of other deep water species. In addition, trip limits to slow down harvest and decrease the effects of a fishing derby would not have been part of this alternative. It was impossible to compare the effects of this proposal to the preferred alternative because the specifics for reductions in harvest under TACs were never fully developed.

Rejected Option 6. Allow use of bottom longlines only in the directed fishery for tilefish.

Discussion

Reductions in efficiency are a popular approach to fishery management because they can be used to decrease fishing mortality, while acceptance among fishermen for such approaches is usually fairly high. In the long run, however, legislated inefficiencies often backfire because fishermen find ways to make allowed gear nearly as effective or they simply fish harder with the allowable gear and no reduction in fishing mortality would have been realized. The attraction to making a fishery that is often referred to as "self-managing" through inefficiency is that legislated inefficiencies are supposed to limit fishing to sustainable levels and management costs are supposed to be lower. In practical terms, however, this rarely occurs because fishermen still would have had incentives to overfish and would have circumvented the effectiveness of the rules. Additional management costs are often required to diffuse conflicts among fishermen as well. When this occurs, efficiency losses would still be incurred while management costs would have been the same.

The only benefits to prohibiting bottom longline gear for snowy grouper fishing would have been if habitat damage was occurring, and this damage was greater than that from vertical hook and line gear and anchor damage to reefs. For this amendment, information to compare any potential gains from decreased habitat damage to efficiency losses and changes in management costs was not available.

Rejected Option 7. Establish a size limit for golden tilefish.

Discussion

There is no known systematically collected evidence that demonstrates that fishermen could have targeted large golden tilefish to the degree that discards of undersized tilefish would have been minimal. The percentage of tilefish sets on small fish would have been proportional to the skill level and experience of the fisherman, but even the most skilled fishermen would have occasionally set bottom longline gear on small fish and these fish would have likely not survived release even if they were still alive when the gear was retrieved. Fishermen with lower skill levels would likely have had a large number of sets on small fish. Although it was tempting to accept that the large price differential for large golden tilefish would have induced fishermen to fish exclusively for large fish, or to have immediately moved away from small fish after discovering that an area was occupied by small fish, a bycatch of fish under the size limit would have undoubtedly occurred. In a worst case scenario, larger fish would have been mixed in with small fish and it might still have been worthwhile for fishermen to have continued fishing in that area and discard the smaller fish.

Rejected Option 8. Set individual total allowable catch by species.

Discussion

See Rejected Option 5 above.

Rejected Option 9. Establish a boundary line at 33° N latitude and allow bottom longlines south to Cape Canaveral. Only vertical hook and line gear would have been allowed north of 33°.

Discussion

See Rejected Option 7 above.

Rejected Option 10. Exempt fishermen south of Cape Canaveral, Florida from the golden tilefish quota program, limit them to 200 pounds per trip, and back out their estimated catch from the quota.

Discussion

This option may have helped smaller scale fishermen to continue fishing longer under rebuilding TACs because the TAC may have been met rather quickly had a fishing derby ensued under TAC reductions. This option would not have been necessarily better than the preferred alternative, however, because the catch per trip bycatch allowance after the directed fishery TAC has been met will probably also allow small scale fishermen to continue to fish. The bycatch of golden tilefish from trips not targeting golden tilefish will be deducted from the TAC (see discussion of golden tilefish trip limits) and this could conceivably allow for small scale trips to continue without impacts. This will probably not mean the TAC is exceeded because the data on trip catches used to set the bycatch limit already reflect small scale trips (see discussion of golden tilefish trip limits).

ACTION 2. REDUCTION BASE YEAR

Use the catch figures from the 1992 logbook data for calculating the snowy grouper and golden tilefish quotas.

Discussion

The implications in terms of catch and revenues for the preferred option for a base year from which reductions in catch are calculated are discussed in Action 1. The accuracy and relevance of using NMFS general canvass and state landings wherein varying quantities of snowy grouper are thought to be recorded as "unclassified grouper" has been questioned. Logbook data are thought to be a superior estimate of landings because use of general canvass data involves the rather subjective decision of how much of landings recorded in the "unclassified grouper" category to attribute to snowy grouper.

The following are proposed options to Action 2 that were rejected.

Rejected Options for Action 2

Rejected Option 1. Calculate the quota using landings data from 1992.

Discussion

The inherent problem with using general canvass data for snowy grouper catch estimates has been discussed above.

Rejected Option 2. Calculate the quota using the average of landings data from 1990-92 and do not include all "unclassified groupers" as snowy grouper.

Discussion

The actual figures are contained in Tables 8 and 10 (Section 11.0). Use of general canvass data without having recognized that some portion of "unclassified groupers" was likely to have been snowy grouper would have been clearly inaccurate because evidence from fishermen and a state data collection official suggested that some snowy grouper landings were recorded in the unclassified category. Use of what would have amounted to a low estimate of snowy grouper catches would have increased short term economic hardships on fishermen unnecessarily and could have potentially undermined the cooperation of fishermen with the management program.

Rejected Option 3. Calculate the quota using the landings data from 1992 and do not include all "unclassified groupers" as snowy grouper.

Discussion

Use of general canvass data without having recognized that some portion of "unclassified groupers" was likely to have been snowy grouper would have been clearly inaccurate because evidence from fishermen and a state data collection official suggested that some snowy grouper landings were recorded in the unclassified category. Use of what would have amounted to a low estimate of snowy grouper catches would have increased short term economic hardships on fishermen unnecessarily and could have potentially undermined the cooperation of fishermen with the management program.

Rejected Option 4. Separate the "unclassified groupers" based on logbook data and only include that portion that is snowy grouper for calculating the reduction base year figure.

Discussion

This option had some appeal methodologically, but still suffered from the inherent reporting coverage problems of general canvass data. In addition, standard errors for logbook estimates were reported such that confidence intervals were constructed around catch estimates whereas assessments of the accuracy of NMFS general canvass data were not possible. Lastly, an effort by the NMFS is underway to measure the extent and directional influence of non-reporting bias for logbook data (Harris et al., 1993). A formal effort to measure the extent and direction of non-reporting for general canvass data has never been undertaken. For these reasons the choice of logbook data to set a baseline for TAC reductions probably represented a more accurate assessment of present catch levels than any system that uses general canvass data.

Rejected Option 5. Calculate the snowy grouper and golden tilefish quotas using the average of landings data from 1990-92. Include all "unclassified groupers" as snowy grouper.

Discussion

This option was the preferred alternative prior to the availability of logbook data (Tables 8 and 10; Section 11.0). Practically, this method proposes snowy grouper catches that are very close to logbook

estimates of catch (see discussion above) and thus involved nearly the same economic impacts on the fishing industry over the reduction period. Methodologically, this method of calculating a baseline is difficult to defend because although nearly everyone concedes that some of the unclassified groupers category includes snowy grouper catches, there was little justification for assigning all of that category as snowy grouper catches.

ACTION 3. PHASE-IN

Phase in the snowy grouper and golden tilefish quotas (based on 1992 logbook data; see Action 2) using a 13.33% reduction in year one, 13.33% in year two, and 13.33% in year three. Year 1 is the 1994 fishing year.

Discussion

The implications in terms of catch and revenues for the preferred and rejected options for phased-in percentage reductions are discussed in Action 1. The overall conclusion is that equal increments are preferable because it may be easier to monitor the effects on reductions and because equal increments means more stability for the fishing industry. In addition, equal increments will mean a slightly smaller initial reduction which may have a small positive effect if effort shifts do occur. Because yield streams prior to and after recovery are not available, the larger and perhaps more important tradeoff of what is given up and the pace and magnitude of recovery cannot be evaluated at this time.

The following are proposed options to Action 3 that were rejected.

Rejected Options for Action 3

Rejected Option 1. Phase the quota in using a 15% reduction in year one, 15% in year two, and 10% in year three.

Discussion

Impacts for this scenario in terms of revenues forfeited in the short run were not significantly different from the preferred alternative discussed above. The reason the preferred alternative for the phase-in was more beneficial was that biological monitoring of rebuilding would likely be facilitated by equal reductions and equal reductions may allow for more stability for the fishing industry during the rebuilding period.

Rejected Option 2. Phase in the quota 100% in year one.

Discussion

Ideally, catch scenarios under different rebuilding strategies could have been forecasted so that the tradeoffs of a phased-in approach could be systematically compared to an instantaneous reduction in catch and no action. Unfortunately, projections of catches under different rebuilding strategies were not possible. Qualitatively, although rapid rebuilding strategies are often preferable in terms of the resource and perhaps overall yields from the fishery, rapid phase-ins would have increased effort shifts and the difficulty managers have controlling fishing effort in this open access fishery. Moreover, rapid phase-ins would have

tended to exacerbate the open access problem where the benefits of reductions may not have accrued to fishing firms making the short run sacrifices if those firms were forced out of the fishing business during the recovery period.

Rejected Option 3. Phase in the quotas equally using the average of landings data from 1990-92.

Fishery	Base Year (lb)	Annual TAC (lb) (1993/94/95)	%Reduction from Base	%Reduction from 1992
Snowy Grouper	769,639	667,046	13.3%	13.9%
		564,453	26.7%	27.1%
		461,783	40.0%	40.4%
Golden Tilefish	1,022,197	885,938	13.3%	18.8%
		749,679	26.7%	31.2%
		613,318	40.0%	43.8%

Discussion

Comparisons with the base year (average of 1990-92 under this option) and the 1992 fishing year were shown to give a relative indication of the impact of this alternative.

ACTION 4. FISHING YEAR

Use the current fishing year (January 1 - December 31). This applies to all species except wreckfish. Landings of snowy grouper and golden tilefish will be counted towards the quota beginning January 1.

Discussion

Establishment of a quota will likely have a differential impact on fishermen in each state depending on when the fishing year begins. The current fishing year is January 1 to December 31. If the fishing year begins in winter, fishermen in North and South Carolina may be at a disadvantage because of severe winter weather conditions. However, a major concern is to avoid beginning the fishing year when supplies of grouper, grouper substitutes, and tilefish from the mid-Atlantic are high. Also, imported grouper is a large component of the total supply of grouper in the southeast. Adams and Lawlor (1990) indicated that there are two peaks in the supply of imported grouper; one in April and one in September. It is worth noting that this trend may have changed in recent years although no information is available to confirm this. Monthly landings of snowy grouper and golden tilefish by state are shown in Figure 2 (Section 10.0).

The following are proposed options to Action 4 that were rejected.

Rejected Options for Action 4

Rejected Option 1. Use the wreckfish fishing year (April 16 - April 15).

Discussion

These dates would have coincided with the tracking time period for wreckfish but would have resulted in wreckfish fishermen being at a disadvantage in terms of fishing for snowy and golden tilefish. This would occur because wreckfish fishing is usually good in April when the season opens, and a substantial amount of wreckfish effort occurs then. Opening the season for snowy grouper and golden tilefish concurrently with the wreckfish season may have also resulted in lower exvessel prices for snowy grouper because snowy grouper probably goes to the same markets as wreckfish. Overall, a concern was that the beginning date not start when supplies of grouper, grouper substitutes, or tilefish from the mid-Atlantic are high. Imported grouper is a large component of the overall supply of grouper consumed in the Southeast (Adams and Lawlor, 1990). There are two peaks in the supply of imported groupers, one in April and one in September, although supply trends may have changed in recent years (Adams and Lawlor, 1990). Thus supply of imports would have been high if these dates were used for the snowy grouper and golden tilefish season.

Enforcement of the wreckfish closure may have been improved if there was no fishing prior to April 15 which would have been the case if the snowy grouper and golden tilefish quotas had been met and the fishery closed.

Rejected Option 2. Begin the fishing year February 15.

Discussion

See discussion above.

Rejected Option 3. Use some other specified fishing year (_____ - _____).

Discussion

See discussion above.

Rejected Option 4. Split the quota equally into two 6-month seasons beginning January 1 and July 1.

Discussion

This method would have likely allocated the catch more equitably between fishermen in different states. The inherent problem with this approach is that the cost of tracking and monitoring TACs and issuing closure notices in a timely manner are increased considerably. One problem with two separate TACs was that if most fishermen from the region were capable of participating in both fishing seasons, then the negative economic aspects of TAC management such as flooding markets with rapid catches, thus lowering exvessel prices and possibly increasing fishing costs, would have in fact increased with this approach. The Council has decided to address this concern with proposed trip limits (see discussion that follows). Trip limits are, of course, not without efficiency and equity problems, but probably represent a more cost-

effective method to extend the fishing season and allow fishermen an adequate opportunity to participate in the fishery.

ACTION 5. SPECKLED HIND AND WARSAW GROUPER

Allow retention of one warsaw grouper and one speckled hind per vessel (recreational and commercial) per trip, both of which count towards the five grouper aggregate bag limit. See Action 11 which includes all tilefish species in the grouper aggregate bag limit. Sale of speckled hind and warsaw grouper is prohibited and fishermen are encouraged to donate these fish to "good causes," such as charitable organizations.

Discussion

This measure applies to both recreational and commercial fishermen. Recreational fishermen would be allowed one warsaw grouper and one speckled hind per vessel and these fish would apply to one of the recreational fishermen's aggregate bag limit. This option would limit mortality, thereby contributing some conservation benefit. The public will need to be educated concerning the benefits of retaining, but not selling, a fish.

The following are proposed options to Action 5 that were rejected.

Rejected Options for Action 5

Rejected Option 1. No action.

Discussion

If these species were caught individually as rare events rather than in aggregations, then no action would have been roughly equivalent to the preferred option in terms of benefits from the measure in the long run. Under no action, however, fishermen would have retained the fish and at least have obtained some benefit from selling or consuming it themselves, which under this assumption would have been preferable to the outcome of the preferred option if there was little hope that the fish could survive release. If fish were caught in multiple numbers consecutively, then no action would not have been preferable to the preferred alternative because there would likely have been more benefit from incentives to move away from the aggregation rather than being allowed to catch as many as would currently be possible (no action).

Rejected Option 2. The plan development team recommended the following options be evaluated:

A. No retention of speckled hind and warsaw grouper.
B. SMZ in mid-depth zone which would help warsaw, red porgy, and white grunt.
C. Size limit of 20" TL but since survival is around 10%, this would have resulted in few benefits.

Discussion

The major thrust of this recommendation was analyzed separately in the discussion of the preferred option and under Action 7.

Rejected Option 3. Allow retention of one warsaw grouper or speckled hind but do not allow sale of these fish.

Discussion

This option would have had no conservation benefit if capture of these species was normally a rare event. Although the retention of one fish has intuitive appeal because it avoids wanton waste from discards of fish that would not likely survive release, the practical application of enforcing a rule that allows possession, but not sale, may have diminished the benefits of avoiding wastage. Hence this alternative was not preferable to the preferred option.

Rejected Option 4. Prohibit all retention of speckled hind and warsaw grouper by recreational and commercial fishermen.

Discussion

According to NMFS general canvass data for 1992 for the entire south Atlantic region, the commercial speckled hind catch was 21,108 pounds worth $34,614, and catches of warsaw grouper were 22,780 pounds worth $36,720. Although sacrificing this revenue would not have had any major impacts on the fishing industry, long term benefits associated with no retention would have had to have been compared to the loss of revenue in the short term. As was mentioned above, because the capture of either of these species was a fairly rare occurrence, fishermen can do little to avoid catching them as snapper reel and bottom longline gear are not particularly selective. If there were aggregations, the no retention provision might prompt fishermen to move away from the aggregation because catching additional fish becomes a cost if the fish cannot be sold and require time and effort to release or discard. This type of incentive presupposes that these fish aggregate and probably makes more sense for bandit reel fishing than bottom longlines where the fisherman would not likely discover that the gear had been set on an aggregation until the bottom longline was retrieved.

ACTION 6. MANAGEMENT OF MINOR SPECIES AND POTENTIAL IMPLICATIONS OF EFFORT SHIFTS RESULTING FROM IMPLEMENTATION OF QUOTAS

Allow all retention of minor species (except speckled hind and warsaw grouper; see Action 5) and gather information via 100% logbook coverage during 1994 and other years as necessary. Minor species with known SSRs include speckled hind and warsaw grouper. Those with unknown SSRs, but suspected to be severely overfished, are yellowedge and misty groupers. Yellowedge and misty groupers can be sold; speckled hind and warsaw grouper cannot be sold (see Action 5).

Discussion

Because there is a bycatch of minor species such as speckled hind, warsaw grouper, and yellowedge grouper in the deep water fishery, future management efforts to reverse declines or at least stabilize the abundance of minor species will affect the available yields from target species such as snowy grouper. The preferred approach at this time is to document the incidence of catch of minor species while prohibiting the sale of speckled hind and warsaw grouper (see discussion of Action 5).

If future management for the deep water fishery incorporates more aggressive protection for these minor species after later assessments indicate that stock conditions for these species are not improving or perhaps worsening, then measures promulgated in the future may impose significant restrictions on fishing for target species such as snowy grouper. Qualitatively, the trade-off between taking more aggressive steps now or later depends on whether the steps in the future will require much larger impositions (costs) on fishing for target species than if these steps were taken now, and of course, the effective discount rate. There is no way to quantify this tradeoff at this time.

The following are proposed options to Action 6 that were rejected.

Rejected Options for Action 6

Rejected Option 1. Set the snowy grouper and golden tilefish quotas based on catch levels that correspond to suitable target levels for the incidentally caught species.

Discussion

Depending on how "suitable target levels" were defined, this option may have involved smaller impacts on fishermen in the long run than the preferred option. On the other hand, however, lower TACs for deep water target species may not have actually reduced catch of some minor species because fishing may select aggressive species first. There has been some discussion that the decline of minor species may have been caused by a tendency for these minor species to be aggressive feeders at the top of the food chain, thus leading them to be caught first. In any case, this option probably would have had higher short run impacts than the preferred option but may have had lower long run impacts.

Rejected Option 2. Prohibit any retention of incidentally caught species.

Discussion

Because minor species are a bycatch of normal fishing operations for snowy grouper, this alternative may have no positive effects because fish would have been discarded dead and no retention of bycatch species would have probably created little to no economic incentive to move away from bycatch species when they were encountered. Because a large portion of the snowy grouper catch comes from bottom longlines, it is doubtful that fishermen could do anything to avoid these catches. Public testimony has pointed out that some species such as yellowedge grouper can be found in relatively large numbers around wrecks in deep water. Fishing on deep wrecks can still produce some relatively large numbers of yellowedge groupers on a trip if the wreck has not been fished for a long period of time according to deep water fishermen. To the degree that the present catch of yellowedge grouper comes from fishing wrecks rather than from yellowedge mixed in with snowy grouper, this option may have had some ability to reduce catch of minor species.

Rejected Option 3. Allow some species to be overfished.

Discussion

The Magnuson Act does allow overfishing of minor species in a multispecies fishery but requires that no species be pushed to the point of becoming endangered. We know that minor species in the deep water complex are overfished presently. This action would have had no short run impacts (similar to the preferred option) because it allows for the *status quo* in the short run. The crux of the issue, however, was how far were we from endangering these minor species by allowing them to decline over time. Also, what were the longer run impacts on the fishery had managers taken steps to increase the population size of these minor species so that they would not become endangered.

Rejected Option 4. Gear specifications that release larger individuals.

Discussion

Under this option, gear restrictions such as lighter monofilament leaders that would have released larger individuals of a species would have been implemented. While this might work for larger individuals it would not provide protection for smaller individuals or species. The potential of this approach to reduce catch of minor species has not been studied but has some intuitive appeal for warsaw grouper because they are generally large and could break lighter leaders and release themselves. Enforcement of this provision would have been very expensive and potentially ineffectual. Latent hooking mortality would also have had to be studied because broken off hooks may injure large warsaw grouper even if they were not exposed to the stress of being brought to the surface.

Rejected Option 5. Effort limitation.

Discussion

An effort limitation program such as an ITQ could have been used to reduce overall fishing effort and consequently reduce bycatch. The benefits of such a program in terms of reductions in effort would have depended on the degree to which primary species could have been targeted. This would have affected the degree to which fishing rights would have been distributed through an ITQ program to obtain a reduction in effort. The success of effort limitation schemes for multi-species fisheries in other countries has been low, and the primary deficiency has been discards of bycatch or expensive and ineffectual systems to trade rights to bycatch such that the rate of bycatch was both recorded and controlled. At this point, effort limitation may be a long term solution to the problem of protecting minor species, but more experience and innovation with effort limitation systems is needed to solve some of the fundamental problems with that approach.

ACTION 7. ESTABLISH THE *OCULINA* HAPC AS AN EXPERIMENTAL CLOSED AREA

Establish the *Oculina* "Habitat Area of Particular Concern" (HAPC) as a closed area where no fishing will be allowed for species in the snapper grouper management unit, including amberjack. Fishing

for coastal migratory pelagics (mackerels), tunas, swordfish, billfish, and pelagic sharks would not be restricted although any species in the snapper grouper management unit caught must be released without removal from the water. This area measures 4 by 23 nautical miles and the water depth is between 30 and 75 fathoms. Anchoring within the closed area is prohibited to aid in enforcement of the no bottom fishing oriented nature of the closure. The *Oculina* HAPC will "sunset" after 10 years if not reauthorized. This will encourage establishment of the proper research and evaluation program. NMFS is to report to the Council on the area's effectiveness as soon as results become available, but no later than the end of year 7.

Discussion

The need for a long term solution to the potential future problem of protecting minor species is clear, and this option presents a possible solution in the future. Although this option would provide an opportunity to research whether the reserve concept will work, one detraction is that it is not clear how the results of this experiment with closed areas will be monitored to test whether the concept works. As presently proposed, the experimental closed area is relatively small, thereby not displacing a large number of fishermen. Thus costs to fishermen are small in aggregate. To justify these costs, a system to monitor the results of the experiment should be developed.

Further, as proposed, no bottom fishing will be allowed by either recreational or commercial fishermen within the closed zone and anchoring would be prohibited. Yet allowing trolling potentially opens up a loophole for deep trolling that could allow some illegal harvest of deep water species. This underscores the need for a system to monitor the effect of the closure. Without such a system, the impacts on the small number of recreational and commercial fishermen who presently use the area are probably not justified because the value of the concept will not be known until after the experiment has been conducted.

The benefits of this proposed closed area are difficult to describe because the use of closed areas to reduce overfishing of minor species and increase spawning stock for snapper and grouper species have only been tried abroad. The extent to which minor species migrate and would thus be outside of protected areas for a portion of the year is not fully understood. Other limitations on the effectiveness of closed areas are that it is not clear how the results of this experiment with closed areas will be monitored to test whether the concept works.

Impacts to be weighed against potential biological and economic benefits of the proposed closure of the HAPC in the short run are nearly impossible to quantify because extremely little information to estimate the amount of commercial and recreational fishing for snapper grouper species currently occurring in the area is available. Anchoring is not presently prohibited in the area and fishermen may drift fish, slow troll with downriggers or weighted lines, or "motor fish." Motor fishing is a technique commonly used in the wreckfish fishery where the vessel is held in one place by running the engines into the direction of the drift so as to fish on or close to the bottom without anchoring. The economic impacts and displacement effects of this measure cannot be evaluated due to the lack of information on current use of the HAPC by recreational and commercial fishermen.

The Council recognizes these concerns and will work closely with NMFS to ensure that the necessary enforcement, research and monitoring programs are established. This information will allow evaluation of the experimental closed area.

The following are proposed options to Action 7 that were rejected.

Rejected Option for Action 7

Rejected Option 1. No action.

Discussion

This option would not have provided the opportunity to evaluate use of deep water closed areas for protecting minor deep water species which would have been unfortunate because the concept represents one of the potential long term solutions to the problem of overfishing minor species.

Rejected Option 2. Establish experimental closed area(s) for the deep water snapper grouper complex.

Discussion

This option would not have proposed any specific closed areas and could not be evaluated.

Rejected Option 3. Establish a portion (one-quarter, one-third, one-half, other?) of the *Oculina* HAPC as a closed area.

Discussion

The proposed closure already represents a relatively small closed area in terms of offering protection to overfished snapper grouper species. It is likely that limiting the closure to only a portion of the proposed area would be more difficult to enforce, create more confusion among user groups as to the location of the proposed closed area, and afford biological gains that are very small or even too small to be measurable. Under that scenario, the costs of setting up, monitoring, and studying the effects of such a small closed area probably would not have exceeded the benefits from the closure.

ACTION 8. COMMERCIAL BYCATCH

Allow retention of no more than 300 pounds of snowy grouper when the directed snowy grouper quota is filled and 300 pounds of golden tilefish when the directed golden tilefish quota is filled. Set the snowy grouper incidental catch at 96,000 pounds and deduct it from the quota as a set-aside for after the directed quota is filled. Set the golden tilefish incidental catch at 65,000 pounds and deduct it from the quota as a set-aside for after the directed quota is filled.

Discussion

The snapper reel trips that do not target snowy grouper but catch small quantities while fishing in less than 50 fathoms will continue after the snowy grouper directed TAC has been taken. If a fishing derby ensues under the directed snowy grouper TAC, the season will be shorter than expected (shorter than the proportional percentage decrease in catch under TACs to rebuild the snowy grouper resource), and this may

result in more boats fishing with snapper reels and consequently more bycatch of snowy grouper. This could lead to exceeding the TAC if the bycatch allowance is inadequate. Ideally, the bycatch trip limit should allow a fishing firm to retain snowy grouper taken as bycatch while not allowing small firms to target snowy grouper, which will lead to an increase of effort over what was anticipated and a TAC overage. Available data suggest that the majority of trips not targeting but having a bycatch of snowy grouper catch more than 100 pounds on a trip (see catch per trip data in Tables 11-21; Section 11.0). This will mean that some snowy grouper will be discarded or high-graded if price per pound incentives are large. Bycatch limits of between 200 and 300 pounds are better suited to accommodating the present practices of snapper grouper fishermen. The only state which may be able to target snowy grouper under a 200-300 pound bycatch limit is Florida where amberjack and snowy grouper could be targeted together.

The set aside bycatch for snowy grouper for year one of the TAC can be estimated by applying the percentage of catch under the 300 pound limit from catch per trip frequency tables for each state to the average catch per state, 1990-1992. This then is fitted to projected catch under the TAC. The tables on the next page shows these estimates.

Commercial Bycatch Deductions for Snowy Grouper

State	% Catch from trips under 300 lb	Bycatch (pounds)
North Carolina	6%	13,000
South Carolina	37%	46,060
Georgia	49%	6,780
Florida (E. Coast)	28%	29,690
TOTAL		95,530

Commercial Bycatch Deductions for Snowy Grouper and Unclassified Groupers

State	% Catch from trips under 300 lb	Bycatch (pounds)
North Carolina	6%	18,811
South Carolina	37%	56,766
Georgia	49%	9,805
Florida (E. Coast)	28%	52,296
TOTAL		137,678

There are different opinions as to the potential for bycatch of golden tilefish after the directed TAC is met. One school of thought suggests that other deep water fisheries such as snowy grouper and wreckfish have virtually no bycatch of golden tilefish which are mostly restricted to an area of mud bottom off Georgia and northeast Florida. Evaluating catch by trip for golden tilefish in the catch per trip frequency tables suggests that there are few small quantities of golden tilefish landed on trips such that one would expect those small trips to be bycatch or broken trips directed at golden tilefish. The single exception to this is for Atlantic Florida to some degree and for Monroe County, Florida, to a large extent.

For golden tilefish the 65,000 pound "set aside" was estimated by increasing the 41,000 pounds from Florida trips reporting less than 300 pounds by 59.5% which represents the difference in reported landings of golden tilefish in 1992 versus the 1992 logbook estimate (1992 catch=1,114,368; 1992 logbook=1,777,772; 59.5% higher). These figures and the resulting catches under the 300 pound bycatch limit will be considered and adjusted if necessary during annual TAC setting procedures.

The following are proposed options to Action 8 that were rejected.

Rejected Options for Action 8

Rejected Option 1. Allow retention of no more than 100 pounds of snowy grouper when the snowy grouper directed quota is filled and 100 pounds of golden tilefish when the golden tilefish directed quota is filled.

Discussion

This low bycatch quota would have probably involved some discarding or highgrading of snowy grouper because snapper reel trips in 30-50 fathoms for red porgy, vermilion snapper, and gag grouper in the Carolinas would likely have had a bycatch of greater than 100 pound.

Rejected Option 2. Allow a one fish bag limit of these species (including wreckfish) as a bycatch in other fisheries.

Discussion

This option would have resulted in large quantities of discards of snowy grouper after the directed TAC for snowy grouper was met. Depending on how quickly the directed TAC was met (see above discussion of TACs and trip limits), this option would have proven both wasteful and would have encouraged overfishing because discarded bycatches would not have been recorded in catch statistics. Another detractor to this approach was that fishermen forced to discard snowy grouper might have been reluctant to cooperate with the management program.

Rejected Option 3. Prohibit retention of deep water complex species in other fisheries.

Discussion

The extent of the bycatch of deep water species in other fisheries is not known exactly but expected to be small. This proposed action would have been costly to enforce because enforcement personnel would have found it difficult to determine whether the deep water bycatch in possession was from snapper grouper trips or the bycatch of some other fishery.

Rejected Option 4. Allow retention of no more than _____ fish (equivalent to 200 pounds) per trip until the quota is filled. This would have applied to snowy grouper (15% SSR), yellowedge grouper (SSR unknown), warsaw grouper (6% SSR), and tilefish (golden tilefish 21% SSR).

Discussion

In reality, most snapper grouper trips targeting species other than deep water species would have had a bycatch of under 200 pounds so this proposed option would not have impacted many trips from that regard (Tables 11-16; Section 11.0). The inferior aspect of this option was that bycatch would have been in terms

of the number of fish rather than poundage as with the preferred option. This might have encouraged discards of small individual fish which would have been wasteful and encouraged overfishing by not recording all of the catch.

ACTION 9. SNOWY GROUPER COMMERCIAL TRIP LIMIT

Establish a 2,500 pound (gutted weight) snowy grouper trip limit while the directed snowy grouper quota is open.

Discussion

Tables 11-16 (Section 11.0) present the catch per trip frequencies for snowy grouper by state in 1992. It should be noted that bottom longline trips accounted for the majority of the snowy grouper landings. Snapper reel trips that targeted showy grouper, and bycatch from snapper grouper trips that operated in the 30-50 fathom range, accounted for a small percentage of the snowy grouper landings.

Using the data in Tables 11-16 (Section 11.0), the proposed 2,500 pound trip limit will impact 33% and 12% of the landings in North Carolina and Florida respectively. The percentage of trips and catch that will be affected by the trip limits do not represent trips and catches that will be foregone. Rather trips that would have exceeded the trip limit will be limited to 2,500 pounds for snowy grouper. The actual reduction in catches would be less than the percentages shown above. The trip limit will mainly affect the larger bottom longline trips in both states. However, the trip limit will likely stabilize exvessel prices and make distribution of the catch among participants more equitable.

Trip limits tend to impair efficiency and decrease net producer and consumer economic benefits. Seen from a different perspective, trip limits can be used to spread the catch evenly among participants for equity purposes. Trip limits also have some effectiveness for decreasing the negative effects of intensive fishing activities under a restrictive TAC regime. However, in some cases, fishermen simply make back to back trips and find ways to catch fish faster so that the trip limit introduces inefficiency and does not slow down fishing activities or spread the catch equitably among fishermen. The 2,500 pound trip limit is an attempt to find a compromise between the desire to slow the fishery down and stabilize prices to fishermen.

The following are proposed options to Action 9 that were rejected.

Rejected Options for Action 9

Rejected Option 1. Do not establish a trip limit for snowy grouper.

Discussion

The discussion above compares the proposed trip limit of 2,500 pounds to no action. The discussion concludes that the use of a 2,500 pound trip limit has both negative and positive aspects but is probably better than no action in the long run.

Rejected Option 2. Establish a 1,000 pound (gutted weight) snowy grouper trip limit.

Discussion

In North Carolina, where roughly three-fifths of the total reported south Atlantic snowy grouper was landed in 1992, roughly 72% of the total catch from that state in 1992 came from trips that landed more than 1,000 pounds (Table 11; Section 11.0). A 1,000 pound trip limit would have probably made use of bottom longlines in the fishery infeasible. This would have created large economic impacts because the vast majority of snowy grouper came from bottom longline gear. Also, deadweight economic losses would have resulted because there may have been no other use for the longline cable and reels that were being used for snowy grouper.

Rejected Option 3. Establish an endorsement system, similar to red snapper in the Gulf of Mexico, based on catches during 1990-1992.

Discussion

The value of an endorsement system for snowy grouper was not clear. According to early reports, the endorsement system for red snapper in the Gulf of Mexico does not appear to be successful in slowing down catch. The administrative costs of processing and documentation of applications for snowy grouper endorsements might be costly if the time period for establishing eligibility were lengthy. Additionally, state catch records on a per vessel per trip basis to verify applications are not available in most cases for the south Atlantic states.

Rejected Option 4. Establish a lower trip limit south of Cape Canaveral, Florida and a higher trip limit north of Cape Canaveral, Florida for snowy grouper.

Discussion

This option would have favored operators of smaller fishing vessels but would have cost more to track and enforce. The preferred option is more beneficial than this proposal because it avoids enforcement problems from different trip limits in different areas and the 300 pound bycatch trip limit fishery-wide to be deducted from the TAC prior to the beginning of the fishing year, will reduce discards and allow small fishing vessels to catch snowy grouper after the TAC is met.

ACTION 10. GOLDEN TILEFISH COMMERCIAL TRIP LIMIT

Establish a 5,000 pound (gutted weight) golden tilefish trip limit while the directed golden tilefish quota is open.

Discussion

The potential for a fishing derby under the TAC for golden tilefish appears less likely than for snowy grouper according to the testimony of fishermen attending public hearings. This is because the market for south Atlantic golden tilefish is primarily in New York and New Jersey, as well as cities in eastern Canada, and prices appear to be dependent on the seasonality of supply from mid-Atlantic tilefish fishery (Micah LaRoche, Cherry Point Seafood, Rockville, SC; personal communication). Nevertheless, there is always

potential for a fishing derby when fishermen's catches are constrained by a TAC coupled with the 40% reduction over three years.

The 5,000 pound trip limit will affect 14% of trips and 30% of the catch in North Carolina (Table 17; Section 11.0). For South Carolina, 7% of the trips and 26% of the catch will be affected (Table 18; Section 11.0). None of the catch in Georgia or Monroe County, Florida will be affected (Tables 19 and 21; Section 11.0). Only 0.2% of the trips and 2% of the catch will be affected on the Florida Atlantic coast (Table 20; Section 11.0).

The following are proposed options to Action 10 that were rejected.

Rejected Options for Action 10

Rejected Option 1. Do not establish a trip limit for golden tilefish.

Discussion

This option would have had lower enforcement costs but might have allowed intensive fishing to drive harvest faster, resulting in lower prices and market interruptions. The no action option cannot be evaluated because cost and earnings data for bottom longline fishing were not available.

Rejected Option 2. Set a 2,000 pound trip limit for golden tilefish.

Discussion

Setting a trip limit is an attempt to stretch the quota over more of the fishing year. That objective might have been accomplished with a 2,000 pound trip limit but very large impacts on the way fishing is conducted for golden tilefish would have resulted from such a low trip limit. During 1992, 78%, 69% and 38% respectively of the golden tilefish taken on trips of over 2,000 pounds of golden tilefish were landed in North Carolina, South Carolina and the Florida Atlantic coast (Tables 17-21; Section 11.0).

Rejected Option 3. Set a 3,000 pound trip limit for golden tilefish.

Discussion

The 3,000 pound trip limit would have impacted fishing practices, particularly in North Carolina where some golden tilefish trips catch as much as 10,000 pounds per trip. Approximately 58%, 42% and 18% of the 1992 golden tilefish catch in North Carolina, South Carolina, and Atlantic Florida respectively were taken on trips that caught more than 3,000 pounds (Tables 17-21; Section 11.0). There are no cost and earnings data available to estimate whether the revenue from a 3,000 pound golden tilefish trip would be adequate to compensate even the variable costs of making a tilefish trip. According to public comment, the variable costs of bottom longline trips are high with bait (squid) and fuel being the major variable costs. What may occur with both snowy grouper and golden tilefish trip limits in place is that vessels split trips between golden tilefish and snowy grouper so that some fishing for both species occurs and revenues are increased.

ACTION 11. RECREATIONAL BAG LIMIT

Include all tilefish species in the current five grouper aggregate bag limit. (Note: Possession of Nassau grouper and jewfish is currently prohibited.)

Discussion

Presently it is believed that recreational removals from the deep water complex are minimal. Headboats apparently had fairly large historical catches of snowy grouper and golden tilefish in the early 1970s (Mr. Lavon Reeves, Owner Thunderstar Headboat Inc., Mount Pleasant, SC; personal communication) and still make occasional directed trips for snowy grouper. Data on the headboat fishery reveal that the mean catch per angler day was 10.78 pounds in 1972, which likely amounted to fewer than one fish per angler day on average given the high average weight at that time. Another estimate of average headboat catch of snowy grouper and golden tilefish per angler in the peak of the fishery is 3 fish (Mr. Lavon Reeves, Owner Thunderstar Headboat Inc., Mount Pleasant, SC; personal communication). Depending on which estimate of angler catch more accurately depicts historical catch, this measure may cap recreational catch at about the average level in the heyday of the fishery or may be less restrictive and actually allow recreational catch to be slightly higher than historical levels if headboats begin to target deep water species as rebuilding occurs. Including all species of tilefish in the 5-grouper aggregate bag limit will limit fishing mortality.

The following are proposed options to Action 11 that were rejected.

Rejected Options for Action 11

Rejected Option 1. No action.

Discussion

No action was slightly less restrictive than the preferred alternative in that anglers could have conceivably caught five snowy groupers and then moved to the area where golden tilefish commonly occur and catch an unlimited number of golden tilefish. In actuality, because of the great distance to golden tilefish grounds, the probability that anglers still target golden tilefish at all is probably very low so the preferred alternative was quite similar in effect to no action. On the other hand, if rebuilding occurs and commercial catches are not allowed to return to prior levels, then the large abundance of golden tilefish might begin to attract headboat trips to target golden tilefish which was apparently popular among some anglers in the 1970s (Mr. Lavon Reeves, Owner Thunderstar Headboat Inc., Mount Pleasant, SC; personal communication). At that time it was believed that recreational removals of golden tilefish were extremely low. Some charter/headboats still make occasional directed trips for snowy grouper. In terms of the benefits of not allowing the recreational sector to expand catches to affect rebuilding, the preferred option was preferable to no action in that it would do more to restrict expansion of the recreational catch.

Rejected Option 2. Prohibit retention of deep water complex species in other fisheries.

Discussion

This option would have amounted to more restrictive management of the recreational sector than the commercial sector and would have impacted charter/headboats that presently make a few deep water trips per year. As pointed out earlier, although participation in the deep water fishery by the recreational sector is apparently limited to a few trips per year by charter/headboats and private boats, recreational fishermen have historically participated in the deep water fishery. The level of catch under this option would have obviously not allowed recreational fishing for snowy grouper and golden tilefish to continue in deep water.

Rejected Option 3. Allow retention of no more than 200 pounds per trip until the quota is filled.

Discussion

This option would have created a bag limit that would have exceeded recreational catch in the heyday of the recreational deep water fishery. This option would have had roughly the same impacts as no action (see above).

Rejected Option 4. Allow a one fish bag limit per person per species (snowy grouper, warsaw grouper and golden tilefish; speckled hind, misty and yellowedge groupers; and wreckfish) as a bycatch in the recreational and head/charter boat fisheries.

Discussion

This option would have amounted to more restrictive management of the recreational sector than the commercial sector and would have impacted headboats that presently make a few deep water trips per year. As pointed out earlier, although participation in the deep water fishery by the recreational sector is apparently limited to a few trips per year by headboats and private boats, recreational fishermen have historically participated in the deep water fishery. According to public hearing comments, this level of catch would not have allowed recreational fishing for snowy grouper and golden tilefish to continue in deep water because although the effective catch is not significantly greater than one fish on average, the expectation of being able to catch more is apparently important to the marketing of deep water headboat trips.

Rejected Option 5. Include all tilefish species in the current five grouper aggregate bag limit. The recreational bag limit may include no more than one snowy grouper and one golden tilefish. (Note: Possession of Nassau grouper and jewfish is currently prohibited.)

Discussion

See discussion above.

ACTION 12. TRACKING TOTAL QUOTAS BY SPECIES

Track and monitor total quotas by species to ensure that TAC is not exceeded and to document production by species by individual fishermen. Require 100% logbook coverage and some form of verification with information from dealers. This in effect requires the Science and Research Director to

select and analyze mandatory logbooks for all snapper grouper permitted vessels. The catch by divers is to be separated by gear (powerheads, spearing, etc.).

Discussion

This system will allow for verification of the logbook and dealer reporting and if the data collection system periodically compares dealer reporting to logbook reports from fishermen, a dual entry tracking system will be in place.

Tracking catch accurately and closing the commercial fishery as soon as the TAC is met or projected to be met is important to rebuilding the deep water fishery. Hence the long run increases in catch and revenue depend in large measure on a viable tracking system. If the logbook reports are used to verify dealer reporting, then a dual entry system will be in effect and this should make tracking catch reasonably accurate. Because the Council may use logbook reports to establish fishermen's catch histories for future controlled access scenarios, it is expected that under-reporting or non-reporting in logbooks will be less of a problem than occurred in past logbook data collections.

One potential problem with using logbook reporting to track catches is that with all the publicity about potential controlled access for the deep water complex, some fishermen may actually overstate their landings in the hope that data will be used for allocating fishing rights in the future. Should that occur, then using logbooks to track catch may impact fishermen and consumers by holding production at a level that is lower that the TAC.

The following are proposed options to Action 12 that were rejected.

Rejected Options for Action 12

Rejected Option 1. Track individual quotas with the existing data collection system.

Discussion

The existing data collection system was not designed for tracking landings under TACs that are fairly restrictive. This may have allowed TAC to be exceeded.

Rejected Option 2. Track individual quotas by a receipt system (paper trail).

Discussion

The coupon system used for wreckfish was one form of paper trail or receipt system. Usually, receipt systems are dual-entry recording systems that are audited at the end of the fishing year to determine if fishermen have exceeded their individual quotas. This system is the principle tracking device used for ITQ programs in Australia and New Zealand. Such a system would have been preferable for tracking TACs but because there are no fishermen's shares in this open access fishery, there was no practical way to implement a coupon system for the TACs for snowy grouper and golden tilefish.

Rejected Option 3. Track individual quotas by a fish tag system.

Discussion

This system was as impractical for the deep water fishery as a coupon or receipt system because catch shares were not established in the fishery.

C. Summary of Impacts

Amendment 6 would establish total allowable catches (TACs) for snowy grouper and golden tilefish; trip limits, bag limits, and an experimental closed area are also included. The 1992 snowy grouper catch was worth $1,255,448; estimated annual values over the 3-year phase-in are $1,156,693 in 1994, $1,035,500 in 1995, and $893,543 in 1996. For golden tilefish, the 1992 catch was worth $2,702,213 and estimated annual values over the phase-in are $2,480,040, $2,220,192, and $1,915,826. Trip limits are designed to lengthen the season and bag limits are not expected to prevent recreational trips from taking place. The experimental closed area is relatively small, thereby not displacing a large number of fishermen; thus costs to fishermen are small.

The measures in this amendment are expected to have some economic impact on snapper grouper fishermen in the south Atlantic and particularly on fishermen who depend on the deep water species. These impacts are discussed throughout the regulatory impact review and are estimated to be approximately $1.15 million over three years. This represents those costs that can be quantified and results from losses of $361,905 for snowy grouper and $786,387 for golden tilefish. It is expected that fishermen will make up a portion of revenue reductions from deep water TACs by concentrating more fishing effort on other species in the short run. Overall, impacts are not expected to be major.

Although impossible to quantify at this time, the impacts of continued overfishing of deep water species would hold greater economic consequences in terms of revenue reductions than the measures proposed in this amendment. The SSR for snowy grouper was estimated to have been between 10% and 40% based on the 1990 assessment by area. The 1991 assessment presented a combined SSR of 15% using the same data (1972-1988/89). The 1992 assessment included data through 1990 which indicated that the SSR had remained at 15%, far below the overfishing level of 30%. For golden tilefish, the initial SSR was between 28% and 42% by area. In the 1991 assessment using the same data (1972-1988/89), the SSR was 31%. The 1992 assessment indicated that the golden tilefish SSR had declined to 21%, indicating a further decline in the biological health of this resource. The Council concluded that without the proposed actions, the SSRs of these and the minor species would, at best, remain below the overfishing level (30%), and could very likely continue to decline, resulting in even greater negative economic impacts.

The following table provides a summary of the economic impacts of the proposed management measures:

SUMMARY OF ECONOMIC IMPACTS

ACTION	Positive Impacts	Negative Impacts	Net Impacts
Snowy Grouper Quota: 40% reduction over 3 years	Prevent overfishing & ensure long-term economic viability	$361,905 in forgone revenues over 3 years	Positive
Golden Tilefish Quota: 40% reduction over 3 years	Prevent overfishing & ensure long-term economic viability	$786,389 in forgone revenues over 3 years	Positive
Speckled Hind/Warsaw: Retain 1/vessel/trip (rec. & com.)	Prevent waste & helps prevent overfishing	Some discards	Positive
Minor Species: Allow retention except for speckled hind & warsaw	Prevent waste & helps prevent overfishing	Some discards	Positive
Oculina HAPC: Establish as closed area for snapper grouper management unit; no anchoring	Protect long-term biological characteristics Helps prevent overfishing	Some displacement but expected to be small	Positive
Commercial Bycatch: Allow retention of up to 300 lb of snowy grouper and/or golden tilefish once directed quotas are filled	Prevent waste	None	Positive
Snowy Grouper Trip Limit: Establish 2,500 lb trip limit while directed quota is open	Extend season & prevent derby	Some revenue loss on small percentage of trips	Positive
Golden Tilefish Trip Limit: Establish 5,000 lb trip limit while directed quota is open	Extend season & prevent derby	Some revenue loss on small percentage of bottom longline trips	Positive
Recreational Bag Limit: Include all tilefish species in the current 5-grouper aggregate bag limit	Allows continued participation & helps prevent overfishing	Some discards	Positive

D. Public and Private Costs

The 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 this specific action include:

Council costs of document preparation, meetings, public hearings and information dissemination	$117,840
NMFS administrative costs of document preparation, meetings and review	$25,000
NMFS law enforcement costs (no new costs)	$0
Public burden associated with permits, etc.	$0
Total	$142,840

No new costs for enforcement are anticipated because the HAPC already exists through prior regulations and the trip limits will be enforced dockside.

E. Effects on Small Businesses

Introduction

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. The category of small entities likely to be affected by the proposed plan is that of commercial snowy grouper fishermen, golden tilefish fishermen, and fish houses which have a high dependence on these species. The impacts of the proposed action on these entities have been discussed in the regulatory impact review (Appendix C). The following discussion of impacts focuses specifically on the consequences of the proposed action on the mentioned business entities. An Initial Regulatory Flexibility Analysis (IRFA) is conducted primarily to determine whether the proposed action would have a "significant economic impact on a substantial number of small entities." In addition to analyses conducted for the Regulatory Impact Review (RIR), the IRFA provides an estimate of the number of small businesses affected, a description of the small businesses affected, and a discussion of the nature and size of the impacts.

Determination of Significant Economic Impact on a Substantial Number of Small Entities

In general, a "substantial number" of small entities is more than 20 percent of those small entities engaged in the fishery (NMFS, 1991). For the 1992 fishing season, the most recent year for which data on numbers of participants are available for all south Atlantic states, there were 1,887 individuals and corporations holding snapper grouper permits (Harris et al., 1993). The Small Business Administration (SBA) defines a small business in the commercial fishing activity as a firm with receipts of up to $2.0 million annually. All 1,887 holders of snapper grouper permits readily fall within the definition of small

business. Since the proposed action will directly and indirectly affect many of these permittees, the "substantial number" criterion will be met.

Economic impacts on small business entities are considered to be "significant" if the proposed action would result in any of the following: a) reduction in annual gross revenues by more than 5 percent; b) increase in total costs of production by more than 5 percent as a result of an increase in compliance costs; c) compliance costs as a percent of sales for small entities are at least 10 percent higher than compliance costs as a percent of sales for large entities; d) capital costs of compliance represent a significant portion of capital available to small entities, considering internal cash flow and external financing capabilities; or e) as a rule of thumb, 2 percent of small business entities being forced to cease business operations (NMFS, 1991). The proposed measure for the deep water species are significant.

Explanation of Why the Action is Being Considered

Refer to Section 1.0, Purpose and Need.

Objectives and Legal Basis for the Rule

Refer to Section 1.0 and Appendix A for the Management Objectives. The Magnuson Fishery Conservation and Management Act of 1976 provides the legal basis for the rule.

Demographic Analysis

Refer to the Source Document (SAFMC, 1983b), and Section 3.0 of this amendment.

Cost Analysis

Refer to the summary of the regulatory impact review and the summary of government costs within the regulatory impact review (Appendix C).

Competitive Effects Analysis

The industry is composed entirely of small businesses (harvesters and fish houses). Since no large businesses are involved, there are no disproportional small versus large business effects.

Identification of Overlapping Regulations

The proposed action does not create overlapping regulations with any state regulations or other Federal laws.

Conclusion

The proposed measure for the deep water species will have a significant effect on small businesses.

References

Adams, C.M. and F.J. Lawlor, III. 1990. Trends in the importation of selected fresh and frozen seafood products into the southeastern United States. Technical Paper 59, FL Sea Grant College Prog., Univ. of Florida, Gainesville, FL. 70 pp.

Harris, K.C., A.J. Chester, G.N. Johnson, and C.W. Krouse. 1993. The 1992 south Atlantic snapper-grouper logbook survey. NMFS/SEFSC Beaufort Laboratory, 101 Pivers Island Road, Beaufort, NC 28516. June 1993. 27 pp. plus tables.

Keithly, W.R. and F.J. Prochaska. 1985. The demand for major reef fish species in the Gulf and South Atlantic regions of the United States. Proceedings of the Tenth Annual Tropical and Subtropical Fisheries Technologies Conference of the Americas, Texas A & M Sea Grant TAMU-SG-86-102, pages 59-72.

NMFS. 1991. Operational guidelines: fishery management plan process. October 1992.

Poffenberger, J.R. Jr. 1985. Operational and financial characteristics of reeffish vessels in the South Atlantic and Gulf of Mexico areas. N. Am. J. Fish. Man. 5:379-388.

SAFMC. 1983b. South Atlantic Fishery Management Council. Source Document for the Snapper Grouper Fishery of the South Atlantic Region.

SAFMC. 1991a. South Atlantic Fishery Management Council. Amendment Number 4, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region.

Appendix D. Habitat Concerns

The habitat section for the Snapper Grouper Fishery Management Plan was updated as part of Amendment 1. The following information replaces Section 8.2.5 in Snapper Grouper Amendment #1 and Adds Section 8.3.

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
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 reefs
14. hurricane Hugo impacts on fisheries habitat
15. anchoring on reefs and groundings
16. habitat utilization documentation
17. impacts of fishing techniques
18. sea level rise
19. impacts of jetties and groins
20. mandatory boat access

8.2.5.3 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 (Table 1).

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).

8.2.5.4 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. Local production could be adversely affected by dredging and pipe laying activities. Increased industrial activities could also affect adult and juvenile species 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.

8.2.5.5 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) and a policy statement concerning dredging and dredge disposal activities (Section 8.3.3).

8.2.5.6 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.

8.2.5.7 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. 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.

8.2.5.8 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.

8.2.5.9 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 nonpoint 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. Table 2 describes the pollutants included in the NCPDI, their definition and effects on the environment, marine organisms, and humans.

8.2.5.10 Agricultural Pesticide use in Coastal Areas

Pesticides including herbicides, insecticides, fungicides, nematicides, algicides, wood preservatives, and fumigants have been used extensively in the southeast coastal zone. 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 has undertaken a comprehensive review of pesticide use in coastal areas. 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 will be available in 1993 and will be included in a subsequent amendment to this plan.

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 on Ocean Dumping

The SAFMC is opposed to ocean dumping of industrial waste, sewage sludge, and other harmful materials. Until ocean dumping of these materials ceases, the SAFMC strongly urges state and Federal agencies to control the amount of industrial waste, sludge, and other harmful materials discharged into

rivers and the marine environment , and these agencies should increase their monitoring and research of waste discharge. The SAFMC requests that the Environmental Protection Agency continue to implement and enforce all legislation, rules, and regulations with increased emphasis on the best available technology requirements and pretreatment standards. The SAFMC requests that EPA require each permitted ocean dumping vessel (carrying the above described material) to furnish detailed information concerning each trip to the dump site. This might be monitored with transponders, locked Loran C recorder plots of trips to and from dump sites, phone calls to the EPA when a vessel leaves and returns to port, or other appropriate methods. Also the EPA should take legal action to enforce illegal (short or improper) dumping. The SAFMC requests that fishermen and other members of the public report to the EPA, Coast Guard, and the Councils any vessels dumping other than in approved dump sites. The SAFMC supported the phase out of ocean dumping of the above described materials.

8.3.3 SAFMC Policy Statement Concerning Dredging and Dredge Material Disposal Activities

Ocean Dredged Material Disposal Sites (ODMDS)

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 concerning its role in the designation, operation, maintenance, and enforcement of activities in the ODMDSs:

Policies

The Council acknowledges that living marine resources under its jurisdiction and their essential habitat may be impacted by the designation, operation, and maintenance of ODMDSs in the South Atlantic. The Council may review the activities of EPA, COE, the state Ports Authorities, private dredging contractors, and any other entity engaged in activities which impact, directly or indirectly, living marine resources within the EEZ.

The Council may review plans and offer comments on the designation, maintenance, and enforcement of disposal activities at the ODMDSs.

ODMDSs should be designated or redesignated so as to avoid the loss of live or hard bottom habitat and minimize impacts to all living marine resources.

Notwithstanding the fluid nature of the marine environment, all impacts from the disposal activities should be contained within the designated perimeter of the ODMDSs.

The final designation of ODMDSs should be contingent upon the development of suitable management plans and a demonstrated ability to implement and enforce that plan. The Council encourages EPA to press for the implementation of such management plans for all designated ODMDSs.

All activities within the ODMDSs are required to be consistent with the approved management plan for the site.

The Council's Habitat and Environmental Protection Advisory Panel when requested by the Council will review such management plans and forward comment to the Council. The Council may review the plans and recommendations received from the advisory sub-panel and comment to the appropriate agency. All federal agencies and entities receiving a comment or recommendation from the Council will provide a detailed written response to the Council regarding the matter pursuant to 16 U.S.C. 1852 (i). All other agencies and entities receiving a comment or recommendation from the Council should provide a detailed written response to the Council regarding the matter, such as is required for federal agencies pursuant to 16 U.S.C.
1852 (i).

ODMDSs management plans should indicate appropriate users of the site. These plans should specify those entities/ agencies which may use the ODMDSs, such as port authorities, the U.S. Navy, the Corps of Engineers, etc. Other potential users of the ODMDSs should be acknowledged and the feasibility of their using the ODMDSs site should be assessed in the management plan.

Feasibility studies of dredge disposal options should acknowledge and incorporate ODMDSs in the larger analysis of dredge disposal sites within an entire basin or project. For example, Corps of Engineers analyses of existing and potential dredge disposal sites for harbor maintenance projects should incorporate the ODMDSs. as part of the overall analysis of dredge disposal sites.

The Council recognizes that EPA and other relevant agencies are involved in managing and/or regulating the disposal of all dredged material. The Council recognizes that disposal activities regulated under the Ocean Dumping Act and dredging/filling carried out under the Clean Water Act have similar impacts to living marine resources and their habitats. Therefore, the Council urges these agencies apply the same strict policies to disposal activities at the ODMDSs. These policies apply to activities including, but not limited to, the disposal of contaminated sediments and the disposal of large volumes of fine-grained sediments. The Council will encourage strict enforcement of these policies for disposal activities in the EEZ. Insofar as these activities are relevant to disposal activities in the EEZ, the Council will offer comments on the further development of policies regarding the disposal/ deposition of dredged materials.

The Ocean Dumping Act requires that contaminated materials not be placed in an approved ODMDS. Therefore, the Council encourages relevant agencies to address the problem of disposal of

contaminated materials. Although the Ocean Dumping Act does not specifically address inshore disposal activities, the Council encourages EPA and other relevant agencies to evaluate sites for the suitability of disposal and containment of contaminated dredged material. The Council further encourages those agencies to draft management plans for the disposal of contaminated dredge materials. A consideration for total removal from the basin should also be considered should the material be contaminated to a level that it would have to be relocated away from the coastal zone.

Offshore and Nearshore Underwater Berm Creation

The use of underwater berms in the South Atlantic region has recently been proposed as a disposal technique that may aid in managing sand budgets on inlet and beachfront areas. Two types of berms have been proposed to date, one involving the creation of a long offshore berm, the second involving the placement of underwater berms along beachfronts bordering an inlet. These berms would theoretically reduce wave energy reaching the beaches and/or resupply sand to the system.

The Council recognizes offshore berm construction as a disposal activity. As such, all policies regarding disposal of dredged materials shall apply to offshore berm construction. Research should be conducted to quantify larval fish and crustacean transport and use of the inlets prior to any consideration of placement of underwater berms. Until the impacts of berm creation in inlet areas on larval fish and crustacean transport is determined, the Council recommends that disposal activities should be confined to approved ODMDSs. Further, new offshore and nearshore underwater berm creation activities should be reviewed under the most rigorous criteria, on a case-by-case basis.

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.

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.

8.3.4 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 nearshore 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.

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 on the following pages along with the Atlantic States Marine Fisheries Commission policy on marine, estuarine and riverine habitat.

REFERENCES

CEE. 1987. Plastics in the ocean: More than a litter problem. Center for Environmental Education. 128 pp.

Department of Commerce. 1988b. Fisheries Grant-in-Aid 1987 Program Activities. U.S. DOC, October 1988.

Department of Commerce. 1988c. Report of the Interagency Task Force on Persistent Marine Debris. U.S. DOC, May 1988. 170 pp.

Fish and Wildlife Service. 1980. Ecological characterization of the sea island coastal region of South Carolina and Georgia. Volume II: Socioeconomic features of the characterization area. USFWS. FWS/OBS-79/41. 321 pp.

National Oceanic and Atmospheric Administration. 1989. National Status and Trends Program for marine environmental quality. Program report. A summary of data on tissue contamination from the first three years (1986-1988) of the mussel watch project. NOAA/NOS. NOSOMA 49. 151pp.

National Oceanic and Atmospheric Administration. 1992a. Assessing nonpoint source pollution in coastal areas: NOAA's current and future capabilities. NOAA strategic assessment program. NOAA/NOS. October 1992. 2pp.

National Oceanic and Atmospheric Administration. 1992b. Agricultural pesticide use in coastal areas: A national summary. Rockville, MD: Strategic Environmental Assessments Division, Office of Ocean Resources Conservation and Assessment. Prepublication Draft. 112pp.. USDOC and USFWS. 59 pp.

Office of Technology Assessment. 1987. Wastes in Marine Environments. US Congress, Office of Technology Assessment, U.S. Government Printing Office, Washington, D.C. OTA-0-334.

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.

Table 1. 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 component[d]	Varies by component[d]	Varies by component[d]	Varies by

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 shall apply.

Table 2. Pollutants included in the National Pollutant Discharge Inventory. (Source: NOAA 1985).

Pollutants	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 (P)	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 (Slu)	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 (WW)	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 E. Summary of Public Hearings & Written Comments

Public hearings were held at the following locations:

August 26, 1993	Charleston, South Carolina
June 21, 1993	Marathon, Florida
June 16, 1993	West Palm Beach, Florida
June 15, 1993	Jacksonville Beach, Florida
June 14, 1993	Savannah, Georgia
June 10, 1993	Charleston, South Carolina
June 9, 1993	North Myrtle Beach, South Carolina
June 8, 1993	Wrightsville Beach, North Carolina
June 7, 1993	Morehead City, North Carolina

A briefing package containing copies of all letters received and minutes from all public hearings was distributed to all Council members prior to final deliberations on Amendment 6. Summaries of the public hearing comments and letter received follow. Additional public input was received during the Council meeting on August 26, 1993 in Charleston, South Carolina and the minutes are a part of the administrative record.

Number=Number Speakers

ACTION ITEM	MOREHEAD CITY, NC (10)	WRIGHTSVILLE BEACH, NC (17)
1. Problem		
2. Objective		
3. Quota system		Snowy bandit N of Cape Canav/LL S = 1
4. Base year		
5. Phase-in		
6. Fishing year		
7. Minor sp. & effort shift		
8. Speckled hind & warsaw	Incl in 5 aggreg = 2	Yes = 0; No = 2
9. Oculina HAPC		
Sanctuaries for gag off S. FL = 1		
10. Snowy trip limit		
11. Golden tilefish trip limit		
12. Commercial bycatch		
13. Recreational bag limit	No = 1; Incl in 5 aggreg = 1	
14. Dealer permit		
15. Charter & Headboat permit		
16. Commercial permit to sell	Yes = 1; No = 2	Yes = 0; No = 5; Use 10% = 1
17. Tracking quota		
18. Red porgy quota & bag limit	Bag of 3 too low = 2; Eval 12" = 1	Quota hard/low = 3
	Phase-in bag = 1	Bag tough/low = 2
19. Gag spawning closure	Yes = 0; No = 5	Yes = 0; No = 6; 26" better = 1
Prefer a bag/trip limit	1-2 fish rec/com trip limit = 1	
		OK for Florida = 1; More research = 3
20. Red snapper		
21. Greater amberjack		
22. White grunt	No = 2; Maybe 10" = 1	No = 3
23. Hogfish		
24. Gray triggerfish		
25. Mutton snapper		
26. Cubera snapper		
Minimum size = 42"		
27. Yellowtail snapper		
28. Multi-day bag limit		
29. Crew specification		
30. Scup mgmt. unit		
31. Framework		
32. Allowable gear		
No powerheads off SC		
Longline north of Cape Canaveral		
Prohibit longlines		
33. Experimental gear		
34. Sink net fishery		
35. Tend black sea bass pots	Yes = 1; No = 2; Limit number = 1	Yes = 1; No = 4
Limit number of traps	Vessel safety problem = 1	Yes = 0; No = 1 Limit # tags = 1
OTHER COMMENTS		OTHER COMMENTS
You do not listen		
Support Limited Entry		
RIR/Economic Impacts Not Sufficient	Yes = 1	
Regs will destroy tourism	Yes = 1	
Undersized fish used for bait		
Bag/size limits	BSB larger than 8" = 1	
Allow shrimpers to exceed bag limits		Yes = 1
Shrimp bycatch is problem		Yes = 2; Need observers = 1
Data is lacking/poor/inaccurate	Yes = 2	
Need faster stock assessments		Yes = 1
Logbooks not accurate		
Seperate mgmt by zones	Yes = 1	
Oppose Amendment 6	Yes = 1	
Fish are hook-smart & more abundant		
Leave current regs in place for 5 years		
No more regs until eval current regs	Yes = 3	Yes = 5
No more regs until get enforcement		Yes = 1
Law enforcement lacking; no response		
SAFMC should not track FL MFC		
Inshore pollution & beach renours		
Commercial effort has declined		Yes = 1
Tax imports/$ to fishermen		

	NORTH MYRTLE BEACH, SC (12)	CHARLESTON, SC (4)
ACTION ITEM		
1. Problem	BSB pots = 2; Inshore grounds = 3	
2. Objective		
3. Quota system		
4. Base year		
5. Phase-in		
6. Fishing year		Tile start Jan 1 = 1
7. Minor sp. & effort shift		
8. Speckled hind & warsaw	No = 1; Prohibit sale = 1	
9. Oculina HAPC	Yes = 0; No = 1	Yes = 1
Sanctuaries for gag off S. FL = 1		
10. Snowy trip limit		Yes = 1
11. Golden tilefish trip limit		Yes = 1; 5,000 lb = 2
12. Commercial bycatch		If catch more snowy, keep = 1
13. Recreational bag limit	Phase-in = 1	No = 1
14. Dealer permit	Yes = 1	
15. Charter & Headboat permit		
16. Commercial permit to sell	Yes = 3	Yes = 1; Boat either rec or com = 1
17. Tracking quota		
18. Red porgy quota & bag limit		Bag low = 1; Phase-in bag (10) = 1
	Phase-in bag = 1	
19. Gag spawning closure	Yes = 0; No = 1; Leave rec open = 1	Yes = 1
Prefer a bag/trip limit	90 fish or 15 boxes = 1	
20. Red snapper		
21. Greater amberjack		
22. White grunt		
23. Hogfish		
24. Gray triggerfish		
25. Mutton snapper		
26. Cubera snapper		
Minimum size = 42"		
27. Yellowtail snapper		
28. Multi-day bag limit		
29. Crew specification		
30. Scup mgmt. unit		
31. Framework		
32. Allowable gear	No cable = 2	Hook & line only = 1
No powerheads off SC	Agree = 0; Disagree = 1	
Longline north of Cape Canaveral		
Prohibit longlines		
33. Experimental gear		
34. Sink net fishery		
35. Tend black sea bass pots	Yes = 3; No = 1	Yes = 1
Limit number of traps	Limit effort=1; BSB pots damage habitat=3	Limit effort = 1
OTHER COMMENTS	OTHER COMMENTS	OTHER COMMENTS
You do not listen	Same size limit rec & com = 1	Habitat damage rec & com = 1
Support Limited Entry		Severe lack of enforcement = 1
RIR/Economic Impacts Not Sufficient		
Regs will destroy tourism		
Undersized fish used for bait		
Bag/size limits		
Allow shrimpers to exceed bag limits		
Shrimp bycatch is problem		
Data is lacking/poor/inaccurate	Yes = 2	
Need faster stock assessments	Yes = 1	
Logbooks not accurate		
Separate mgmt by zones	Yes = 1	
Oppose Amendment 6		
Fish are hook-smart & more abundant		
Leave current regs in place for 5 years		
No more regs until eval current regs		
No more regs until get enforcement		
Law enforcement lacking; no response	Yes = 1	
SAFMC should not track FL MFC		
Inshore pollution & beach renours		
Commercial effort has declined		
Tax imports/$ to fishermen	Yes = 1	

	SAVANNAH, GA (5)	JACKSONVILLE BEACH, FL (18)
ACTION ITEM		
1. Problem		
2. Objective		
3. Quota system		Two 6-month quotas = 1
4. Base year		
5. Phase-in		
6. Fishing year		Jan 1 = 1
7. Minor sp. & effort shift		
8. Speckled hind & warsaw		No = 1
9. Oculina HAPC	No = 1	
Sanctuaries for gag off S. FL = 1		
10. Snowy trip limit		
11. Golden tilefish trip limit		5,000 or 6,000 aggregate = 2
12. Commercial bycatch		
13. Recreational bag limit		
14. Dealer permit	Yes = 2	
15. Charter & Headboat permit		
16. Commercial permit to sell	Yes = 2; No = 1	No = 2; Exceptions for part-time = 1
17. Tracking quota		
18. Red porgy quota & bag limit	No phase-in of quota = 1	Yes = 1; Quota steep = 1; Bag tough = 1; More info=1
		Bag ok = 1; Higher bag (5-6) = 2; Bag of 10=1
19. Gag spawning closure	No = 1; Maybe off FL = 1; Not rec = 1	Yes = 1; No = 11
Prefer a bag/trip limit		2-3/person, even 1 = 2; Lower bag = 5
		Prefer a larger size (30") = 3; Max size = 1
20. Red snapper	Slot limit = 2 (14-24")	High mortality = 1
21. Greater amberjack	Do something, no sale = 3; Reduce rec ok=1	No = 4; Lower bag if necessary = 1; Humps spawn=1
22. White grunt	No = 1	
23. Hogfish		
24. Gray triggerfish		Yes = 2
25. Mutton snapper		
26. Cubera snapper		No bag = 1
Minimum size = 42"		
27. Yellowtail snapper		
28. Multi-day bag limit	Want for rec if policed = 1	
29. Crew specification		
30. Scup mgmt. unit		
31. Framework		
32. Allowable gear		No cable on live bottom = 1; Powerheads OK=4
No powerheads off SC	No powerheads for AJ = 1	Unconstitutional = 2; Poss >100'=4
		Depth dangerous=1; Endorsement on permit = 1
		No = 1
Longline north of Cape Canaveral		
Prohibit longlines		
33. Experimental gear		
34. Sink net fishery		
35. Tend black sea bass pots		
Limit number of traps		
OTHER COMMENTS	OTHER COMMENTS	OTHER COMMENTS
You do not listen	Ban all commercial fishing = 1	Against ITQs = 1
Support Limited Entry		Enforcement lacking in HAPC = 1
RIR/Economic Impacts Not Sufficient		African pompano needs action = 1
Regs will destroy tourism		
Undersized fish used for bait		
Bag/size limits	Size limits kill brood stock = 2	Grouper bag of 2 all year = 1
		Vermilion size of 9" = 1
		Rec should be able to land smaller fish = 1
Allow shrimpers to exceed bag limits		
Shrimp bycatch is problem		
Data is lacking/poor/inaccurate	YES = 1	Yes = 6
Need faster stock assessments		
Logbooks not accurate		
Separate mgmt by zones		
Oppose Amendment 6		Yes = 1
Fish are hook-smart & more abundant		Yes = 1
Leave current regs in place for 5 years		Yes = 1
No more regs until eval current regs		Evaluate effects of current regs = 1
No more regs until get enforcement		
Law enforcement lacking; no response		Yes = 1
SAFMC should not track FL MFC		
Inshore pollution & beach renours		
Commercial effort has declined		
Tax imports/$ to fishermen		

	WEST PALM BEACH, FL (22)
ACTION ITEM	
1. Problem	
2. Objective	
3. Quota system	Yes = 1
4. Base year	
5. Phase-in	
6. Fishing year	
7. Minor sp. & effort shift	
8. Speckled hind & warsaw	Yes = 1; No = 1; Bag of 1 = 4
9. Oculina HAPC	Yes = 1; No = 5; Limit to hook & line = 1
Sanctuaries for gag off S. FL = 1	No only off FL = 1
10. Snowy trip limit	
11. Golden tilefish trip limit	
12. Commercial bycatch	
13. Recreational bag limit	3 tile = 1
14. Dealer permit	Yes = 1; Stricter rules, reporting, etc. = 1
15. Charter & Headboat permit	
16. Commercial permit to sell	Yes = 8; Yes but not charter = 1
	Stop handing out permits = 2
17. Tracking quota	
18. Red porgy quota & bag limit	
19. Gag spawning closure	Yes=1; No = 12; Gag Jan-Mar exc Kings closed=1
Prefer a bag/trip limit	10 fish/vessel/trip = 10; 12/vessel/trip =1
	1/person rec = 3; 1-2 rec/com=1; 1/person/5/boat=1
20. Red snapper	
21. Greater amberjack	Yes = 2; No = 6; Com quota?=1; Bag of 1=2
	10/t=1; 20/trip all year = 4; 25/trip Apr&May=7
22. White grunt	
23. Hogfish	Yes = 1
24. Gray triggerfish	Yes = 1; No = 4
25. Mutton snapper	Lower size=3; 16"=1; 15-16-17"=4;No = 1
	No closure, 20" all year = 1
26. Cubera snapper	Yes = 1
Minimum size = 42"	
27. Yellowtail snapper	
28. Multi-day bag limit	Yes = 1
29. Crew specification	
30. Scup mgmt. unit	
31. Framework	
32. Allowable gear	Yes w/powerheads =1
No powerheads off SC	No powerheads or sleds = 1
Longline north of Cape Canaveral	Yes Canaveral or Jupiter = 2; No = 1
Prohibit longlines	
33. Experimental gear	
34. Sink net fishery	
35. Tend black sea bass pots	
Limit number of traps	
OTHER COMMENTS	OTHER COMMENTS
You do not listen	SSR>30% more restrictive than <30% = 2
Support Limited Entry	AJ good candidate = 1; Support LE not sure ITQ=1
RIR/Economic Impacts Not Sufficient	Gag, AJ, mutton & Oculina in next Am=1
Regs will destroy tourism	Negotiate treaties with Mexico/Bahamas = 1
Undersized fish used for bait	
Bag/size limits	Rec & com same size limit = 4
	Rec bag limit should be per boat = 1
	Grouper bag limit of 1 all year = 1
	AJ trip limit/permit holder = 1
Allow shrimpers to exceed bag limits	
Shrimp bycatch is problem	Rock shrimp/calico bycatch is problem = 2
Data is lacking/poor/inaccurate	Yes = 2
Need faster stock assessments	
Logbooks not accurate	
Separate mgmt by zones	Line between Canaveral/Jupiter = 1
Oppose Amendment 6	
Fish are hook-smart & more abundant	
Leave current regs in place for 5 years	
No more regs until eval current regs	
No more regs until get enforcement	
Law enforcement lacking; no response	Yes = 3; Dealers don't check = 2
SAFMC should not track FL MFC	Uniformity w/AJ regs not suff = 1
Inshore pollution & beach renours	Estuaries important=1; Trawl habitat damage=1
Commercial effort has declined	Yes = 2; Effort by opportunists up =1
Tax imports/$ to fishermen	

	MARATHON, FL (35)
ACTION ITEM	
1. Problem	Yes, inshore NC & SC = 2; No, do not address=1
2. Objective	Localized depletion not unique to Monroe; Monroe is unique=1
3. Quota system	No in S.FL =3
4. Base year	
5. Phase-in	
6. Fishing year	Nov when $ up =1
7. Minor sp. & effort shift	
8. Speckled hind & warsaw	Dead when caught=1
9. Oculina HAPC	
Sanctuaries for gag off S. FL = 1	
10. Snowy trip limit	
11. Golden tilefish trip limit	
12. Commercial bycatch	
13. Recreational bag limit	Phase-in but at least >1=1
14. Dealer permit	
15. Charter & Headboat permit	Yes & report=1; OK but have so many permits now=1
16. Commercial permit to sell	No cos eliminate small boat fishermen=1
	Caused me to fish harder = 1; Can be used to stop com=1
17. Tracking quota	
18. Red porgy quota & bag limit	No com phase-in=1
	Phase-in bag limit=1
19. Gag spawning closure	Yes = 1; No=4; Keep 20"=3
Prefer a bag/trip limit	No closure & no trip limit, SSR high=1
	Rec bag of 1=1; Coordinate with other species=1
20. Red snapper	
21. Greater amberjack	No=1; No April or May =8; No size limit cos SSR high=1
	3 fish during closure allows black mkt=1; Rec bag of 1=1
22. White grunt	No = 18; Bag limit = 1; Separate stocks =1
23. Hogfish	Yes = 1; No = 2
24. Gray triggerfish	No = 3
25. Mutton snapper	12" OK=3; Lower size=3; 14"=1; 15"=2; 16"=5
	If raise, 2"/year & check=1; No closure = 3; Rec bag of 1=1
26. Cubera snapper	
Minimum size = 42"	
27. Yellowtail snapper	Keep 12"=2
28. Multi-day bag limit	Yes = 1; No, keep 3-day = 1
29. Crew specification	
30. Scup mgmt. unit	
31. Framework	
32. Allowable gear	Will prevent updating equipment=1
No powerheads off SC	
Longline north of Cape Canaveral	
Prohibit longlines	
33. Experimental gear	
34. Sink net fishery	
35. Tend black sea bass pots	Yes=1
Limit number of traps	Need to protect inshore NC & SC =2
OTHER COMMENTS	OTHER COMMENTS
You do not listen	SSR>30% more restrictive than <30% = 1
Support Limited Entry	No ITQs=2
RIR/Economic Impacts Not Sufficient	Not allow sale during spawning = 1
Regs will destroy tourism	Negotiate w/Bahamas = 1
Undersized fish used for bait	Charter/headboats, enforcement on passenger=1
Bag/size limits	Keep 12" on gray snapper=1
	Spawning closures instead of size limits =1
Allow shrimpers to exceed bag limits	Allow lobster/crab fishermen exceed bag=1; Shrimpers=1
Shrimp bycatch is problem	Shrimp bycatch is problem =1
Data is lacking/poor/inaccurate	Yes = 4
	Use of size & maturity for calculating SSR incorrect=1
Need faster stock assessments	
Logbooks not accurate	Logbook zones overlap, multiple books, language =2
Separate mgmt by zones	Yes = 1
Oppose Amendment 6	
Fish are hook-smart & more abundant	Council is biased against comercial fishermen=1
Leave current regs in place for 5 years	
No more regs until eval current regs	Yes =3; Yes except gags & hogfish = 1; Regulatory frenzy=1
No more regs until get enforcement	
Law enforcement lacking; no response	Yes, intact fish traps = 1
SAFMC should not track FL MFC	Yes = 1
Inshore pollution & beach renours	Estuaries & habitat degradation=1; Water quality poor=1
Commercial effort has declined	
Tax imports/$ to fishermen	

	LETTERS @ MARATHON	
ACTION ITEM		
1. Problem	Major problem in NC & SC=1	
2. Objective		
3. Quota system	Unfair to phase-in quotas while bag immediate=1	
	Not is S. FL = 1	
4. Base year		
5. Phase-in	Can they slant the phase-in=1	
6. Fishing year		
7. Minor sp. & effort shift		
8. Speckled hind & warsaw		
9. Oculina HAPC	Yes=1	
Sanctuaries for gag off S. FL = 1		
10. Snowy trip limit		
11. Golden tilefish trip limit		
12. Commercial bycatch		
13. Recreational bag limit	Too restrictive = 1	
14. Dealer permit	Yes=1	
15. Charter & Headboat permit	No due to increased cost=1	
16. Commercial permit to sell	Yes=1	
17. Tracking quota		
18. Red porgy quota & bag limit	Yes but limit everyone=1	
19. Gag spawning closure	Yes=2	
Prefer a bag/trip limit		
20. Red snapper		
21. Greater amberjack		
22. White grunt		
23. Hogfish		
24. Gray triggerfish		
25. Mutton snapper		
26. Cubera snapper		
Minimum size = 42"		
27. Yellowtail snapper		
28. Multi-day bag limit	Allow 3 day limit=1	
29. Crew specification	Yes=1	
30. Scup mgmt. unit		
31. Framework		
32. Allowable gear	Do not allow traps=3; Only hook & line=3	
No powerheads off SC	Allow powerheads=1; Prohibit off SC=2	
	Do not allow BSB pots = 12; No powerheads=7	
Longline north of Cape Canaveral	No trawling for black sea bass	
Prohibit longlines		
33. Experimental gear		
34. Sink net fishery		
35. Tend black sea bass pots	Prefer no pots but if allow, then require tending=1	
Limit number of traps		
OTHER COMMENTS	OTHER COMMENTS	
You do not listen	Prevent overfishing & inappropriate gear=1	
Support Limited Entry		
RIR/Economic Impacts Not Sufficient		
Regs will destroy tourism		
Undersized fish used for bait		
Bag/size limits	Support bag/size limits proposed=1	
	Quotas & bag limits should be same rec & com =1	
Allow shrimpers to exceed bag limits		
Shrimp bycatch is problem		
Data is lacking/poor/inaccurate		
Need faster stock assessments		
Logbooks not accurate		
Separate mgmt by zones		
Oppose Amendment 6		
Fish are hook-smart & more abundant		
Leave current regs in place for 5 years		
No more regs until eval current regs		
No more regs until get enforcement		
Law enforcement lacking; no response		
SAFMC should not track FL MFC		
Inshore pollution & beach renours	Coral is damaged from traps=1	
Commercial effort has declined		
Tax imports/$ to fishermen		

SUMMARY OF AMENDMENT 6 WRITTEN COMMENTS AND PHONE CALLS

	LETTERS FROM INDIVIDUALS (43)	LETTERS FROM ORGANIZATIONS
ACTION ITEM		(Received 10 letters)
1. Problem	Info lacking on localized depletion = 1	Localized depletion inshore BSB NC = 1
2. Objective		
3. Quota system	No closure, prefer lower trip limits = 2	Yes = 1
4. Base year	Data 90-92 inaccurate = 1	
5. Phase-in		
6. Fishing year	Not April 15 = 1	Calendar year w/two 6-month quotas = 1
	Prefer Nov 1 but no later than Jan 1 = 1	
7. Minor sp. & effort shift		
8. Speckled hind & warsaw	Yes = 0; No = 5, incl w/ 5 grouper = 2;	No = 2; Bag of 1 W & 1 SpH = 1
Size limits or quotas = 1		Very low possession limit & no sale = 1
9. Oculina HAPC	Yes = 1	Yes = 1
Sanctuaries for gag off S. FL = 1		
10. Snowy trip limit	Yes = 1; No=1; No closure & 1500-2000 lb/trip=1	
11. Golden tilefish trip limit	Yes = 1; No = 1	
12. Commercial bycatch		
13. Recreational bag limit	No=1; snowy/tile of 1 No=1; incl w/5 grouper=1	Snowy bag of 3-5 = 1; No incl w/i 5 agg = 1
14. Dealer permit		
15. Charter & Headboat permit	No = 1	
16. Commercial permit to sell	Yes = 1; No = 6; OK for rec to sell, not com quota	No = 2
	Permit for part-time = 1	
17. Tracking quota		
18. Red porgy quota & bag limit	Quota too severe = 3; Lst min size work=2	Phase-in bag limit = 2; Yes = 1
Logbook catch est more accurate = 1	Bag of 3 too severe = 3;	
19. Gag spawning closure	Yes = 2; No = 8; 20" working = 3	No = 1; No particularly off NC = 1
Prefer a bag/trip limit	10 gag/trip = 1;	5 fish/trip = 1
Concerned about release mort; perhaps prohibiting diving sufficient = 1		
20. Red snapper	Support 18" = 1; Mortality high, lower limit = 1	Yes 18" w/2-bag = 1
21. Greater amberjack	No spawning closure = 2	
22. White grunt	No = 5; 11" in NC = 1	Yes = 1; No, consider 10" = 1
23. Hogfish	OK south but mortality north = 1	
24. Gray triggerfish	No = 4	
25. Mutton snapper	20" No = 3; Bag of 2 No = 1; keep 12" = 1	Yes 20" = 2; Yes bag = 1
Support smaller size limit; diff bag	17" = 1; 18" = 1; incl in 10 snapper = 1	Gradual increase 1-2"/yr to 16-18" = 1
Prohibit trapping spawning fish=1	No spawning closure = 2	Need to sell bag limit during closure = 1
26. Cubera snapper	2 fish/person Yes=1	Yes bag limit = 2
Minimum size = 42"	Yes = 1	Yes min size 36-42" = 1; Yes larger min=1
27. Yellowtail snapper	12"->14" Yes = 1	
28. Multi-day bag limit	Yes 3 day limit = 1;Yes 2 day limit = 1	
3-day limit of snappers inconsistent with FL law of 20 in possession = 1		
29. Crew specification		
30. Scup mgmt. unit		
31. Framework		
32. Allowable gear	Restrict powerheads = 1	Exclude BSB pots = 1
No powerheads off SC		
Longline north of Cape Canaveral	No = 2	
Prohibit longlines	Yes = 1	
33. Experimental gear		
34. Sink net fishery	Yes = 1	Yes but prefer Rej Opt 2 = 1
35. Tend black sea bass pots	Yes = 2; No = 2; Limit number of pots = 1	Yes = 1; Little support in NC = 1
	not necessary w/escape panels=2	Limit number of pots = 1
OTHER COMMENTS		OTHER COMMENTS
You do not listen	Yes = 3	RIR should address loss of employment,
Support Limited Entry	Yes = 2	income and tax impacts = 1
Snowy/yellowedge assessment off	Yes = 1	
Undersized fish used for bait	Is this allowed?= 1	
Bag/size limits	More time before additional regs = 1	
	Same for rec & com = 1; Scamp lower size = 1	
	Beginners at 10" & support others = 1	
	24" for gag = 2; 24" black grouper = 1	
Permit to sell in addition to com permit	No = 1	
Permit holders sell bycatch of other sp.	Yes = 1	
Require all who sell to keep records	Yes = 1	
Allow shrimpers to exceed bag limits	Yes = 1	
Data is lacking/poor/inaccurate	Yes = 5	
Data is ignored/misinterpreted	Yes = 1	
Charter & headboat logs not accurate	Yes = 1	
Separate mgmt by zones	Yes = 2	
Reduce grouper & red snapper size limi	Yes = 1	
Support Amendment 6	Yes = 1; No = 1	
No problem in NC	Yes = 2	
Partyboat Grounds off N Florida - 1	no com harvest of SG w/i 32 mi or <106'	
	grouper bag=2; red snapper=2; AJ=1	
	penalty = loss of RS license	
Fish are hook-smart & more abundant	Yes = 1	
Leave current regs in place for 5 years	Yes = 1	
No more regs until eval current regs	Yes = 3	
Unfair time/questions of some persons	Yes = 1	
Law enforcement lacking; no response	Yes = 1	
SAFMC should not track FL MFC = 1	Regulations put us out of business = 1	
Inshore pollution & beach renours = 1		

SUMMARY OF AMENDMENT 6 WRITTEN COMMENTS AND PHONE CALLS

	PHONE CALLS TO OFFICE (6)
ACTION ITEM	
1. Problem	
2. Objective	
3. Quota system	Snowy quota hurts bandit gear because
	longliners will fill quota quickly.
4. Base year	
5. Phase-in	
6. Fishing year	April 16 OK snow=1; Nov 1 golden tile=1
7. Minor sp. & effort shift	
8. Speckled hind & warsaw	
Size limits or quotas = 1	
9. Oculina HAPC	Unenforceable = 1
Sanctuaries for gag off S. FL = 1	
10. Snowy trip limit	Aggregate limit of 5,000 = 1
11. Golden tilefish trip limit	
12. Commercial bycatch	
13. Recreational bag limit	
14. Dealer permit	
15. Charter & Headboat permit	
16. Commercial permit to sell	Yes but do not include Ch & HB income = 1
	Ch & HB should not fish commercially = 1
17. Tracking quota	
18. Red porgy quota & bag limit	
Logbook catch est more accurate = 1	
19. Gag spawning closure	No = 1; fish houses incl black,
Prefer a bag/trip limit	yellowedge, etc
Concerned about release mort; perhaps prohibiting diving sufficient = 1	
20. Red snapper	
21. Greater amberjack	
22. White grunt	
23. Hogfish	
24. Gray triggerfish	
25. Mutton snapper	
Support smaller size limit; diff bag	
Prohibit trapping spawning fish=1	
26. Cubera snapper	
Minimum size = 42"	
27. Yellowtail snapper	
28. Multi-day bag limit	
3-day limit of snappers inconsistent with FL law of 20 in possession = 1	
29. Crew specification	
30. Scup mgmt. unit	
31. Framework	
32. Allowable gear	
No powerheads off SC	
Longline north of Cape Canaveral	No = 2
Prohibit longlines	
33. Experimental gear	
34. Sink net fishery	
35. Tend black sea bass pots	
OTHER COMMENTS	OTHER COMMENTS
You do not listen	
Support Limited Entry	Need limited entry (BSB fisherman) = 1
Snowy/yellowedge assessment off	
Undersized fish used for bait	
Bag/size limits	
Permit to sell in addition to com permit	
Permit holders sell bycatch of other sp.	
Require all who sell to keep records	
Allow shrimpers to exceed bag limits	
Data is lacking/poor/inaccurate	
Data is ignored/misinterpreted	
Charter & headboat logs not accurate	
Separate mgmt by zones	
Reduce grouper & red snapper size limit	
Support Amendment 6	
No problem in NC	
Partyboat Grounds off N Florida - 1	
Fish are hook-smart & more abundant	
Leave current regs in place for 5 years	
No more regs until eval current regs	
Unfair time/questions of some persons	
Law enforcement lacking; no response	
SAFMC should not track FL MFC = 1	
Inshore pollution & beach renours = 1	Anchor damage from Ch & HB = 1

Table A-1. Total South Atlantic commercial landings in pounds for 1978-92.

SPECIES	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Lane	24,675	34,720	9,596	24,098	5,825	3,824	4,248	5,522	9,348	10,575	6,192	4,864	18,147	26,616	29,298
Gray	77,774	127,171	79,423	82,647	64,397	62,156	88,143	86,329	93,664	102,287	94,580	96,156	210,713	200,849	217,012
Mutton	234,171	124,000	139,074	116,371	74,406	52,054	74,913	63,401	167,881	188,456	172,073	168,242	264,062	212,964	208,115
Red	605,716	416,194	374,403	371,088	302,231	313,836	251,132	248,528	220,323	188,368	171,516	266,105	223,109	133,826	100,803
Vermilion	550,400	373,106	396,715	519,898	611,854	554,008	690,136	869,430	811,623	674,833	910,476	1,149,000	1,329,520	1,026,016	791,189
Yellowtail	40,172	46,260	45,177	37,434	37,242	67,364	35,857	41,135	92,348	88,863	111,953	137,021	916,511	842,464	985,069
Schoolmaster															
Queen															
Blackfin					777	538	159	132	337	512	116	351	10	15	
Cubera			188	1,016	1,193	1,066	2,998	5,016	3,436	2,864	8,995	10,842	9,032	6,056	3,614
Dog			467												
Mahogany															
Silk			257	15,213	20,139	17,207	4,058	12,366	13,404	13,246	10,198	11,008	33,269	15,250	19,334
Snapper uncl.	124,259	123,338	150,746	260,549	332,787	295,334	186,462	101,870	239,521	232,067	183,621	125,026	110,383	92,436	106,833
Total Snappers	1,657,367	1,248,789	1,196,046	1,428,514	1,450,851	1,387,387	1,336,106	1,435,729	1,651,685	1,502,071	1,669,720	1,968,615	3,114,753	2,556,493	2,461,265
Gag			123,090	336,895	434,914	441,876	381,713	508,113	826,169	887,401	605,884	993,956	800,195	698,552	632,974
Scamp			33,009	112,461	197,602	183,287	250,886	220,958	328,957	431,103	431,160	375,846	491,184	399,892	291,460
Red				6,076	12,867	7,927	12,296	35,725	321,058	268,236	289,989	246,220	177,599	175,611	152,819
Black				131,811	122,593	114,929	233,307	62,225	435,174	493,226	333,299	332,865	240,934	156,386	188,701
Yellowfin				6,291	5,418	144	753	5,308	26,124	4,126	1,366	680	3,457	8,005	26,721
Yellowmouth															
Nassau									10,909		1,013	1,669	3,977	2,511	3,827
Speckled Hind			1,628	11,123	13,455	27,597	32,620	32,183	35,690	25,674	20,342	22,430	21,861	16,631	21,023
Snowy			6,788	222,596	203,942	416,966	319,390	155,621	441,631	387,669	295,473	486,425	586,145	449,064	561,066
Misty															
Yellowedge			527	343	10,254	20,525	2,152	578	32,310	28,660	16,439	16,063	15,599	24,002	29,898
Rock Hind				50	6		324	299	32	302	657	20	428	575	4,517
Red Hind					110	86	636	7,766	3,321	10,983	4,576	11,875	29,396	15,366	17,044
Grouper & Scamp	2,713,152	2,505,027	2,024,585	2,009,527	1,845,469	2,055,669	1,744,077	1,328,827	393,096	433,552	551,500	348,669	308,307	159,377	
Warsaw	16,601	17,257	5,907	17,506	16,803	16,103	12,529	9,901	25,958	33,225	25,045	17,739	16,524	12,163	22,680
Jewfish	33,508	26,524	26,103	24,907	15,634	22,013	17,784	19,505	21,981	31,034	25,136	21,043	2,471	0	0
Grouper uncl.															
Marbled													43	24	9
Total Groupers	2,763,261	2,548,808	2,221,637	2,881,586	2,879,069	3,307,122	3,008,471	2,387,031	2,902,509	3,015,190	2,603,878	2,877,718	2,698,115	2,118,160	2,152,740
Amberjack	42,009	50,211	69,394	97,344	145,125	97,332	155,408	144,853	426,070	1,170,223	1,013,996	1,005,261	1,398,115	1,674,170	1,832,326
Grunts	55,183	124,981	94,015	121,954	144,223	132,118	110,211	106,080	183,875	303,015	308,298	337,978	425,027	377,869	273,370
Hogfish	19,972	20,637	35,698	48,877	31,499	26,939	22,127	28,383	40,024	49,815	52,396	66,176	77,565	68,395	89,476
Porgy or Scup	201,377	202,137	231,320	265,972	229,241	169,884	175,248	118,437	186,310	164,324	186,258	288,168	486,952	256,738	505,835
Red porgy								453,069	682,851	678,132	632,604	670,061	760,150	570,092	299,859
Whitebone porgy								2,524	89	215	9,178	272	866	865	36
Knobbed porgy								15,521	32,438	51,060	75,008	34,288	47,149	46,293	43,351
Black Seabass	99,159	540,873	510,864	664,445	555,232	357,523	344,228	296,434	393,770	416,952	632,912	691,106	754,840	455,722	429,536
Seabass uncl.	1,191,975	1,124,528	1,299,478	1,222,786	845,577	464,795	695,249	1,116,009	992,584	389,414	689,345	590,601	717,575	621,495	646,032
Sheepshead	183,182	231,874	182,371	276,438	378,337	266,427	270,707	266,760	385,389	401,639	357,049	312,256	426,238	481,908	435,205
Blueline tilefish								46,578	40,820	52,431	27,896	55,598	105,942	142,400	258,183
Tilefish	138,691	150,188	248,386	998,285	3,340,928	1,551,956	923,986	1,052,396	970,742	263,609	561,201	970,102	986,099	1,051,017	1,114,368
Tilefish, goldface									77,194	5,291				40	
Tilefish, sand									66	254		3	88	1,155	451
Tilefish uncl.							104,659	41,272	94,526	81,032	50,261	25,702	17,822	25,058	13,834
Triggerfish	44,636	46,485	58,249	85,014	103,172	73,426	79,408	73,833	74,117	79,659	88,339	106,737	211,530	285,870	312,209
Total Others	1,976,383	2,492,013	2,727,773	3,781,113	5,773,923	3,140,399	3,081,228	3,764,125	4,580,864	3,999,064	4,884,141	5,154,328	6,416,956	6,039,084	6,253,778
Wreckfish										28,490	307,202	2,153,091	3,783,261	1,595,122	1,204,704
GRAND TOTAL	6,397,011	6,289,610	6,145,456	8,091,213	10,103,242	7,834,908	7,427,805	7,586,885	9,135,058	8,544,815	9,464,940	12,153,751	16,013,085	12,308,858	12,072,486

Table A-2. Total South Atlantic commercial landings in dollars for 1978-92.

SPECIES	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Lane	$18,959	$41,005	$9,697	$23,295	$6,032	$4,865	$5,757	$8,092	$12,749	$15,390	$10,195	$7,010	$22,075	$37,409	$39,220
Gray	$72,793	$148,685	$94,276	$96,860	$80,889	$105,280	$124,916	$133,436	$130,817	$155,007	$155,377	$148,536	$327,244	$294,418	$361,292
Mutton	$363,235	$174,378	$202,966	$169,583	$106,388	$88,654	$118,725	$112,827	$310,361	$382,471	$342,898	$316,657	$476,994	$399,577	$371,874
Red	$1,111,880	$703,491	$760,835	$824,008	$671,720	$719,542	$599,689	$606,183	$592,604	$506,327	$473,213	$735,531	$632,802	$362,805	$282,593
Vermilion	$333,660	$526,237	$566,107	$715,138	$876,922	$815,367	$1,078,129	$1,428,588	$1,470,699	$1,242,674	$1,607,173	$2,210,795	$2,612,910	$2,709,880	$1,527,691
Yellowtail	$49,654	$61,573	$66,533	$59,634	$56,051	$84,843	$63,398	$75,880	$176,432	$183,777	$244,198	$298,282	$1,952,025	$1,858,688	$2,076,979
Schoolmaster															
Queen															
Blackfin					$843	$1,001	$291	$204	$553	$930	$210	$502	$15	$33	
Cubera			$158	$4,513	$1,741	$1,258	$3,982	$3,576	$3,242	$3,186	$12,255	$14,324	$10,556	$8,727	$11,683
Dog			$529												
Mahogany															
Silk			$479	$26,928	$24,606	$32,119	$7,621	$23,547	$23,771	$25,003	$138,363	$24,184	$55,346	$28,289	$37,508
Snapper uncl.	$185,480	$188,957	$247,565	$448,385	$572,521	$530,899	$350,111	$210,886	$302,432	$241,049	$356,693	$219,318	$194,141	$168,942	$199,830
Total Snappers	$2,115,851	$1,844,326	$1,969,144	$2,368,344	$2,397,814	$2,383,828	$2,352,587	$2,603,899	$3,023,460	$2,757,798	$3,340,675	$3,979,120	$6,288,108	$5,887,567	$4,908,569
Gag			$109,578	$314,833	$417,148	$493,745	$519,572	$761,232	$1,482,140	$1,669,107	$1,262,137	$1,961,824	$1,883,434	$1,579,739	$1,913,226
Scamp			$32,877	$108,747	$183,471	$176,012	$300,526	$280,738	$476,281	$583,260	$601,327	$723,744	$1,000,488	$858,938	$635,248
Red				$7,167	$10,051	$7,070	$15,502	$46,114	$493,399	$419,394	$486,730	$402,619	$290,445	$301,477	$260,919
Black				$129,634	$102,031	$99,906	$318,606	$107,413	$824,803	$937,045	$750,260	$700,585	$511,718	$334,653	$395,748
Yellowfin				$5,931	$4,475	$163	$764	$9,164	$50,462	$7,103	$2,526	$1,355	$6,385	$14,894	$54,979
Yellowmouth															$1,820
Nassau									$18,415		$1,714	$3,157	$7,642	$4,254	$8,626
Speckled Hind			$1,518	$10,558	$12,470	$26,203	$39,310	$44,128	$52,144	$38,402	$33,123	$36,600	$36,767	$30,468	$38,800
Snowy			$4,885	$191,087	$177,019	$389,997	$396,051	$220,851	$738,940	$574,632	$488,936	$786,736	$974,843	$755,270	$960,820
Misty	$318,806	$318,806	$318,806	$318,806	$318,806	$318,806	$318,806	$318,806	$318,806	$318,806	$318,806			$67	$4
Yellowedge			$395	$324	$9,546	$18,805	$2,554	$874	$53,128	$51,965	$33,110	$32,286	$28,377	$46,339	$58,073
Rock Hind				$34	$7		$83		$25	$192	$890	$32	$707	$1,160	$7,695
Red Hind					$101	$76	$685	$10,110	$4,897	$15,600	$7,612	$17,602	$49,332	$27,077	$33,063
Grouper & Scamp	$1,841,040	$1,959,228	$1,769,258	$2,115,987	$1,775,994	$2,232,660	$2,243,842	$1,927,027	$618,332	$712,310	$857,199	$589,604	$549,292	$283,404	$128,809
Warsaw	$8,452	$11,074	$4,544	$13,938	$13,389	$13,662	$12,457	$12,027	$33,028	$43,393	$35,784	$29,199	$26,062	$21,351	$36,186
Jewfish	$13,081	$13,815	$13,943	$14,994	$9,000	$12,978	$13,248	$17,511	$22,890	$30,297	$26,650	$22,511	$2,644		
Grouper uncl.				$109,131	$54,699	$103,639	$135,349	$78,859	$142,213	$182,098	$105,478		$62	$86,301	$283,434
Total Groupers	$2,181,389	$2,302,923	$2,255,804	$3,039,171	$3,068,206	$3,895,722	$4,319,534	$3,834,852	$5,328,500	$5,577,902	$5,018,088	$5,287,871	$5,170,196	$4,325,583	$4,811,445
Amberjack	$4,813	$7,882	$15,438	$23,766	$29,372	$24,368	$64,487	$58,406	$149,868	$510,511	$359,385	$415,862	$881,007	$850,357	$793,174
Grunts	$9,402	$19,169	$37,985	$35,219	$43,417	$45,842	$37,649	$35,803	$89,754	$150,769	$156,008	$152,784	$209,364	$182,238	$126,051
Hogfish	$11,447	$14,724	$36,635	$47,703	$20,148	$28,571	$20,338	$25,985	$51,490	$73,595	$82,256	$101,236	$119,242	$105,622	$127,042
Porgy or Scup	$91,682	$118,039	$160,956	$166,587	$144,067	$139,077	$144,562	$106,714	$194,489	$157,225	$184,498	$280,139	$544,127	$287,090	$315,880
Red porgy								$414,328	$702,854	$501,838	$884,235	$720,729	$900,881	$893,407	$382,850
Whitebone porgy								$2,528	$60	$107	$3,985	$281	$448	$571	$35
Knobbed porgy								$6,773	$14,217	$28,391	$49,205	$13,985	$18,819	$19,238	$20,680
Black Seabass	$63,151	$282,880	$316,988	$495,478	$419,032	$269,981	$256,519	$243,240	$345,930	$401,143	$719,118	$855,703	$831,620	$587,137	$481,837
Seabass uncl.	$550,008	$674,806	$619,078	$918,623	$597,392	$366,168	$699,758	$929,238	$998,525	$403,540	$840,105	$841,878	$1,090,757	$1,058,224	$927,840
Sheepshead	$33,904	$50,857	$40,291	$73,777	$116,552	$60,400	$62,173	$61,053	$114,403	$132,166	$149,351	$117,451	$174,537	$210,174	$201,840
Blueline tilefish								$30,405	$91,533	$40,169	$20,741	$52,356	$95,317	$121,166	$172,045
Tilefish	$76,605	$107,181	$237,087	$898,244	$3,269,328	$2,012,322	$1,422,766	$1,474,728	$1,781,735	$489,696	$856,213	$1,588,333	$1,570,510	$1,830,534	$1,886,750
Tilefish, goldface								$18,685	$179,851	$41,794	$21,969			$54	$142
Tilefish, sand									$9	$63		$1	$43	$264	$261
Tilefish uncl.								$101,910	$30,055	$41,795	$19,666	$20,553	$14,735	$18,101	$10,417
Triggerfish	$10,283	$13,342	$15,790	$24,730	$35,732	$28,560	$31,324	$35,476	$34,897	$40,908	$54,634	$76,428	$157,223	$190,015	$220,955
Total Others	$951,294	$1,288,669	$1,660,247	$2,804,137	$4,675,039	$3,017,087	$2,756,574	$3,563,279	$4,800,669	$3,084,709	$4,181,574	$5,037,498	$6,388,828	$6,020,252	$5,437,284
Wreckfish										$52,780	$467,883	$2,688,433	$4,701,661	$2,124,393	$1,812,934
GRAND TOTAL	$5,148,534	$5,435,918	$5,905,194	$8,511,651	$10,160,859	$8,296,637	$9,431,705	$10,002,130	$12,953,629	$11,472,887	$13,000,321	$16,986,722	$22,546,791	$18,957,795	$16,970,242

10.0 FIGURES REFERENCED IN TEXT

Figure 1. Distribution of golden tilefish and snowy grouper. (Source: NMFS Beaufort Lab)

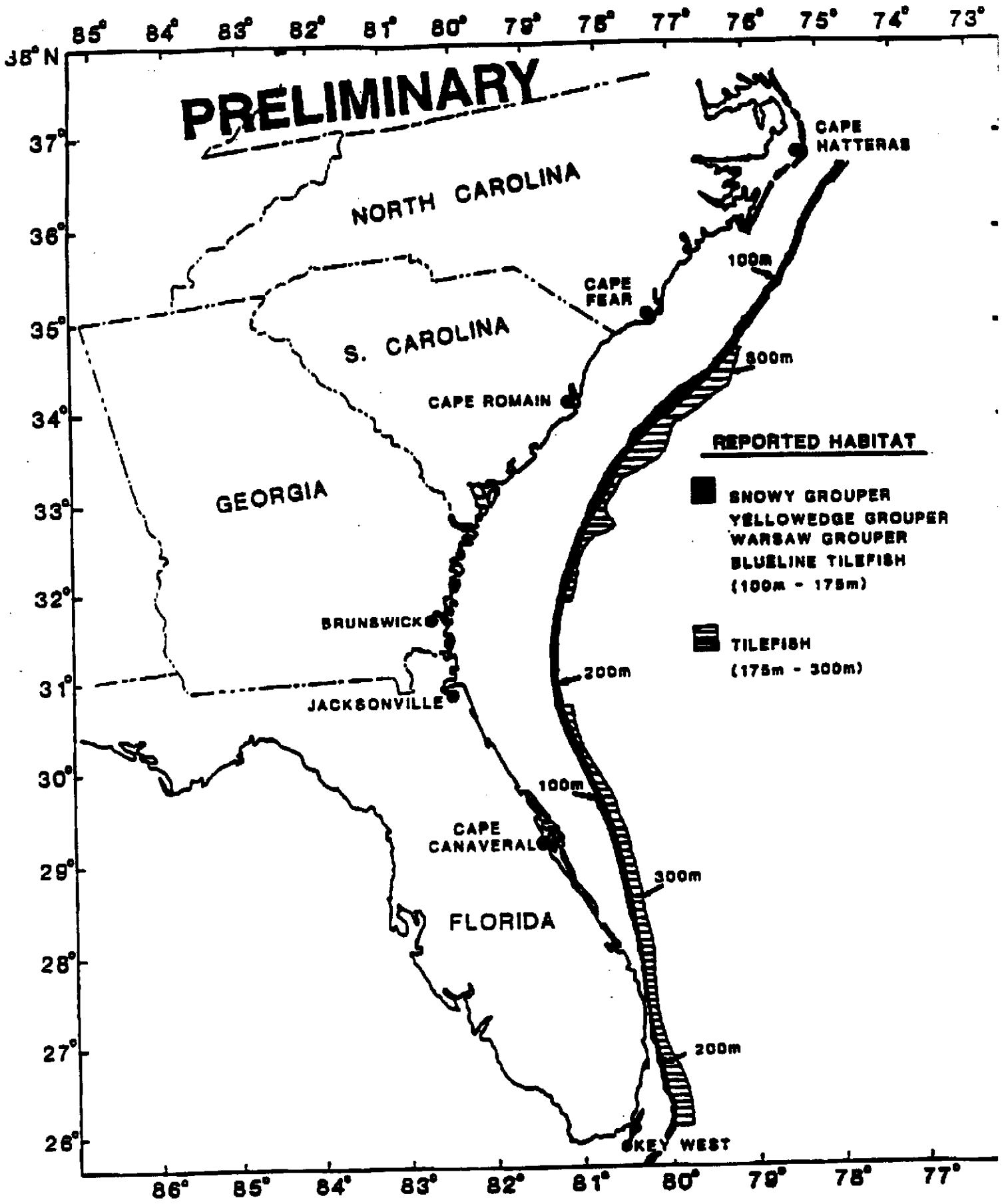
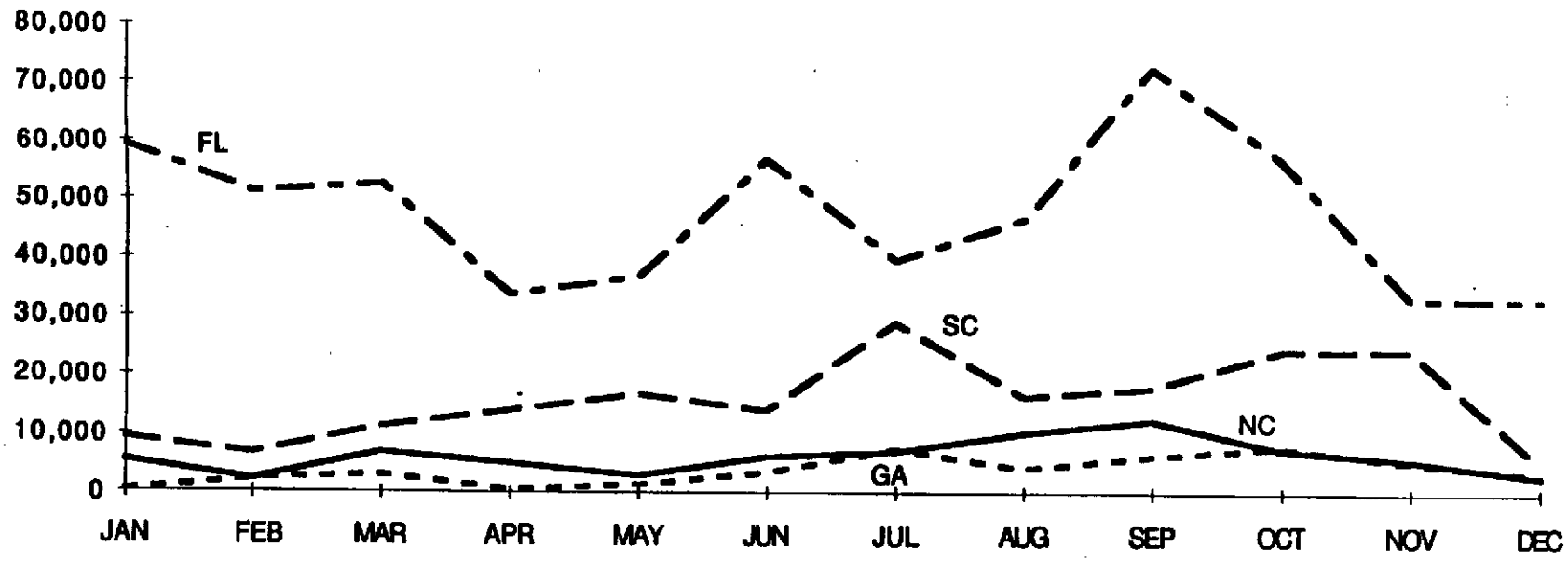
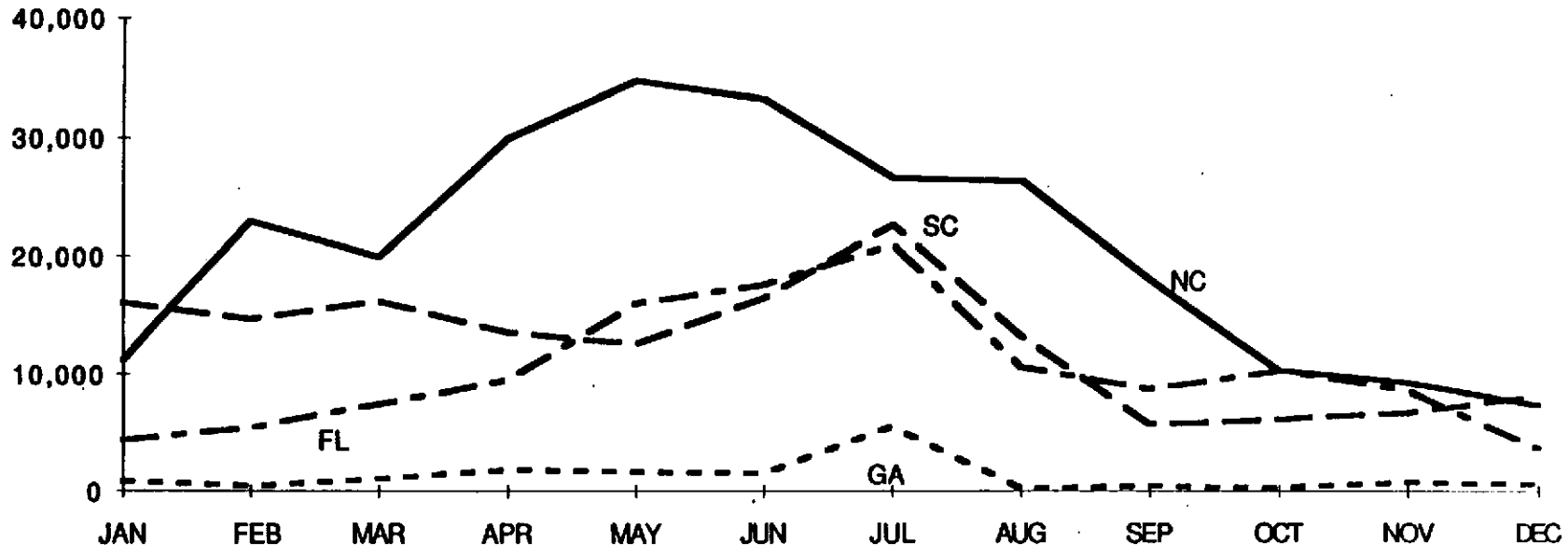


Figure 2. 1990-92 average for tilefish by state



1990-92 average for snowy grouper by state



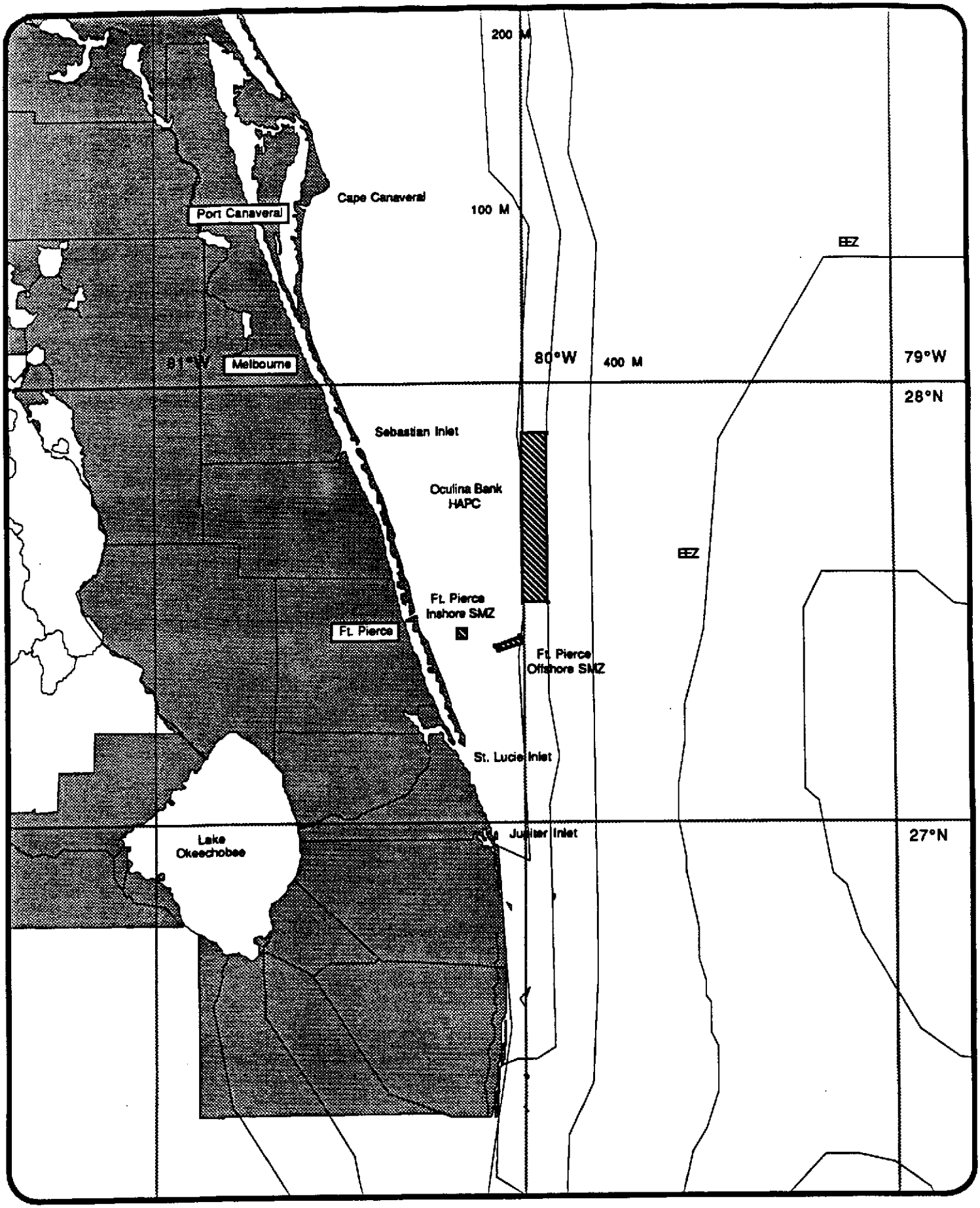


Figure 3. Oculina Bank Habitat Area of Particular Concern (HAPC).

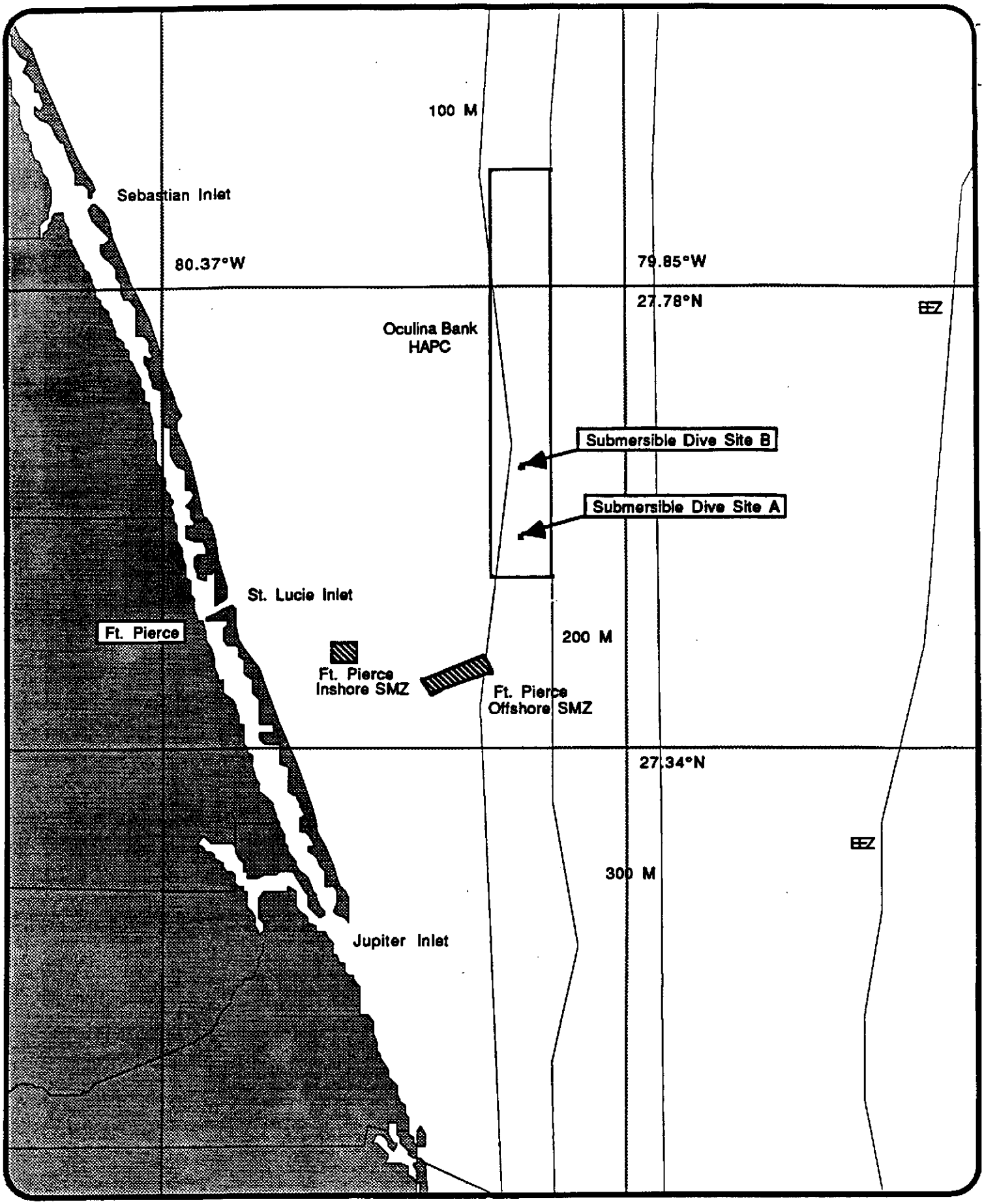


Figure 3 Continued.

11.0 TABLES REFERENCED IN TEXT

TABLE 1. SPECIES IN THE MANAGEMENT UNIT GROUPED ACCORDING TO KNOWLEDGE ABOUT SSR.

SNAPPERS - Lutjanidae

SSR 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*
SSR 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

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

GROUPERS = Serranidae

SSR 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*
SSR 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*
Wreckfish	*Polyprion americanus*

PORGIES - Sparidae

SSR Estimates Available	
Red porgy	*Pagrus pagrus*
SSR 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

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

JACKS - Carangidae

SSR Estimates Available	
Greater amberjack	*Seriola dumerili*
SSR 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.**

TABLE 1. SPECIES IN THE MANAGEMENT UNIT GROUPED ACCORDING TO KNOWLEDGE ABOUT SSR.

SSR ESTIMATES ARE UNAVAILABLE FOR THE FOLLOWING SPECIES

SPADEFISHES - Ephippidae

Spadefish	*Chaetodipterus faber*

GRUNTS - Pomadasyidae

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 parral*
White grunt	*Haemulon plumieri*
Blue striped grunt	*Haemulon sciurus*

TILEFISHES - Malacanthidae

Blueline tilefish*	*Caulolatilus microps*
Tilefish (Golden)*	*Lopholatilus chamaeleonticeps*
Sand tilefish*	*Malacanthus plumieri*

WRASSES - Labridae

Hogfish	*Lachnolaimus maximus*
Puddingwife	*Halichoeres radiatus*

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

TABLE 2. AREA-WIDE SSR VALUES BY SPECIES WITH AND WITHOUT MINIMUM SIZES. (Bold=Overfished)

	COUNCIL'S	1990 Assessment*		1990 Assessment*		1991 Assessment**		1992 Assessment***		1993 Assessment+	
	OVERFISHED	SSR % w/o Minimum Size		SSR % with Minimum Size		Overall	SSR% with	Overall	SSR% with	Overall	SSR% with
	SSR %	Recreational	Commercial	Recreational	Commercial	SSR %	Minimum Sizes	SSR %	Minimum Sizes	SSR %	Minimum Sizes
I. MINIMUM SIZE = 8" (203 MM) TOTAL LENGTH											
Lane snapper	30%	FL=47-50%	NFL = 47%	31%	47%	58%	59%	58%	63%		
Black sea bass	30%	Car = 15%	CarHLL=39%	30%	47%	34%	46%	29%	38%		
		FL=17-26%	CarTRPS=40%								
II. MINIMUM SIZE = 12" (305 MM) TOTAL LENGTH											
Yellowtail snapper	30%	FL=43-40%	SFL = 42%	56%	55%	38%	55%	19%	28%	24%	30%
Gray snapper	30%	FL=58-29%	NFLHLL=19%	32%	25%	12%	14%	49%	52%	41%	45%
Mutton snapper	30%	FL=49-47%		49%		38%	44%	51%	51%	43%	45%
Vermilion snapper (10" rec. & 12" com.)	30%	Car = 19%	Car=20-28%	30%	25%	23%	28%	20%	27%	16%	27%
		FL=26-19%	FL=17-27%								
Red porgy	30%	Car = 18%	Car = 29%	33%	38%	11%	15%	8%	12%		
		FL=45-19%									
Schoolmaster snapper	30%										
Queen snapper	30%										
Blackfin snapper	30%										
Cubera snapper	30%										
Dog snapper	30%										
Mahogany snapper	30%										
Silk snapper	30%										
III. MINIMUM SIZE = 20" (508 MM) TOTAL LENGTH											
Red snapper	30%	Car = 15%	Car = 24%	33%	40%	8%	34%	13%	35%		
		NFL = 5%	FL=17-55%								
Gag	30%	Car = 19%	Car = 47%	30%	67%	32%	34%	35%	39%		
		FL=32-30%	FL=54-58%								
Scamp (Fork Length)	30%	Car = 18%	Car = 28%	Car = 42%	Car = 50%	28%	42%	20%	30%		
		NFL = 42%	NFL = 49%	NFL = 74%	NFL = 80%						
Red grouper (SAFMC currently 12" TL)	30%	Car = 24%	Car = 34%	FL=51-62%	FL = 37%	41%	50%	61%	68%		
		FL=11-26%	SFLTRP=15%								
			SFLHLL=45%								
Black grouper	30%	SFL = 40%	NFL = 45%	43%	50%	37%	42%	43%	47%		
Yellowfin grouper	30%										
Yellowmouth grouper	30%										
IV. MINIMUM SIZE = 28" (711 MM) FORK LENGTH											
Greater amberjack (28" FL rec. & 28" cored/36" FL com.)	30%	Car = 17%	27%	27%	43%	79%		51%	62%	45%	54%
		NFL = 16%								New amberjack aging:	
V. OTHER SPECIES										64%	67%
Speckled hind	30%	Car = 22%	Car = 37%			25%		12%			
		SFL = 46%	FL=42-45%								
Snowy grouper	30%	Car = 10%	Car = 15%			15%		15%			
			FL=36-40%								
Warsaw grouper	30%		12%			0.2%		6%			
Misty grouper	30%										
Yellowedge grouper	30%										
Golden tilefish	30%		Car=35%			31%		21%			
			NFL=28%;SFL=42%								
VI. SPECIES WITH NO MANAGEMENT											
White Grunt	30%					17%		19%			
Gray triggerfish	30%	Car = 43%	Car = 36%	Car = 44%	Car = 39%	30%		27%			
		FL=22-18%	NFL = 36%	FL= 26-22%							
Abbreviations: FL=Florida; Car=Carolinas; NFL=North Florida; SFL=South Florida, HLL=hook&line,longline; TRP=traps											
*1990 Assessment included data from 1972 through 1988/89.											
**1991 Assessment applied models to catch data from 1988.											
***1992 Assessment applied models to catch data from 1990.											
+1993 Assessment applied models to catch data from 1991.											

Table 3. Estimated numbers & total weight of fish caught by anglers by species groups and subregion for 1991 Headboat & 1991 MRFSS (Catch type A).

					HEADBOAT*				MRFSS
SPECIES	North Carolina		South Carolina		Florida east coast		TOTAL	TOTAL	TOTAL
	numbers	pounds	numbers	pounds	numbers	pounds	numbers	pounds	pounds
Black sea bass	39,234	15,001	319,002	75,251	148,112	39,582	506,348	129,834	660,790
Epinephelus groupers	1,051	2,286	1,262	1,915	6,942	8,611	9,255	12,812	<66,300
Mycteroperca groupers	22,676	78,030	8,351	29,600	6,576	24,385	37,603	132,015	<66,300
other sea basses	14,095	3,847	33,576	6,176	13,380	2,056	61,051	12,079	<66,300
crevalle jack									209,950
greater amberjack	1,832	15,891	3,800	26,708	3,077	22,488	8,709	65,087	<66,300
other jacks	255	1,265	366	1,712	3,991	8,246	4,612	11,223	90,610
gray snapper	11	15	627	866	29,600	24,531	30,238	25,412	179,010
red snapper	725		3,290	11	9,842	19,635	13,857	19,646	72,930
lane snapper		7,253	25	9,879	59,414	15,539	59,439	32,671	<66,300
vermilion snapper	159,682	182,633	174,055	49,617	266,764	43,440	600,501	275,690	72,930
yellowtail	2	0	114	44	207,374	153,605	207,490	153,649	<66,300
other snappers	3,713	1,944	193	166	22,561	38,190	26,467	40,300	<66,300
pigfish									64,090
white grunts	99,577	94,053	23,247	15,106	114,717	31,124	237,541	140,283	97,240
other grunts	71,324	13,301	80,719	13,127	197,019	26,303	349,062	52,731	33,150
sheepshead									1,365,780
red porgy	68,515	32,138	54,223	26,284	7,141	5,452	129,879	63,874	37,570
other porgies	48,778	23,049	21,274	24,457	29,871	17,712	99,923	65,218	<66,300
hogfish									<66,300
triggerfish & filefish	23,718	34,498	10,267	10,423	53,992	31,056	87,977	75,977	<66,300
TOTAL	555,188	505,204	734,391	291,342	1,180,373	511,955	2,469,952	1,308,501	3,547,050

*Georgia not included in Headboat Survey

TABLE 4. RECREATIONAL CATCHES AND IMPACTS OF SIZE LIMITS.

						% REC CATCH	% HEADBOAT
	MRFSS—1986		HEADBOAT FOR 1989			Below Min Size	Below Min Size
	NUMBERS	WEIGHT(LB)+	NUMBERS	WEIGHT (KG)	WEIGHT (LB)	(1989 Data)	(1989 Data)
I. 8" (203MM) TL							
Lane Snapper	45,000	33,377	140,096	47,134	103,912	FL 0%	0%
Black Sea Bass	1,677,000	1,031,643	808,497	225,603	497,364	NC 17%; SC 16%	9%
						GA 29%; FL 5%	
II. 12" (305MM) TL							
Yellowtail Snapper	278,000	381,329	160,021	99,564	219,499	FL 21%	4%
Gray Snapper	529,000	1,093,472	26,963	27,156	59,868	FL 79%	22%
Mutton Snapper			25,948	48,801	107,587	FL 0%	0%
Vermilion Snapper	56,000	29,348	661,251	157,189	346,539	NC79%;GA100%	86%
Red Porgy	11,000	12,394	146,488	74,865	165,047	NC 44%;SC 80%	40%
Gray Triggerfish (FL)			37,367	38,725	85,373	NC 7%; FL 39%	48%
Schoolmaster Snapper			989	493	1,087		50%
Queen Snapper							
Blackfin Snapper							91%
Cubera Snapper			53	208	459		0%
Dog Snapper							
Mahogany Snapper							
Silk Snapper			3,919	1,241	2,736		92%
Snappers	134,000	64,560	2,082	455	1,003		
Triggerfishes	45,000	102,812					
III. 20" (508MM) TL							
Red Snapper	210,000	633,916	23,453	32,113	70,796	NC 63%;SC100%	81%
						GA100%;FL 88%	
Gag						NC 54%;SC 36%	25%
Scamp (FL)							80%
Red Grouper						NC 73%	46%
Black Grouper							25%
Yellowfin Grouper							100%
Yellowmouth Grouper							
Groupers	156,000	672,371					
Groupers (Epinephelus)			6,516	16,653	36,713		
Groupers (Mycteroperca)			35,248	102,498	225,967		
IV. 28" (711MM) FL							
Greater Amberjack	123,000	2,656,577				NC 5%; FL 0%	63%
V. NO RETENTION							
Nassau Grouper							
Speckled Hind							
Snowy Grouper							
Warsaw Grouper							
Misty Grouper							
Yellowedge Grouper							
Golden Tilefish							
TOTALS	3,264,000	6,711,800	2,082,893	872,698	1,923,950		
% Recreational catch below the minimum size is from 1989 MRFSS data; Roger Pugliese & John Gauvin.							
%Headboat catch below the minimum size is from Huntsman & Dixon; NMFS Beaufort Lab.							
+Recreational weight from the MRFSS was calculated from MRFSS numbers and Headboat avg. wt.							
Total weight for MRFSS include amberjacks with avg. wt. from MRFSS.							

TABLE 5a. SUMMARY OF RECREATIONAL AND COMMERCIAL SNAPPER GROUPER CATCH BY GEAR.

	Hand Line+		Elec/Hyd Reel		Rod & Reel		Bottom LL		Fish Traps		Diving		Entanglement Nets		Other gear*		All Gear
	Pounds	%	Pounds	%	Pounds	%	Pounds	%	Pounds	%	Pounds	%	Pounds	%	Pounds	%	Pounds
Commercial (1988)																	
NC->GA	3,069,334	41%	66,988	1%	13,479	0%	470,306	6%	553,363	7%	16,239	0%	1,398	0%	3,380,818	45%	7,571,925
Florida	3,219,115	70%	0	0%	0	0%	576,310	13%	410,791	9%	52,122	1%	253,739	6%	84,979	2%	4,597,056
Total	6,288,449		66,988		13,479		1,046,616		964,154		68,361		255,137		3,465,797		12,168,981
Recreational																	
MRFSS**					6,711,800												
Headboat (1989)					1,923,950												
Total					8,635,750												8,635,750
Grand Total	6,288,449		66,988		8,649,229		1,046,616		964,154		68,361		255,137		3,465,797		20,804,731

+Handline includes catches by electric/hydraulic reels.
*Other gear includes catches for which the gear type is unknown as well as catches by other gear types.
**MRFSS=Marine Recreational Fishing Statistical Survey= (1986 MRFSS Number Fish) X (1989 Headboat Average Weight)

TABLE 5b. SUMMARY OF RECREATIONAL AND COMMERCIAL SNAPPER GROUPER CATCH BY GEAR (1990/91).

	Hand Line		Elec/Hyd Reel		Rod & Reel		Bottom LL		Fish Traps		Diving		Entanglement Nets		Other gear*		All Gear
	Pounds	%	Pounds	%	Pounds	%	Pounds	%	Pounds	%	Pounds	%	Pounds	%	Pounds	%	Pounds
Commercial (1990)																	
NC->GA	1,500,231	19%	57,981	1%	8,395	0%	696,680	9%	798,279	10%	4	0%	12,754	0%	4,957,047	62%	8,031,371
Florida	3,364,076	42%	428,734	5%	0	0%	481,369	6%	299,389	4%	49,313	1%	320,379	4%	3,038,455	38%	7,981,714
Total	4,864,307	30%	486,715	3%	8,395	0%	1,178,049	7%	1,097,668	7%	49,317	0%	333,133	2%	7,995,502	50%	16,013,085
Recreational (1991)																	
MRFSS					3,547,050												3,547,050
Headboat					1,308,501												1,308,501
Total					4,855,551												4,855,551
Grand Total	4,864,307		486,715		4,863,946		1,178,049		1,097,668		49,317		333,133		7,995,502		20,868,636

*Other gear includes catches for which the gear type is unidentified as well as catches by other gear types.

SOURCE: MRFSS; NMFS BEAUFORT; NMFS MIAMI

TABLE 6. SNOWY GROUPER LANDINGS & REVENUES

	NC	SC	GA	FL	total
1990	237327	239920	13337	95561	586145
1991	208299	106469	12392	121904	449064
1992	304021	88857	16575	151155	560608
1990	$341,057	$444,560	$18,282	$170,944	$974,843
1991	$295,862	$208,004	NA	$233,034	$736,900
1992	$476,294	$169,342	NA	$286,119	$931,755

note:some 1992 revenues are estimates

TABLE 7A. SNOWY GROUPER AND UNCLASSIFIED GROUPER

snowy	nc	sc	ga	fl	total
1990	237327	239920	13337	95561	586145
1991	208299	106469	12392	121904	449064
1992	304021	88857	16575	151155	560608
unclassified					total
1990	110921	46617	7401	143368	308307
1991	85929	22059	9575	73448	191011
1992	127830	13908	7231	64813	213782
snowy and unclassified combined					total
1990	348248	286537	20738	238929	894452
1991	294228	128528	21967	195352	640075
1992	431851	102765	23806	215968	774390

TABLE 7B. SNOWY GROUPER AND UNCLASSIFIED GROUPER REVENUE

snowy	nc	sc	ga	fl	total
1990	$341,057	$444,560	$18,282	$170,944	$974,843
1991	$295,862	$208,004	NA	$233,034	$736,900
1992	$476,294	$169,342	NA	$286,119	$931,755

unclassified					total
1990	$163,283	$101,803	$14,463	$269,743	$549,292
1991	$140,372	$45,652	NA	$143,032	$329,056
1992	$239,521	$27,061	NA	$134,519	$401,101

snowy and unclassified combined					total
1990	$504,340	$546,363	$32,745	$440,687	$1,524,135
1991	$436,234	$253,656	NA	$376,066	$1,065,956
1992	$715,815	$196,403	NA	$420,638	$1,332,856

Table 8. Snowy Grouper TACs (pounds) and Associated Predicted Revenues.

Scenarios One-Four (15%,15%,10%)			
	Year 1 TAC 452,148	Year 2 TAC 372,357	Year 3 TAC 319,163
Scenario One (90-92 base) (531,939 lb)	Year 1 $803,501	Year 2 $704,526	Year 3 $628,387
	Year 1 TAC 476,517	Year 2 TAC 392,426	Year 3 TAC 336,365
Scenario Two (92 base) (560,608 lb)	Year 1 $846,805	Year 2 $742,497	Year 3 $662,254
	Year 1 TAC 654,193	Year 2 TAC 538,747	Year 3 TAC 461,783
Scenario Three (90-92 base) (&unclass grouper) (769,639 lb)	Year 1 $1,188,429	Year 2 $1,042,039	Year 3 $929,425
	Year 1 TAC 658,232	Year 2 TAC 542073	Year 3 TAC 464,634
Scenario Four (92 base) (&unclass grouper) (774,390 lb)	Year 1 $1,211,338	Year 2 $1,062,126	Year 3 $947,341

Table 8 (continued). Snowy Grouper TACs (pounds) and Associated Predicted Revenues.

Scenarios Five-Eight (13.33%, 13.33%, 13.33%)

	Year 1 TAC 461,032	Year 2 TAC 390,124	Year 3 TAC 319,163
Scenario Five (90-92 base) (531,939 lb)	Year 1 $813,379	Year 2 $728,157	Year 3 $638,387
	Year 1 TAC 485,879	Year 2 TAC 411,150	Year 3 TAC 336,365
Scenario Six (92 base) (560,608 lb)	Year 1 $857,217	Year 2 $767,401	Year 3 $662,254
	Year 1 TAC 667,046	Year 2 TAC 564,453	Year 3 TAC 461,783
Scenario Seven (90-92 base) (&unclass grouper) (769,639 lb)	Year 1 $1,203,040	Year 2 $1,076,990	Year 3 $929,425
	Year 1 TAC 671,164	Year 2 TAC 567,938	Year 3 TAC 464,634
Scenario Eight (92 base) (&unclass grouper) (774,390 lb)	Year 1 $1,226,230	Year 2 $1,097,751	Year 3 $947,341

TABLE 9 . GOLDEN TILEFISH LANDINGS & REVENUES

	NC	SC	GA	FL	total
1990	94289	186649	5234	717749	1003921
1991	157313	116971	109637	589048	972969
1992	219337	241988	32698	596415	1090438
1990	$130,119	$293,607	NA	$1,155,183	$1,578,909
1991	$214,688	$239,456	$139,753	$903,338	$1,497,235
1992	$337,613	$325,909	NA	$914,636	$1,578,158

note:some 1992 revenues are estimates

Table 10. Golden Tilefish TACs (pounds) and Associated Predicted Revenues.

Scenarios One-Two (15%, 15%, 10%)

	Year 1	Year 2	Year 3
	TAC	TAC	TAC
	868,867	715,538	613,318
Scenario One			
(90-92 base)	Year 1	Year 2	Year 3
(1,022,197 lb)	$1,409,988	$1,236,307	$1,102,698

	Year 1	Year 2	Year 3
	TAC	TAC	TAC
	926,258	762,801	653,829
Scenario Two			
(92 base)	Year 1	Year 2	Year 3
(1,089,715 lb)	$1,434,275	$1,257,603	$1,212,692

Scenarios Three-Four (13.3%, 13.3%, 13.3%)

	Year 1	Year 2	Year 3
	TAC	TAC	TAC
	885,938	749,679	613,318
Scenario Three			
(90-92 base)	Year 1	Year 2	Year 3
(1,022,197 lb)	$1,427,323	$1,277,774	$1,102,698

	Year 1	Year 2	Year 3
	TAC	TAC	TAC
	944,456	799,197	653,829
Scenario Four			
(92 base)	Year 1	Year 2	Year 3
(1,089,715 lb)	$1,451,909	$1,299,784	$1,212,692

Table 11. North Carolina snowy grouper catch by trip. (Source: North Carolina Division of Marine Fisheries.)

NORTH CAROLINA SNOWY GROUPER CATCHES-1992

INTERVAL	FREQ	CPERCENT	MIDPOINT	POUNDS	CPERCENT
<100	55	26.7%	50	2750	1.8%
100-199	29	40.8%	150	4350	4.5%
200-299	12	46.6%	250	3000	6.4%
300-399	18	55.3%	350	6300	10.4%
400-499	8	59.2%	450	3600	12.7%
500-599	10	64.1%	550	5500	16.2%
600-699	5	66.5%	650	3250	18.3%
700-799	8	70.4%	750	6000	22.1%
800-899	4	72.3%	850	3400	24.3%
900-999	5	74.8%	950	4750	27.3%
1000-1099	3	76.2%	1050	3150	29.3%
1100-1199	8	80.1%	1150	9200	35.2%
1200-1299	4	82.0%	1250	5000	38.4%
1300-1399	8	85.9%	1350	10800	45.2%
1400-1499	3	87.4%	1450	4350	48.0%
1500-1599	*	87.4%	1550		48.0%
1600-1699	2	88.3%	1650	3300	50.1%
1700-1799	1	88.8%	1750	1750	51.2%
1800-1899	*	88.8%	1850		51.2%
1900-1999	4	90.8%	1950	7800	56.2%
2000-2099	*	90.8%	2050		56.2%
2100-2199	*	90.8%	2150		56.2%
2200-2299	3	92.2%	2250	6750	60.5%
2300-2399	1	92.7%	2350	2350	62.0%
2400-2499	2	93.7%	2450	4900	65.1%
2500-2599	1	94.2%	2550	2550	66.7%
2600-2699	*	94.2%	2650		66.7%
2700-2799	*	94.2%	2750		66.7%
2800-2899	1	94.7%	2850	2850	68.5%
2900-2999	1	95.1%	2950	2950	70.4%
*	*	95.1%			70.4%
3400-3499	1	95.6%	3450	3450	72.6%
*	*	95.6%			72.6%
3700-3799	1	96.1%	3750	3750	75.0%
*	*	96.1%			75.0%
3900-3999	1	96.6%	3950	3950	77.5%
*	*	96.6%			77.5%
4200-4299	*	96.6%	4250		77.5%
*	*	96.6%			77.5%
4600-4699	3	98.1%	4650	13950	86.4%
*	*	98.1%			86.4%
4800-4899	1	98.5%	4850	4850	89.5%
*	*	98.5%			89.5%
5300-5399	2	99.5%	5350	10700	96.3%
*	*	99.5%			96.3%
5800-5899	1	100.0%	5850	5850	100.0%
*	*				100.0%
7000-7099	*		7050		100.0%
TOTAL	206			157100	

Table 12. South Carolina snowy grouper catch by trip from longlines. (Source: South Carolina Wildlife & Marine Resources.)

S.CAROLINA SNOWY GROUPER CATCHES-BOTTOM LONGLINE-1992

INTERVAL	FREQ	CPERCENT	MIDPOINT	POUNDS	CPERCENT
< 199	32	38.9%	100	3200	24.1%
200-399	3	55.6%	300	900	30.8%
400-599	4	61.1%	500	2000	45.9%
600-799	5	66.7%	700	3500	72.2%
800-999		77.8%	900	0	72.2%
1000-1199	2	83.3%	1100	2200	88.7%
1200-1399		83.3%	1300	0	88.7%
1400-1599	1	83.3%	1500	1500	100.0%
1600-1799		83.3%	1700	0	100.0%
>1800		100.0%	1800	0	100.0%
TOTALS	47			13300	

Table 13. South Carolina snowy grouper catch by trip from snapper reels. (Source: South Carolina Wildlife & Marine Resources.)

S.CAROLINA SNOWY GROUPER CATCHES-SNAPPER REELS-1992

INTERVAL	FREQ	CPERCENT	MIDPOINT	POUNDS	CPERCENT
<100	44	58.7%	50	2200	19.2%
100-199	11	73.3%	150	1650	33.6%
200-299	6	81.3%	250	1500	46.7%
300-399	7	90.7%	350	2450	68.1%
400-499	4	96.0%	450	1800	83.8%
500-599	1	97.3%	550	550	88.6%
600-699	2	100.0%	650	1300	100.0%
TOTALS	75			11450	

Table 14. Georgia snowy grouper catch by trip. (Source: Georgia Department of Natural Resources.)

Snowy Grouper Catch Frequencies 1991/92
Georgia Department of Natural Resources
Coastal Resources Division/Marine Fisheries Section
One Conservation Way
Brunswick, GA 31523
Contact: Gina L. Gore Telephone: 912-264-7218

	# of Trips	
	1991	1992
< 99	103	74
100-199	20	16
200-299	3	8
300-399	2	0
400-499	1	0
500-599	0	0
600-699	0	1
700-799	1	0
800-899	1	1
900-999	2	0
1000-1099	0	0
1100-1199	2	0
1200-1299	1	1
1700-1799**	0	1
5000-5099**	0	1
Total Trips	136	103
Total lbs Snowy Grouper (whole weight)	12,392	16,575

** Out of Sequence

Table 15. Florida Atlantic Coast snowy grouper catch by trip. (Source: Florida Department of Natural Resources.)

FLORIDA (ATLANTIC) SNOWY GROUPER CATCHES-1992

INTERVAL	FREQ	CPERCENT	POUNDS	CPERCENT
<100	464	65.8%	15977	11.8%
100-199	91	78.7%	12738	21.1%
200-299	36	83.8%	8816	27.6%
300-399	28	87.8%	9663	34.7%
400-499	16	90.1%	7104	40.0%
500-599	12	91.8%	6728	44.9%
600-699	11	93.3%	7230	50.3%
700-799	6	94.2%	4469	53.5%
800-899	5	94.9%	4223	56.7%
900-999	2	95.2%	1928	58.1%
1000-1099	8	96.3%	8314	64.2%
1100-1199	3	96.7%	3457	66.7%
1200-1299	2	97.0%	2553	68.6%
1300-1399	2	97.3%	2737	70.6%
1400-1499	2	97.6%	2838	72.7%
*		97.6%		72.7%
1600-1699	2	97.9%	3392	75.2%
1700-1799	3	98.3%	5273	79.1%
1800-1899	3	98.7%	5513	83.2%
1900-1999	2	99.0%	3960	86.1%
2000-2099	1	99.1%	2028	87.6%
*		99.1%		87.6%
2700-2799	1	99.3%	2714	89.6%
*		99.3%		89.6%
2900-2999	2	99.6%	2913	91.7%
*		99.6%		91.7%
>3000	3	100.0%	11249	100.0%
TOTALS	705		135817	

Table 16. Monroe County (Florida) catch of snowy grouper by trip. (Source: Florida Department of Natural Resources.)

FLORIDA (MONROE COUNTY) SNOWY GROUPER CATCHES-1992

INTERVAL	FREQ	CPERCENT	POUNDS	CPERCENT
<100	318	79.7%	11462	37.3%
100-199	49	92.0%	6700	59.2%
200-299	17	96.2%	4159	72.7%
300-399	5	97.5%	1715	78.3%
400-499	6	99.0%	2779	87.4%
500-599	1	99.2%	518	89.0%
600-699	2	99.7%	1280	93.2%
*		99.7%		93.2%
>2000	1	100.0%	2083	100.0%
TOTALS	399		30696	

Table 17. North Carolina golden tilefish catch by trip. (Source: North Carolina Division of Marine Fisheries.)

NORTH CAROLINA GOLDEN TILEFISH CATCHES-1992

INTERVAL	FREQ	CPERCENT	MIDPOINT	POUNDS	CPERCENT
<499	17	21.3%	250	4250	2.4%
500-999	15	40.0%	750	11250	8.7%
1000-1499	10	52.5%	1250	12500	15.6%
1500-1999	3	56.3%	1750	5250	18.6%
2000-2499	9	67.5%	2250	20250	29.9%
2500-2999	4	72.5%	2750	11000	36.0%
3000-3499	3	76.3%	3250	9750	41.5%
3500-3999	4	81.3%	3750	15000	49.9%
4000-4499	2	83.8%	4250	8500	54.6%
4500-4999	2	86.3%	4750	9500	59.9%
5000-5499	2	88.8%	5250	10500	65.8%
5500-5999	2	91.3%	5750	11500	72.2%
6000-6499	4	96.3%	6250	25000	86.2%
6500-6999		96.3%	6750		
7000-7499	1	97.5%	7250	7250	90.2%
7500-7999	1	98.8%	7750	7750	94.6%
*					
*					
*					
9500-9999	1	100.0%	9750	9750	100.0%
10000-10499			10250		
TOTAL	80			179000	

Table 18. South Carolina golden tilefish catch by trip from longlines. (Source: South Carolina Wildlife and Marine Resources.)

S.CAROLINA GOLDEN TILEFISH CATCHES-1992 (B. LONGLINES)

INTERVAL	*FREQ*	*CPERCENT*	*MIDPOINT*	*POUNDS*	*CPERCENT*
< 499	*24*	*25.5%*	*250*	*6000*	*3.5%*
500-999	*9*	*35.1%*	*750*	*6750*	*7.4%*
1000-1499	*15*	*51.1%*	*1250*	*18750*	*18.3%*
1500-1999	*16*	*68.1%*	*1750*	*28000*	*34.6%*
2000-2499	*9*	*77.7%*	*2250*	*20250*	*46.4%*
2500-2999	*5*	*83.0%*	*2750*	*13750*	*54.4%*
3000-3499	*4*	*87.2%*	*3250*	*13000*	*62.0%*
3500-3999	*2*	*89.4%*	*3750*	*7500*	*66.4%*
4000-4499	*2*	*91.5%*	*4250*	*8500*	*71.3%*
4500-4999	*1*	*92.6%*	*4750*	*4750*	*74.1%*
5000-5499		*92.6%*	*5250*	*0*	*74.1%*
5500-5999	*2*	*94.7%*	*5750*	*11500*	*80.8%*
6000-6499	*3*	*97.9%*	*6250*	*18750*	*91.7%*
6500-6999	*1*	*98.9%*	*6750*	*6750*	*95.6%*
7000-7499		*98.9%*	*7250*	*0*	*95.6%*
>7500	*1*	*100.0%*	*7500*	*7500*	*100.0%*
TOTAL	*94*			*171750*	

Table 19. Georgia golden tilefish catch by trip. (Source: Georgia Department of Natural Resources.)

Golden Tilefish Catch Frequencies 1991/92
Georgia Department of Natural Resources
Coastal Resources Division/Marine Fisheries Section
One Conservation Way
Brunswick, GA 31523
Contact: Gina L. Gore Telephone: 912-264-7218

	# of Trips	
	1991	1992
< 99	4	8
100-199	2	0
200-299	2	4
300-399	0	3
500-599	0	1
600-699	1	0
700-799	0	1
800-899	2	2
900-999	0	3
1000-1099	2	0
1100-1199	2	1
1200-1299	1	1
1400-1499	1	0
1500-1599	1	0
1600-1699	1	1
1700-1799	2	0
1800-1899	1	3
1900-1999	0	2
2000-2099	1	0
2100-2199	2	0
2200-2299	1	0
2300-2399	0	1

Table 19 continued.

Golden Tilefish Catch Frequencies 1991/92 CONTINUED

	# of Trips	
	1991	1992
2400-2499	0	1
2500-2599	2	1
2600-2699	2	0
2700-2799	2	0
2800-2899	1	0
2900-2999	2	0
3100-3199	1	0
3200-3299	2	0
3500-3599	2	0
3700-3799	1	0
4300-4399	1	1
4400-4499	1	0
5000-5099	1	0
5100-5199	1	0
5400-5499	1	0
6300-6399	1	0
6400-6499	1	0
Total Trips	48	34
Total lbs Golden Tile (whole weight)	109,637	32,698

ADDITIONAL INFORMATION: THESE TOTALS NOT INCLUDED IN ABOVE TABLE

Total lbs Blueline Tile (whole weight)	3,059	10,114

Table 20. Florida Atlantic Coast golden tilefish catch by trip. (Source: Florida Deparment of Natural Resources.)

FLORIDA (ATLANTIC) GOLDEN TILEFISH CATCHES-1992

INTERVAL	FREQ	CPERCENT	POUNDS	CPERCENT
<100	222	27.3%	9813	1.7%
100-199	92	38.7%	12688	3.9%
200-299	59	45.9%	14522	6.4%
300-399	38	50.6%	13195	8.7%
400-499	42	55.8%	18432	11.9%
500-599	47	61.6%	25928	16.4%
600-699	25	64.7%	16300	19.2%
700-799	45	70.2%	33589	25.0%
800-899	30	73.9%	25518	29.5%
900-999	28	77.3%	26209	34.0%
1000-1099	25	80.4%	26338	38.6%
1100-1199	21	83.0%	24234	42.8%
1200-1299	6	83.7%	7516	44.1%
1300-1399	13	85.3%	17271	47.1%
1400-1499	14	87.1%	20256	50.6%
1500-1599	8	88.1%	12404	52.7%
1600-1699	8	89.0%	13211	55.0%
1700-1799	6	89.8%	10487	56.8%
1800-1899	4	90.3%	7385	58.1%
1900-1999	11	91.6%	21430	61.8%
2000-2099	9	92.7%	18462	65.0%
2100-2199	6	93.5%	12856	67.2%
2200-2299	7	94.3%	15769	70.0%
2300-2399	4	94.8%	9335	71.6%
2400-2499	6	95.6%	14712	74.1%
2500-2599	4	96.1%	10184	75.9%
2600-2699	5	96.7%	13374	78.2%
2700-2799	1	96.8%	2783	78.7%
2800-2899	5	97.4%	14118	81.2%
2900-2999	1	97.5%	2937	81.7%
*		97.5%		81.7%
3000-3499	1	97.7%	22892	85.6%
*		97.7%		85.6%
3500-3999	8	98.6%	30387	90.9%
*		98.6%		90.9%
4000-4499	5	99.3%	21274	94.6%
*		99.3%		94.6%
4500-4999	4	99.8%	18788	97.8%
*		99.8%		97.8%
5500-5999	1	99.9%	5554	98.8%
*		99.9%		98.8%
6500-6999	1	100.0%	6886	100.0%
TOTALS	812		577037	

Table 21. Monroe County (Florida) golden tilefish catch by trip. (Source: Florida Department of Natural Resources.)

FLORIDA (MONROE COUNTY) GOLDEN TILEFISH CATCHES-1992

INTERVAL	FREQ	CPERCENT	POUNDS	CPERCENT
<100	56	77.8%	2003	35.5%
100-199	10	91.7%	1401	60.3%
200-299	2	94.4%	499	69.2%
300-399	2	97.2%	706	81.7%
400-499	1	98.6%	446	89.6%
500-599	1	100.0%	586	100.0%
TOTALS	72		5641	