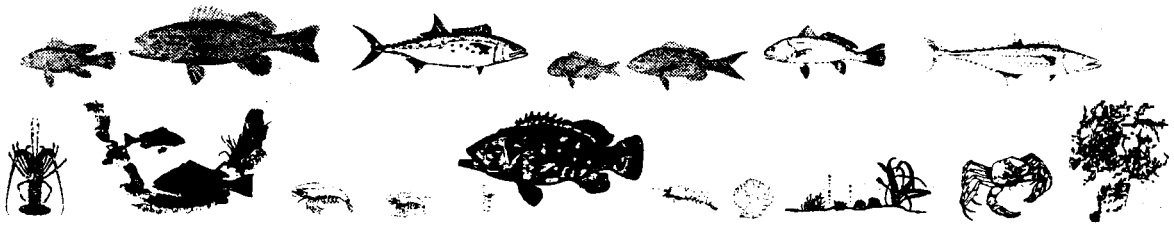
FINAL

COMPREHENSIVE AMENDMENT ADDRESSING ESSENTIAL FISH HABITAT IN FISHERY MANAGEMENT PLANS OF THE SOUTH ATLANTIC REGION

AMENDMENT 3 TO THE SHRIMP FISHERY MANAGEMENT PLAN,
AMENDMENT 1 TO THE RED DRUM FISHERY MANAGEMENT PLAN,
AMENDMENT 10 TO THE SNAPPER GROUPER FISHERY MANAGEMENT PLAN,
AMENDMENT 10 TO THE COASTAL MIGRATORY PELAGICS FISHERY MANAGEMENT PLAN,
AMENDMENT 1 TO THE GOLDEN CRAB FISHERY MANAGEMENT PLAN,
AMENDMENT 5 TO THE SPINY LOBSTER FISHERY MANAGEMENT PLAN, AND
AMENDMENT 4 TO THE CORAL, CORAL REEFS, AND LIVE/HARD BOTTOM HABITAT FISHERY MANAGEMENT PLAN

(INCLUDING A FINAL EA/SEIS, RIR & SIA/FIS)



OCTOBER 1998

South Atlantic Fishery Management Council
1 Southpark Circle, Charleston, South Carolina 29407-4699
(843) 571-4366 / FAX (843) 769-4520
email: safmc@noaa.gov

This is a publication of the South Atlantic Fishery Management Council pursuant to National Oceanic and Atmospheric Administration Award No. NA87FC0004

FINAL

COMPREHENSIVE AMENDMENT ADDRESSING ESSENTIAL FISH HABITAT IN FISHERY MANAGEMENT PLANS OF THE SOUTH ATLANTIC REGION

AMENDMENT 3 TO THE SHRIMP FISHERY MANAGEMENT PLAN,
AMENDMENT 1 TO THE RED DRUM FISHERY MANAGEMENT PLAN,
AMENDMENT 10 TO THE SNAPPER GROUPER FISHERY MANAGEMENT PLAN,
AMENDMENT 10 TO THE COASTAL MIGRATORY PELAGICS FISHERY MANAGEMENT PLAN,
AMENDMENT 1 TO THE GOLDEN CRAB FISHERY MANAGEMENT PLAN,
AMENDMENT 5 TO THE SPINY LOBSTER FISHERY MANAGEMENT PLAN, AND
AMENDMENT 4 TO THE CORAL, CORAL REEFS, AND LIVE/HARD BOTTOM HABITAT FISHERY MANAGEMENT PLAN

(INCLUDING A FINAL EA/SEIS, RIR & SIA/FIS)

Prepared by the:
South Atlantic Fishery Management Council

OCTOBER 1998

Financial assistance for producing this document was provided by grant funds from the National Marine Fisheries Service, National Oceanic and Atmospheric Administration, under Public Law 104-208, the Magnuson-Stevens Fishery Conservation and Management Act.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACTIONS IN COMPREHENSIVE HABITAT AMENDMENT

COMPREHENSIVE AMENDMENT COVER SHEET

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

Responsible Agencies:

South Atlantic Fishery Management Council
Contact: Robert K. Mahood
1 Southpark Circle, Suite 306
Charleston, South Carolina 29407-4699
(843) 571-4366; FAX (843) 769-4520
Email: safmc@noaa.gov

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

Name of Action:

(X) Administrative ( ) Legislative

SUMMARY

The Council is proposing the following actions to meet the habitat-related requirements of the Magnuson-Stevens Act:

Amendment 3 to the FMP for the Shrimp Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Penaeid and Rock Shrimp.
ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Penaeid Shrimp.
ACTION 3. Implement a Voluntary Vessel Monitoring System (VMS) as soon as Possible in the Rock Shrimp Fishery.

Amendment 1 to the Fishery Management Plan for the Red Drum Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Red Drum.
ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Red Drum.

Amendment 10 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Species in the Snapper Grouper Management Unit.
ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Species in the Snapper Grouper Management Unit.
ACTION 3. No Action to Prohibit All Fishing Within the Experimental Closed Area.

Amendment 10 to the Fishery Management Plan for the Coastal Migratory Pelagics Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Coastal Migratory Pelagics.

ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Coastal Migratory Pelagics.

ACTION 3. No Action to Prohibit Fishing for Coastal Migratory Pelagics in the Experimental Closed Area.

Amendment 1 to the Fishery Management Plan for the Golden Crab Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Golden Crab.

ACTION 2. No Action to Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Golden Crab.

Amendment 5 to the Fishery Management Plan for the Spiny Lobster Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Spiny Lobster.

ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Spiny Lobster.

ACTION 3. No Action to Prohibit Fishing for Spiny Lobster in the Experimental Closed Area.

Amendment 4 to the Fishery Management Plan for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region.

ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Coral, Coral Reefs, and Live/Hard Bottom Habitats.

ACTION 3A. Expand the Oculina Bank Habitat Area of Particular Concern (HAPC) to an area bounded to the west by 80°W. longitude, to the north by 28°30' N. latitude, to the south by 27°30' N. latitude, and to the east by the 100 fathom (600 feet) depth contour.

ACTION 3B. Establish the following two Satellite Oculina HAPCs: (1) Satellite Oculina HAPC #1 is bounded on the north by 28°30'N. Latitude, on the south by 28°29'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude, and (2) Satellite Oculina HAPC #2 is bounded on the north by 28°17'N. Latitude, on the south by 28°16'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude.

ACTION 4. No Action to Prohibit All Fishing Within the Experimental Closed Area.

FRAMEWORK PROCEDURE & ACTIVITIES AUTHORIZED BY SECRETARY

Mechanism for Determination of Framework Adjustments/Framework Procedure and Activities Authorized by the Secretary of Commerce.

Establish a procedure to allow for rapid modification to definitions of Essential Fish Habitat (EFH), and establishment of new, or modification of existing, Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs).

FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL ASSESSMENT

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

( ) Draft (X) Final

TABLE OF CONTENTS

SUMMARY

A Final SEIS/EA is provided for the actions. To address the habitat-related requirements of the Magnuson-Stevens Act, the Council is proposing the following actions:

Amendment 3 to the FMP for the Shrimp Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Penaeid and Rock Shrimp.

ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Penaeid Shrimp.

ACTION 3. Implement a Voluntary Vessel Monitoring System (VMS) as soon as Possible in the Rock Shrimp Fishery.

Amendment 1 to the Fishery Management Plan for the Red Drum Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Red Drum.

ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Red Drum.

Amendment 10 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Species in the Snapper Grouper Management Unit.

ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Species in the Snapper Grouper Management Unit.

ACTION 3. No Action to Prohibit All Fishing in the Experimental Closed Area.

Amendment 10 to the Fishery Management Plan for the Coastal Migratory Pelagics Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Coastal Migratory Pelagics.

ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Coastal Migratory Pelagics.

ACTION 3. No Action to Prohibit Fishing for Coastal Migratory Pelagics in the Experimental Closed Area.

Amendment 1 to the Fishery Management Plan for the Golden Crab Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Golden Crab.

ACTION 2. No Action to Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Golden Crab.

Amendment 5 to the Fishery Management Plan for the Spiny Lobster Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Spiny Lobster.

ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Spiny Lobster.

ACTION 3. No Action to Prohibit Fishing for Spiny Lobster in the Experimental Closed Area.

Amendment 4 to the Fishery Management Plan for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region.

ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Coral, Coral Reefs, and Live/Hard Bottom Habitats.

ACTION 3A. Expand the Oculina Bank Habitat Area of Particular Concern (HAPC) to an area bounded to the west by 80°W. longitude, to the north by 28°30' N. latitude, to the south by 27°30' N. latitude, and to the east by the 100 fathom (600 feet) depth contour.

ACTION 3B. Establish the following two Satellite Oculina HAPCs: (1) Satellite Oculina HAPC #1 is bounded on the north by 28°30'N. Latitude, on the south by 28°29'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude, and (2) Satellite Oculina HAPC #2 is bounded on the north by 28°17'N. Latitude, on the south by 28°16'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude.

ACTION 4. No Action to Prohibit All Fishing Within the Experimental Closed Area.

FRAMEWORK PROCEDURE & ACTIVITIES AUTHORIZED BY SECRETARY

Mechanism for Determination of Framework Adjustments/Framework Procedure and Activities Authorized by the Secretary of Commerce.

Establish a procedure to allow for rapid modification to definitions of Essential Fish Habitat (EFH), and establishment of new, or modification of existing, Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs).

Public comments were received during public hearings held during June 1998 in St. Augustine, Florida; Richmond Hill, Georgia; Morehead, North Carolina; Charleston, South Carolina; Ft. Pierce, Florida; and Marathon, Florida. Public hearing comments are contained in a package dated August 1998. Limited copies are available from the Council.

The Council's Habitat and Coral Advisory Panel met in conjunction with the Habitat Committee August 11-13, 1998 in Charleston to review public comments and to comment on the draft Habitat Plan and Comprehensive Habitat Amendment.

Public comment was also taken on September 23, 1998 prior to the Council taking final action. Comments are included as part of the Council meeting minutes and are available from the Council.

One comment was received during the DSEIS/EA comment period and is contained in Appendix B. The Council addressed this comment and the response is also included in Appendix B.

DSEIS/EA to NMFS on: May 12, 1998 DSEIS/EA to EPA on: July 2, 1998
Comments on DSEIS/EA requested by: August 24, 1998

FSEIS/EA to NMFS on: October 8, 1998 FSEIS/EA to EPA on: _____
Comments on FSEIS/EA requested by: _____

REGULATORY IMPACT REVIEW

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

INTRODUCTION

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

The National Marine Fisheries Service requires a RIR for all regulatory actions that are of public interest. The RIR does three things: 1) it provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action, 2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem, and 3) it ensures the regulatory agency systematically and comprehensively considers all available alternatives so that public welfare can be enhanced in the most efficient and cost effective way.

The RIR also serves as the basis for determining whether any proposed regulations are a "significant regulatory action" under certain criteria provided in Executive Order 12866 and whether the proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Act of 1980 (RFA) as amended by Public Law 104-121. The purpose of the Regulatory Flexibility Act is to relieve small businesses, small organizations, and small governmental entities from burdensome regulations and record–keeping requirements, to the extent possible.

This RIR analyzes the probable impacts on the fishery and habitat of the proposed comprehensive amendment addressing essential fish habitat in Fishery Management Plans of the South Atlantic Region.

PROBLEMS AND OBJECTIVES

The general problems and objectives are found in Section 1.5.

METHODOLOGY AND FRAMEWORK FOR ANALYSIS

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

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

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

Table 1. Summary of Expected Changes in Net Benefits.

Proposed Actions & Other Possible Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Penaeid and Rock Shrimp			
Proposed Action 1. Identify Essential Fish Habitat for Penaeid and Rock Shrimp.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.
Proposed Action 2. Establish EFH-HAPCs for Penaeid Shrimp.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.

Table 1. (cont.) Summary of Expected Changes in Net Benefits.

Proposed Actions & Other Possible Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Penaeid and Rock Shrimp			
Proposed Action 3. Implement a Voluntary Vessel Monitoring System (VMS) as soon as possible in the Rock Shrimp Fishery.	Demonstrate the efficiency of a monitoring system. Acts as safety insurance for vessels.	None as costs of voluntary program to be paid by NMFS.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Possible decrease in net benefits and destruction to essential habitat.	Likely negative in the long-term.
Option 2. Require Use of Transponders by Rock Shrimp Vessels in the South Atlantic EEZ.	Improved effectiveness of monitoring system. Acts as safety insurance for vessels.	Estimated increase in operating cost estimated between $2,050 and $6,960 as initial setup cost.	Likely positive in the long-term.
Option 3. Require Use of Transponders by Rock Shrimp Vessels Fishing in the EEZ South of 28^0 30' N. Latitude.	Improved effectiveness of monitoring system. Acts as safety insurance for vessels.	Increase in operating cost for vessels fishing in the EEZ South of 28^o 30' estimated between $2,050 and $6,960 as initial setup cost.	Likely positive in the long-term.

Table 1. (cont.) Summary of Expected Changes in Net Benefits.

Proposed Actions & Other Possible Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Red Drum			
Proposed Action 1. Identify Essential Fish Habitat for Red Drum.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.
Proposed Action 2. Establish EFH-HAPCs for Red Drum.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.

Table 1. (cont.) Summary of Expected Changes in Net Benefits.

Proposed Actions & Other Possible Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Snapper Grouper			
Proposed Action 1. Identify Essential Fish Habitat for Species in the Snapper Grouper Management Unit.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.
Proposed Action 2. Establish EFH-HAPCs for Species in the Snapper Grouper Management unit.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Positive.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative.
Proposed Action 3. No Action to Prohibit All Fishing in the Experimental Closed Area.	None.	Possible decrease in net benefits.	Likely negative in the long-term.
Other Possible Options:			
Option 1. Prohibit All Fishing in the Experimental Closed Area.	Possible increase in net benefits and reduction in incidental catches of snapper grouper species.	Could reduce flow of revenue from recreational fishing activities to the local economy by up to $5.0 million annually. Estimated decrease in commercial exvessel value of up to $726,000 to coastal pelagics fishermen, and up to $18,000 to spiny lobster fishermen in the first year.	Unknown.

Table 1. (cont.) Summary of Expected Changes in Net Benefits Continued.

Proposed Actions & Other Possible Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Coastal Migratory Pelagics			
Proposed Action 1. Identify Essential Fish Habitat for Coastal Migratory Pelagics.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.
Proposed Action 2. Establish EFH-HAPCs for Coastal Migratory Pelagics.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.
Proposed Action 3. No Action to Prohibit Fishing for Coastal Migratory Pelagics in the Experimental Closed Area.	None.	Possible decrease in net benefits.	Likely negative in the long-term.
Other Possible Options:			
Option 1. Prohibit Fishing for Coastal Migratory Pelagics in the Experimental Closed Area.	Possible increase in net benefits.	Decrease in exvessel value of up to $726,000 in the first year.	Likely positive in the long-term.

Table 1. (cont.) Summary of Expected Changes in Net Benefits Continued.

Proposed Actions & Other Possible Options	Positive Impacts	Negative Impacts	Net Impacts
Golden Crab			
Proposed Action 1. Identify Essential Fish Habitat for Golden Crab.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.
Proposed Action 2. No Action to Establish EFH-HAPCs for Golden Crab.	None.	Possible decrease in net benefits.	Likely negative in the long-term.
Other Possible Options:			
Option 1. Establish EFH-HAPCs for Golden Crab.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Spiny Lobster			
Proposed Action 1. Identify Essential Fish Habitat for Spiny Lobster.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.
Proposed Action 2. Establish EFH-HAPCs for Spiny Lobster.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.
Proposed Action 3. No Action to Prohibit Fishing for Spiny Lobster in the Experimental Closed Area	None.	Possible decrease in net benefits.	Likely negative in the long-term.
Other Possible Options:			
Option 1. Prohibit Fishing for Spiny Lobster in the Experimental Closed Area	Possible increase in net benefits.	Decrease in exvessel value of up to $18,000 in the first year.	Likely positive in the long-term.

Table 1. (cont.) Summary of Expected Changes in Net Benefits Continued.

Proposed Actions & Other Possible Options	Positive Impacts	Negative Impacts	Net Impacts
Coral, Coral Reefs, and Live/Hard Bottom Habitat			
Proposed Action 1. Identify Essential Fish Habitat for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.
Proposed Action 2. Establish EFH-HAPCs for Coral, Coral Reefs, and Live/Hard Bottom Habitats.	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.
ACTION 3A. Expand the Oculina Bank Habitat Area of Particular Concern (HAPC) to an area bounded to the west by 80°W longitude, to the north by 28°30' N latitude, to the south by 27°30' N latitude, and to the east by the 100 fathom (600 feet) depth contour.	Possible increase in net benefits.	Potential decrease in exvessel value for calico scallop fishermen presently fishing this area.	Likely positive in the long-term.

Table 1. (cont.) Summary of Expected Changes in Net Benefits Continued.

Proposed Actions & Other Possible Options	Positive Impacts	Negative Impacts	Net Impacts
Coral Action 3 Continued:			
ACTION 3B. Establish the following two Satellite Oculina HAPCs: (1) Satellite Oculina HAPC #1 is bounded on the north by 28°30'N. Latitude, on the south by 28°29'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude, and (2) Satellite Oculina HAPC #2 is bounded on the north by 28°17'N. Latitude, on the south by 28°16'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude.	Possible increase in net benefits.	None because fishermen have stated they do not direct harvest for calico scallops in these areas.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Possible decrease in net benefits.	Likely negative in the long-term.
Option 2. Expand the Oculina Bank Habitat Area of Particular Concern (HAPC) by 1-5 miles on the western side between 27°30' N latitude and 28°30' N latitude.	Possible increase in net benefits.	Potential decrease in exvessel value for calico scallop fishermen presently fishing this area. Decrease is estimated at up to $914,613 in the first year.	Likely positive in the long-term.
Action 4. No Action to Prohibit all Fishing within the Experimental Closed Area.	None.	Possible decrease in net benefits and destruction to essential habitat in the long-term.	Likely negative in the long-term.

Table 1. (cont.) Summary of Expected Changes in Net Benefits.

Proposed Actions & Other Possible Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Other Possible Options:			
Option 1. Prohibit all fishing within the experimental closed area.	Possible increase in net benefits. Protects essential fish habitat.	Estimated decrease in commercial exvessel value of up to $726,000 to coastal pelagics fishermen, and up to $18,000 to spiny lobster fishermen in the first year. Estimated decrease in annual revenue of up to $5,000,000 to the local economy from recreational fishing activities.	Unknown.
Framework			
Proposed Action 1. Mechanism for Determination of Framework Adjustments/Framework Procedure and Activities Authorized by the Secretary of Commerce. Establish a procedure to allow for rapid modification to definitions of Essential Fish Habitat (EFH), and establishment of new, or modification of existing, Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs).	Possible increase in net benefits. Protects essential fish habitat.	None. However, other actions resulting from this action could have impacts on fishermen.	Likely positive in the long-term.
Other Possible Options:			
Option 1. No Action.	None.	Likely damage to essential fish habitat.	Likely negative in the long-term.

SOCIAL IMPACT ASSESSMENT/FISHERY IMPACT STATEMENT

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

INTRODUCTION

Mandates to conduct Social Impact Assessments (SIA) come from both the National Environmental Policy Act (NEPA) and the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). NEPA requires Federal agencies to consider the interactions of natural and human environments by using a "systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences...in planning and decision-making" [NEPA section 102 (2) (a)]. Under the Council on Environmental Quality's (CEQ, 1986) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act a clarification of the terms "human environment" expanded the interpretation to include the relationship of people with their natural and physical environment (40 CFR 1508.14). Moreover, agencies need to address the aesthetic, historic, cultural, economic, social, or health effects which may be direct, indirect or cumulative (Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, 1994).

Under the MSFCMA, fishery management plans (FMPs) must "...achieve and maintain, on a continuing basis, the optimum yield from each fishery" [MSFCMA section 2 (b) (4)]. When considering "a system for limiting access to the fishery in order to achieve optimum yield" the Secretary of Commerce and Regional Fishery Management Councils are to consider both the social and economic impacts of the system [MSFCMA section 303 (b) (6)]. Recent amendments to the MSFCMA require that FMPs address the impacts of any management measures on the participants in the affected fishery and those participants in other fisheries that may be affected directly or indirectly through the inclusion of a fishery impact statement [MSFCMA section 303 (a) (9)]. Most recently, with the addition of National Standard 8, FMPs must now consider the impacts upon fishing communities to assure their sustained participation and minimize adverse economic impacts upon those communities [MSFCMA section 301 (a) (8)]. Consideration of social impacts is a growing concern as fisheries experience increased participation and/or declines in stocks. With an increasing need for management action, the consequences of such changes need to be examined in order to mitigate the negative impacts experienced by the populations concerned.

PROBLEMS AND METHODS

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

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

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

SOCIAL IMPACT ASSESSMENT DATA NEEDS

The recent socio-demographic survey and economic surveys conducted with snapper grouper fishermen were snapshots of the commercial fishery. To provide better assessments socio-economic data need to be collected on a continuing basis for both the commercial and recreational sectors, including the for-hire sector, on all fisheries. Collecting social and economic information in logbooks would be one manner of providing this information on a continuing basis for the commercial sector. Social and economic add-ons to the MRFSS data collection system can provide this type of data for recreational fishermen. In addition, information on fishing communities in the South Atlantic is virtually non-existent. Fishing communities need to be identified and their dependence upon fishing and fishery resources needs to be established. The following list of data needs is provided as a guideline:

1. Demographic information may include but not necessarily limited to: population; age; gender; ethnic/race; education; language; marital status; children, (age & gender); residence; household size; household income, (fishing/non-fishing); occupational skills; association with vessels & firms (role & status).

2. Social Structure information may include but not necessarily limited to: historical participation; description of work patterns; kinship unit, size and structure; organization & affiliation; patterns of communication and cooperation; competition and conflict; spousal and household processes; and communication and integration.

3. Emic culture information may include but not necessarily limited to: occupational motivation and satisfaction; attitudes and perceptions concerning management; constituent views of their personal future of fishing; psycho-social well-being; and cultural traditions related to fishing (identity and meaning).

4. Fishing community information might include but not necessarily limited to: identifying communities, dependence upon fishery resources (this includes recreational use), identifying businesses related to that dependence, determine the number of employees within these businesses and their status.

This list of data needs is not exhaustive or all inclusive. The upcoming issues within the South Atlantic will undoubtedly focus upon allocation and the need for reliable and valid information concerning the social environment will become necessary for managing fisheries. A further recommendation might be for the NMFS to review and implement the "Southeast Social and Cultural Data and Analysis Plan" as this would address many of the current data needs.

SOCIAL IMPACT SUMMARY

Table 2. Social impact (SIA/FIS) summary.

ACTION	SOCIAL IMPACTS
Penaeid and Rock Shrimp	
ACTION 1. Identify Essential Fish Habitat for Penaeid and Rock Shrimp.	There would be few social impacts from identifying essential fish habitat itself.
ACTION 2. Establish EFH-HAPCs for Penaeid Shrimp.	The establishment of EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.
ACTION 3. Implement a Voluntary Vessel Monitoring System (VMS) as soon as possible in the Rock Shrimp Fishery.	Sentiments expressed by industry through the public hearing process in 1994 indicated some dislike for this type of monitoring system. Some of this resistance is due to unfamiliarity with the use and implementation of a vessel monitoring system. The expense of installing VMS is often mentioned as a major detractor also. However, the expense is relative to the type of system that would be required. As commercial fishermen become more acquainted with these systems and realize the benefits to be gained by using such monitoring systems, levels of acceptance may change. The Rock Shrimp Advisory Panel supports this voluntary program which should bring positive social impacts to this process of technology transfer.
Red Drum	
ACTION 1. Identify Essential Fish Habitat for Red Drum.	There would be few social impacts from identifying essential fish habitat itself.
ACTION 2. Establish EFH-HAPCs for Red Drum.	The establishment of EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.

Table 2. (cont.) Social impact (SIA/FIS) summary.

ACTION	SOCIAL IMPACTS
Snapper Grouper	
ACTION 1. Identify Essential Fish Habitat for Species in the Snapper Grouper Management Unit.	There would be few social impacts from identifying essential fish habitat itself.
ACTION 2. Establish EFH-HAPCs for Species in the Snapper Grouper Management Unit.	The establishment of EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.
ACTION 3. No Action to Prohibit All Fishing in the Experimental Closed Area.	The social impacts from no action will be positive in light of public testimony outlining the negative social and economic impacts of the prohibition.
Coastal Migratory Pelagics	
ACTION 1. Identify Essential Fish Habitat for Coastal Migratory Pelagics.	There would be few social impacts from identifying essential fish habitat itself.
ACTION 2. Establish EFH-HAPCs for Coastal Pelagics.	The establishment of EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.
ACTION 3. No Action to Prohibit Fishing for Coastal Migratory Pelagics in the Experimental Closed Area.	Testimony during public hearings suggest that this area is important to tournament fishermen. Because of the social and economic impacts of the prohibition, the social impacts of no action will be positive.
Golden Crab	
ACTION 1. Identify Essential Fish Habitat for Golden Crab.	There would be few social impacts from identifying essential fish habitat itself.
ACTION 2. No Action to Establish EFH-HAPCs for Golden Crab.	None.
Spiny Lobster	
ACTION 1. Identify Essential Fish Habitat for Spiny Lobster.	There would be few social impacts from identifying essential fish habitat itself.
ACTION 2. Establish EFH-HAPCs for Spiny Lobster.	The establishment of EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.
ACTION 3. No Action to Prohibit Fishing for Spiny Lobster in the Experimental Closed Area.	The social impacts from no action should be positive. Public testimony suggest this area is an important recreational fishing area for regional fishermen.

Table 2. (cont.) Social impact (SIA/FIS) summary.

ACTION	SOCIAL IMPACTS
Coral, Coral Reefs, and Live/Hard Bottom Habitat	
ACTION 1. Identify Essential Fish Habitat for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region	There would be few social impacts from identifying essential fish habitat itself.
ACTION 2. Establish EFH-HAPCs for Coral, Coral Reefs, and Live/Hard Bottom.	The establishment of EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.
ACTION 3A. Expand the Oculina Bank Habitat Area of Particular Concern (HAPC) to an area bounded to the west by 80°W longitude, to the north by 28°30' N latitude, to the south by 27°30' N latitude, and to the east by the 100 fathom (600 feet) depth contour.	This area corresponds to the current area closed to rock shrimping. One impact is that rock shrimpers will see some equity in this area being closed to other types of gear identified as being destructive of hard bottom.

Table 2. (cont.) Social impact (SIA/FIS) summary.

ACTION	SOCIAL IMPACTS
Coral, Coral Reefs, and Live/Hard Bottom Habitat	
ACTION 3B. Establish the following two Satellite Oculina HAPCs: (1) Satellite Oculina HAPC #1 is bounded on the north by 28°30'N. Latitude, on the south by 28°29'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude, and (2) Satellite Oculina HAPC #2 is bounded on the north by 28°17'N. Latitude, on the south by 28°16'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude.	Establishing satellite HAPCs should accomplish both the goals of the Council to protect coral and to not unnecessarily adversely impact the trawl fisheries which operate in this area. Anecdotal information from rock shrimpers and calico scallop fishermen indicates that they routinely fish within 1 mile of the western boundary of the Oculina Bank and north. By establishing the satellite HAPCs, fishermen should be able to fish productive grounds without much intrusion on their normal operation. The Council will be able to meet new mandates and protect important outcroppings of coral. Social impacts will be beneficial.
ACTION 4. No Action to Prohibit all Fishing Within the Experimental Closed Area.	The social impacts from no action will be positive in light of public testimony outlining the negative social and economic impacts of the prohibition. This area is important to regional fishermen, especially during tournaments.
Framework	
ACTION 1. Mechanism for Determination of Framework Adjustments.	There would be few social impacts from identifying essential fish habitat itself.

1.0 PURPOSE AND NEED

1.1 Historical Overview of SAFMC Activities to Conserve Essential Fish Habitat

Through the years, the Council has taken a leading role in the protection of habitat essential to managed species. This is accomplished through two avenues as directed by the Magnuson-Stevens Act, the first being through direct regulation of fisheries to protect habitat from the direct or indirect impacts of fishing. With the implementation of the Coral Fishery Management Plan and subsequent amendments to that plan, the Council has protected coral, coral reefs, and live/hard bottom habitat in the south Atlantic region by establishing an optimum yield of zero and prohibiting all harvest or possession of these resources which serve as essential fish habitat to many managed species Another measure adopted by the Council and implemented through the coral plan was the designation of the Oculina Bank Habitat Area of Particular Concern, a unique and fragile deepwater coral habitat off southeast Florida that is protected from all bottom tending fishing gear damage. The Council has also prohibited the use of the following gears in the snapper grouper fishery management plan to protect habitat: bottom longlines in the EEZ inside of 50 fathoms or anywhere south of St. Lucie Inlet Florida, fish traps, bottom tending (roller-rig) trawls on live bottom habitat, and entanglement gear. Also established under the snapper grouper plan is an Experimental Closed Area (experimental marine reserve) where the harvest or possession of all species in the snapper grouper complex is prohibited. Other actions taken by the Council that directly or indirectly protect habitat or ecosystem integrity include: the prohibition of rock shrimp trawling in a designated area around the Oculina Bank, mandatory use of bycatch reduction devices in the penaeid shrimp fishery, a prohibition of the use of drift gill nets in the coastal migratory pelagic fishery; and a mechanism that provides for the concurrent closure of the EEZ to penaeid shrimping if environmental conditions in state waters are such that the overwintering spawning stock is severely depleted. In addition to implementing regulations to protect habitat from fishing related degradation, the Council actively comments on non-fishing projects or policies that may impact fish habitat. In response to an earlier amendment to the Magnuson Act, the Council adopted a habitat policy and procedure document that established a four state Habitat Advisory Panel and adopted a comment and policy development process. Members of the Habitat Advisory Panel serve as the Council's habitat contacts and professionals in the field. The Advisory Panel is structured and functions differently than other panels. The Panel is made up of four state sub-panels each having representatives from the state marine fisheries agency, the U S Fish and Wildlife Service, state coastal zone management agency, conservationist, commercial fishermen, and recreational fishermen. In addition to the state representatives, at large members on the overall panel include representatives from EPA Region IV, NMFS Southeast Fisheries Center, NMFS SERO, Atlantic States Marine Fisheries Commission, and NMFS Habitat Conservation Division Headquarters. This body functions as a whole or as sub-panel depending on the scope of the issue. The Panel serves to provide the Council with both expert recommendations on activities being considered for permitting as well as guidance in development of Habitat policy statements. With guidance from the Panel, the Council, has developed and approved policies on; oil and gas exploration, development and transportation; dredging and dredge material disposal; submerged aquatic vegetation, and ocean dumping. These are included in Section 5 of this document under recommendations to protect EFH.

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

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

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

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

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

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

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

(3) Each Council—

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

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

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

(B) Within 30 days after receiving a recommendation under subparagraph (A), a Federal agency shall provide a detailed response in writing to any Council commenting under paragraph (3) and the Secretary regarding the matter. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on such

habitat. In the case of a response that is inconsistent with the recommendations of the Secretary, the Federal agency shall explain its reasons for not following the recommendations.'

1.3 Affected Fishery Management Plans and Fish Stocks

South Atlantic Snapper-Grouper

Balistidae--Triggerfishes
- Gray triggerfish, *Balistes capriscus*
- Queen triggerfish, *Balistes vetula*
- Ocean triggerfish, *Canthidermis sufflamen*

Carangidae--Jacks
- Yellow jack, *Caranx bartholomaei*
- Blue runner, *Caranx crysos*
- Crevalle jack, *Caranx hippos*
- Bar jack, *Caranx ruber*
- Greater amberjack, *Seriola dumerili*
- Lesser amberjack, *Seriola fasciata*
- Almaco jack, *Seriola rivoliana*
- Banded rudderfish, *Seriola zonata*

Ephippidae--Spadefishes
- Spadefish, *Chaetodipterus faber*

Haemulidae--Grunts
- Black margate, *Anisotremus surinamensis*
- Porkfish, *Anisotremus virginicus*
- Margate, *Haemulon album*
- Tomtate, *Haemulon aurolineatum*
- Smallmouth grunt, *Haemulon chrysargyreum*
- French grunt, *Haemulon flavolineatum*
- Spanish grunt, *Haemulon macrostomum*
- Cottonwick, *Haemulon melanurum*
- Sailors choice, *Haemulon parrai*
- White grunt, *Haemulon plumieri*
- Blue stripe grunt, *Haemulon sciurus*

Lutjanidae--Snappers
- Black snapper, *Apsilus dentatus*
- Queen snapper, *Etelis oculatus*
- Mutton snapper, *Lutjanus analis*
- Schoolmaster, *Lutjanus apodus*
- Blackfin snapper, *Lutjanus buccanella*
- Red snapper, *Lutjanus campechanus*
- Cubera snapper, *Lutjanus cyanopterus*
- Gray snapper, *Lutjanus griseus*
- Mahogany snapper, *Lutjanus mahogoni*
- Dog snapper, *Lutjanus jocu*
- Lane snapper, *Lutjanus synagris*
- Silk snapper, *Lutjanus vivanus*
- Yellowtail snapper, *Ocyurus chrysurus*
- Vermilion snapper, *Rhomboplites aurorubens*

Malacanthidae--Tilefishes
- Blueline tilefish, *Caulolatilus microps*
- Golden tilefish, *Lopholatilus chamaeleonticeps*
- Sand tilefish, *Malacanthus plumieri*

Percichthyidae--Temperate basses
- Wreckfish, *Polyprion americanus*

Serranidae--Sea Basses and Groupers
- Bank sea bass, *Centropristis ocyurus*
- Rock sea bass, *Centropristis philadelphica*
- Black sea bass, *Centropristis striata*
- Rock hind, *Epinephelus adscensionis*
- Graysby, *Epinephelus cruentatus*
- Speckled hind, *Epinephelus drummondhayi*
- Yellowedge grouper, Epinephelus flavolimbatus
- Coney, *Epinephelus fulvus*
- Red hind, *Epinephelus guttatus*
- Jewfish, *Epinephelus itajara*
- Red grouper, *Epinephelus morio*
- Misty grouper, *Epinephelus mystacinus*
- Warsaw grouper, *Epinephelus nigritus*
- Snowy grouper, *Epinephelus niveatus*
- Nassau grouper, *Epinephelus striatus*
- Black grouper, *Mycteroperca bonaci*
- Yellowmouth grouper, *Mycteroperca interstitialis*
- Gag, *Mycteroperca microlepis*
- Scamp, *Mycteroperca phenax*
- Tiger grouper, *Mycteroperca tigris*
- Yellowfin grouper, *Mycteroperca venenosa*

Sparidae--Porgies
- Sheepshead, *Archosargus probatocephalus*
- Grass porgy, *Calamus arctifrons*
- Jolthead porgy, *Calamus bajonado*
- Saucereye porgy, *Calamus*
- Whitebone porgy, *Calamus leucosteus*
- Knobbed porgy, *Calamus nodosus*
- Red porgy, *Pagrus pagrus*
- Longspine porgy, *Stenotomus caprinus*
- Scup, *Stenotomus chrysops*

Labridae--Wrasses
- Hogfish, *Lachnolaimus maximus*
- Puddingwife, *Halichoeres radiatus*

Coastal Migratory Pelagics
Cero, *Scomberomorus regalis*
Cobia, *Rachycentron canadum*
Dolphin, Coryphaena hippurus
King mackerel, *Scomberomorus cavalla*
Little tunny, *Euthynnus alletteratus*
Spanish mackerel, *Scomberomorus maculatus*

Shrimp Fishery of the South Atlantic Region
Brown shrimp, *Penaeus aztecus*
Pink shrimp, *Penaeus duorarum*
Rock shrimp, *Sicyonia brevirostris*
Royal red shrimp, *Pleoticus robustus*
Seabob shrimp, *Xiphopenaeus kroyeri*
White shrimp, *Penaeus setiferus*

Spiny Lobster
Spiny Lobster, *Panulirus argus*

Golden Crab
Golden Crab, *Chaeceon fenneri*

Coral, Coral Reefs, and Live/Hard Bottom Habitat
Coral belonging to the Class Hydrozoa (fire corals and hydrocorals).
Coral belonging to the Class Anthozoa, Subclass Hexacorallia, Orders Scleractinia (stony corals) and Antipatharia (black corals).
A seafan, *Gorgonia flabellum* or *G. ventalina*
Coral in a coral reef, except for allowable octocoral
Coral in an HAPC, including allowable octocoral
(HAPC means habitat area of particular concern)
Live rock means living marine organisms, or an assemblage thereof, attached to a hard substrate, including dead coral or rock (excluding individual mollusk shells).

Red Drum
Red drum, *Sciaenops ocellatus*

1.4 SAFMC Habitat Plan and Comprehensive Habitat Amendment Development Process

A proposed rule was published by NMFS on April 23, 1997 specifying regional fishery management Council guidelines for the description and identification of essential fishery habitat (EFH) in fishery management plans, adverse impacts on EFH, and actions to conserve and enhance EFH. In order to address the new essential fish habitat mandates in the Magnuson-Stevens Act, the South Atlantic Council has begun development of: (1) a habitat plan which will serve as a source document describing EFH; (2) a comprehensive amendment which will amend each of the existing fishery management plans, identifying and describing EFH and addressing impacts of fishing gear and/or fishing practices on EFH; and (3) a monitoring program for each fishery management plan to determine new impacts from fishing gear and/or fishing practices in an effort to minimize, to the extent practicable, the adverse impacts on EFH.

1.5 Issues, Problems, and Management Objectives for Comprehensive Amendment

The Magnuson Act was amended in October 1996 to become the Magnuson-Stevens Fishery Conservation and Management Act (also called the Sustainable Fisheries Act).

Requirements addressing habitat are as follows:

"Section 305 (b) FISH HABITAT.--

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

(B) The Secretary, in consultation with participants in the fishery, shall provide each Council with recommendations and information regarding each fishery under that Council's authority to assist it in the identification of essential fish habitat, the adverse impacts on that habitat, and the actions that should be considered to ensure the conservation and enhancement of that habitat.
(C) The Secretary shall review programs administered by the Department of Commerce and ensure that any relevant programs further the conservation and enhancement of essential fish habitat.
(D) The Secretary shall coordinate with and provide information to other Federal agencies to further the conservation and enhancement of essential fish habitat."

Section 1.2 of the Habitat Plan contains a detailed discussion of the interim final guidelines. The Comprehensive Amendment addressing Essential Fish Habitat in fishery management plans of the South Atlantic Region represents the South Atlantic Council's work to meet the new Sustainable Fisheries Act requirements.

1.6 Summary of Existing Management Measures which Directly or Indirectly Protect Essential Fish Habitat

See Section 1.1 above.

1.7 Proposed Measures

The following measures are proposed:

Amendment 3 to the FMP for the Shrimp Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Penaeid and Rock Shrimp.
ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Penaeid Shrimp.
ACTION 3. Implement a Voluntary Vessel Monitoring System (VMS) as soon as possible in the Rock Shrimp Fishery.

Amendment 1 to the Fishery Management Plan for the Red Drum Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Red Drum.
ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Red Drum.

Amendment 10 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Species in the Snapper Grouper Management Unit.
ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Species in the Snapper Grouper Management Unit.
ACTION 3. No Action to Prohibit All Fishing Within the Experimental Closed Area.

Amendment 10 to the Fishery Management Plan for the Coastal Migratory Pelagics Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Coastal Migratory Pelagics.

ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Coastal Migratory Pelagics.

ACTION 3. No Action to Prohibit Fishing for Coastal Migratory Pelagics in the Experimental Closed Area.

Amendment 1 to the Fishery Management Plan for the Golden Crab Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Golden Crab.

ACTION 2. No Action to Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Golden Crab.

Amendment 5 to the Fishery Management Plan for the Spiny Lobster Fishery of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Spiny Lobster.

ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Spiny Lobster.

ACTION 3. No Action to Prohibit Fishing for Spiny Lobster in the Experimental Closed Area.

Amendment 4 to the Fishery Management Plan for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region

ACTION 1. Identify Essential Fish Habitat for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region.

ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Coral, Coral Reefs, and Live/Hard Bottom Habitats.

ACTION 3A. Expand the Oculina Bank Habitat Area of Particular Concern (HAPC) to an area bounded to the west by 80°W. longitude, to the north by 28°30' N. latitude, to the south by 27°30' N. latitude, and to the east by the 100 fathom (600 feet) depth contour.

ACTION 3B. Establish the following two Satellite Oculina HAPCs: (1) Satellite Oculina HAPC #1 is bounded on the north by 28°30'N. Latitude, on the south by 28°29'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude, and (2) Satellite Oculina HAPC #2 is bounded on the north by 28°17'N. Latitude, on the south by 28°16'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude.

ACTION 4. No Action to Prohibit All Fishing Within the Experimental Closed Area.

FRAMEWORK PROCEDURE & ACTIVITIES AUTHORIZED BY SECRETARY

Mechanism for Determination of Framework Adjustments/Framework Procedure and Activities Authorized by the Secretary of Commerce.

Establish a procedure to allow for rapid modification to definitions of Essential Fish Habitat (EFH), and establishment of new, or modification of existing, Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs).

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

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

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

The following problems/issues identified in the Comprehensive Amendment Addressing Essential Fish Habitat (EFH) are addressed for calico scallops and *Sargassum* through the proposed management actions in the Calico Scallop and *Sargassum* Fishery Management Plans. The summary title is used in the impact table (Table 3) to identify which problems are addressed by which proposed management measure.

Biological

- Mandate to identify and describe EFH. — Habitat Identification
- Mandate to identify EFH-Habitat Areas of Particular Concern. — Habitat Identification
- Habitat degradation / loss of Essential Fish Habitat. — Habitat Protection
- Mandate to reduce impact of fishing in EEZ on Essential Fish. — Habitat Protection
- Habitat and recommend measures to reduce impact from non-fishing activities. — Habitat Protection
- Limited information on production, distribution, and ecology of EFH and species or species complex use of EFH. — Data

Socio-Economic

- Limited statistical, social, and economic information. — Data & Habitat Protection

The following table (Table 3) summarizes how the alternatives address the problems and issues identified by the Council. Management alternatives are in the rows and issues and problems are in the columns. The Council's preferred options are shown in **bold**.

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

Table 3. Summary of Environmental Consequences.

Alternatives	Social & Economic:	Biological:
Penaeid and Rock Shrimp		
Proposed Action 1. Identify Essential Fish Habitat for Penaeid and Rock Shrimp.	Required by revisions to the Magnuson-Stevens Act, identifying essential fish habitat will provide the Council with important information on habitat for species in need of protection.	EFH would be protected which could prevent further declines in productivity.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
Proposed Action 2. Establish EFH-HAPCs for Penaeid Shrimp.	Encourages cooperative state and federal protection of key habitats leading to positive social and long-term economic benefits to society.	Identifies and encourages protection of habitats which are most critical to managed species.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
Proposed Action 3. Implement a Voluntary Vessel Monitoring System (VMS) as soon as possible in the Rock Shrimp Fishery.	Demonstrate the effectiveness of a vessel monitoring system. Acts as safety insurance for vessels.	Positive through protection of essential fish habitat.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
Option 2. Require Use of Transponders by Rock Shrimp Vessels in the South Atlantic EEZ.	Improved effectiveness of monitoring system. Act as safety insurance for vessels.	Positive through protection of essential fish habitat.
Option 3. Require Use of Transponders by Rock Shrimp Vessels Fishing in the EEZ South of 28° 30' N. Latitude.	Improved effectiveness of monitoring system. Act as safety insurance for vessels.	Positive through protection of essential fish habitat.

Table 3(Continued). Summary of Environmental Consequences.

Alternatives	Social & Economic:	Biological:
Red Drum		
Proposed Action 1. Identify Essential Fish Habitat for Red Drum.	Required by revisions to the Magnuson-Stevens Act, identifying essential fish habitat will provide the Council with important information on habitat for species in need of protection.	EFH would be protected which could prevent further declines in productivity.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
Proposed Action 2. Establish EFH-HAPCs for Red Drum.	Encourages cooperative state and federal protection of key habitats leading to positive social and long-term economic benefits to society.	Identifies and encourages protection of habitats which are most critical to managed species.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.

Alternatives	Social & Economic:	Biological:
Snapper Grouper		
Proposed Action 1. Identify Essential Fish Habitat for Species in the Snapper Grouper Management Unit.	Required by revisions to the Magnuson-Stevens Act, identifying essential fish habitat will provide the Council with important information on habitat for species in need of protection.	EFH would be protected which could prevent further declines in productivity.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
Proposed Action 2. Establish EFH-HAPCs for Species in the Snapper Grouper Management Unit.	Encourages cooperative state and federal protection of key habitats leading to positive social and long-term economic benefits to society.	Identifies and encourages protection of habitats which are most critical to managed species.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
Proposed Action 3. No Action to Prohibit All Fishing in the Experimental Closed Area.	Positive in light of public testimony outlining the negative social and economic impacts of the prohibition.	Use of a vessel monitoring system will increase enforcement of closed areas and result in increased habitat protection.
Other Possible Options:		
Option 1. Prohibit All Fishing in the Experimental Closed Area.	Possible increase in net benefits in the long-term but negative in the short-term.	Likely positive.

Table 3(Continued). Summary of Environmental Consequences.

Alternatives	Social & Economic:	Biological:
Coastal Migratory Pelagics		
Proposed Action 1. Identify Essential Fish Habitat for Coastal Migratory Pelagics.	Required by revisions to the Magnuson-Stevens Act, identifying essential fish habitat will provide the Council with important information on habitat for species in need of protection.	EFH would be protected which could prevent further declines in productivity.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
Proposed Action 2. Establish EFH-HAPCs for Coastal Pelagics.	Encourages cooperative state and federal protection of key habitats leading to positive social and long-term economic benefits to society.	Identifies and encourages protection of habitats which are most critical to managed species.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
Proposed Action 3. No Action to Prohibit Fishing for Coastal Migratory Pelagics in the Experimental Closed Area.	Positive in light of public testimony outlining the negative social and economic impacts of the prohibition.	Use of a vessel monitoring system will increase enforcement of closed areas and result in increased habitat protection.
Other Possible Options:		
Option 1. Prohibit Fishing for Coastal Migratory Pelagics in the Experimental Closed Area.	Possible increase in net benefits in the long-term but negative in the short-term.	Likely positive.

Alternatives	Social & Economic:	Biological:
Golden Crab		
Proposed Action 1. Identify Essential Fish Habitat for Golden Crab.	Required by revisions to the Magnuson-Stevens Act, identifying essential fish habitat will provide the Council with important information on habitat for species in need of protection.	EFH would be protected which could prevent further declines in productivity.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
Proposed Action 2. No Action to Establish EFH-HAPCs for Golden Crab.	Encourages cooperative state and federal protection of key habitats leading to positive social and long-term economic benefits to society.	Identifies and encourages protection of habitats which are most critical to managed species.
Other Possible Options:		
Option 1. Establish EFH-HAPCs for Golden Crab.	None.	Likely negative.

Table 3(Continued). Summary of Environmental Consequences.

Alternatives	Social & Economic:	Biological:
Spiny Lobster		
Proposed Action 1. Identify Essential Fish Habitat for Spiny Lobster.	Required by revisions to the Magnuson-Stevens Act, identifying essential fish habitat will provide the Council with important information on habitat for species in need of protection.	EFH would be protected which could prevent further declines in productivity.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
Proposed Action 2. Establish EFH-HAPCs for Spiny Lobster.	Encourages cooperative state and federal protection of key habitats leading to positive social and long-term economic benefits to society.	Identifies and encourages protection of habitats which are most critical to managed species.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
Proposed Action 3. No Action to Prohibit Fishing for Spiny Lobster in the Experimental Closed Area.	Positive in light of public testimony outlining the negative social and economic impacts of the prohibition.	Use of a vessel monitoring system will increase enforcement of closed areas and result in increased habitat protection.
Other Possible Options:		
Option 1. Prohibit Fishing for Spiny Lobster in the Experimental Closed Area.	Possible increase in net benefits in the long-term but negative in the short-term.	Likely positive.

Alternatives	Social & Economic:	Biological:
Coral, Coral Reefs, and Live/Hard Bottom Habitat		
Proposed Action 1. Identify Essential Fish Habitat for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region.	Required by revisions to the Magnuson-Stevens Act, identifying essential fish habitat will provide the Council with important information on habitat for species in need of protection.	EFH would be protected which could prevent further declines in productivity.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.

Table 3(Continued). Summary of Environmental Consequences.

Alternatives	Social & Economic:	Biological:
Proposed Action 2. Establish EFH-HAPCs for Coral, Coral Reefs, and Live/Hard Bottom Habitats.	Encourages cooperative state and federal protection of key habitats leading to positive social and long-term economic benefits to society.	Identifies and encourages protection of habitats which are most critical to managed species.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
ACTION 3A. Expand the Oculina Bank Habitat Area of Particular Concern (HAPC) to an area bounded to the west by 80°W longitude, to the north by 28°30' N latitude, to the south by 27°30' N latitude, and to the east by the 100 fathom (600 feet) depth contour.	Possible increase in net benefit. Improves fairness by expanding protection to gear other than rock shrimp trawls.	EFH would be protected which could prevent further declines in productivity.
ACTION 3B. Establish two Satellite Oculina HAPCs.	Possible increase in net benefit. Provides the necessary level of protection without the larger negative impacts of other alternatives considered.	EFH would be protected which could prevent further declines in productivity.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.
Action 4. No Action to Prohibit all fishing within the Experimental Closed Area.	Positive in light of public testimony outlining the negative social and economic impacts of the prohibition.	Use of a vessel monitoring system will increase enforcement of closed areas and result in increased habitat protection.
Other Possible Options:		
Option 1. Prohibit all fishing within the experimental closed area.	Possible increase in net benefits in the long-term but negative in the short-term.	Likely positive.

Table 3(Continued). Summary of Environmental Consequences.

Alternatives	Social & Economic:	Biological:
Framework		
Mechanism for Determination of Framework Adjustments/Framework Procedure and Activities Authorized by the Secretary of Commerce. Establish a procedure to allow for rapid modification to definitions of Essential Fish Habitat (EFH), and establishment of new, or modification of existing, Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs).	Possible increase in net benefits.	EFH would be protected which could prevent further declines in productivity.
Other Possible Options:		
Option 1. No Action.	None.	Likely negative.

3.0 AFFECTED ENVIRONMENT

The affected environment including a description of the fisheries in the South Atlantic Region are presented in detail in the original plans and amendments. Also see Section 3.0 of the Habitat Plan.

3.1 List and General Description of Stocks Comprising the Management Unit

See the list of species in Section 1.3 of this document and Section 3.3 of the Habitat Plan. The latest amendment for each of the fishery management plans contains more detailed information.

3.1.1 Definitions of Overfishing for Managed Species

See Section 4.3.4 of the Comprehensive Amendment addressing Sustainable Fishery Act definitions and other required provisions in fishery management plans of the South Atlantic Region.

3.1.2 Optimum Yield for Managed Species

See Section 4.3.4 of the Comprehensive Amendment addressing Sustainable Fishery Act definitions and other required provisions in fishery management plans of the South Atlantic Region.

3.1.3 Summary of Present Harvest Levels for Managed Species

See the latest amendment for each fishery management plan.

3.1.4 Description of Fishing Activities for Managed Species

See Section 3.1.4 and Section 4.3.3 of the Comprehensive Amendment addressing Sustainable Fishery Act definitions and other required provisions in fishery management plans of the South Atlantic Region.

3.1.5 Status of Stocks for Managed Species

See the latest amendment for each fishery management plan.

3.2 Description and Distribution of Essential Fish Habitat for Managed Species

See Section 3.1 and 3.2 of the Habitat Plan for the South Atlantic Region.

3.3 Managed Species Distribution and Use of Essential Fish Habitat

See Section 3.3 of the Habitat Plan for the South Atlantic Region.

3.4 Threats to Essential Fish Habitat

See Section 4.0 of the Habitat Plan for the South Atlantic Region. The Council has adopted a general habitat policy and developed policy statements to address concerns and present recommendations on ocean dumping, dredging and dredge disposal, plastic pollution, oil and gas exploration, development and transportation, and submerged aquatic vegetation (See Section 6.0).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

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

Each action is followed by four sub-headings: Biological Impacts, Economic Impacts, Social Impacts, and Conclusions. These are self explanatory presenting the impacts of each measure considered. The Council's preferred action is listed below the Action number and options considered by the Council are indicated under the heading "Other Possible Options".

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

The Magnuson-Stevens Fishery Conservation and Management Act, Public Law 104-208 reflects the new Secretary of Commerce and Fishery Management Council authority and responsibilities for the protection of essential fishery habitat. Section 305 (b) Fish Habitat, indicates the Secretary (through NMFS) shall, within 6 months of the date of enactment of the Sustainable Fisheries Act, establish by regulation guidelines to assist the Councils in the description and identification of essential fish habitat in fishery management plans (including adverse impacts on such habitat) and in the consideration of actions to ensure the conservation and enhancement of such habitat. In addition, the Secretary (through NMFS) shall: set forth a schedule for the amendment of fishery management plans to include the identification of essential fish habitat and for the review and updating of such identifications based on new scientific evidence or other relevant information; in consultation with participants in the fishery, shall provide each Council with recommendations and information regarding each fishery under that Council's authority to assist it in the identification of essential fish habitat, the adverse impacts on that habitat, and the actions that should be considered to ensure the conservation and enhancement of that habitat; review programs administered by the Department of Commerce and ensure that any relevant programs further the conservation and enhancement of essential fish habitat; and the Secretary shall coordinate with and provide information to other Federal agencies to further the conservation and enhancement of essential fish habitat.

The Act specifies that each Federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat identified under this Act. Additional provisions specify that each Council: may comment on and make recommendations to the Secretary and any Federal or State agency concerning any activity authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by any Federal or State agency that, in the view of the Council, may affect the habitat, including essential fish habitat, of a fishery resource under its authority; and shall comment on and make recommendations to the Secretary and any Federal or State agency concerning any such activity that, in the view of the Council, is likely to substantially affect the habitat, including essential fish habitat, of an anadromous fishery resource under its authority. If the Secretary receives information from a Council or Federal or State agency or determines from other sources that an action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by any State or Federal agency would adversely affect any essential fish habitat identified under this Act, the Secretary shall recommend to such agency measures that can be taken by such agency to

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

The Council's current process for reviewing and commenting on projects is described in the Habitat Plan in Appendix N. The proposed process to meet the new requirements is described in Section 4.2.9 and Appendix A of this document.

On December 19, 1997, an interim final rule was published in the Federal Register to implement the essential fish habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). This rule establishes guidelines to assist the Regional Fishery Management Councils (Councils) and the Secretary of Commerce (Secretary) in the description and identification of EFH in fishery management plans (FMPs), including identification of adverse impacts from both fishing and non-fishing activities on EFH, and identification of actions required to conserve and enhance EFH. The regulations also detail procedures the Secretary (acting through NMFS), other Federal agencies, state agencies, and the Councils will use to coordinate, consult, or provide recommendations on Federal and state activities that may adversely affect EFH. The intended effect of the rule is to promote the protection, conservation, and enhancement of EFH.

Essential fish habitat is defined in the Act as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The definition for EFH may include habitat for an individual species or an assemblage of species, whichever is appropriate within each FMP.

For the purpose of interpreting the definition of essential fish habitat: "waters" includes aquatic areas and their associated physical, chemical, and biological properties that are utilized by fish. When appropriate this may include areas used historically. Water quality, including but not limited to nutrient levels, oxygen concentration and turbidity levels is also considered to be a component of this definition. Examples of "waters" that may be considered EFH, include open waters, wetlands, estuarine habitats, riverine habitats, and wetlands hydologically connected to productive water bodies.

"Necessary" , relative to the definition of essential fish habitat, means the habitat required to support a sustainable fishery and a healthy ecosystem. While "spawning, breeding, feeding, or growth to maturity" covers a species full life cycle.

In the context of this definition the term "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities. These communities could encompass mangroves, tidal marshes, mussel beds, cobble with attached fauna, mud and clay burrows, coral reefs and submerged aquatic vegetation. Migratory routes such as rivers and passes serving as passageways to and from anadromous fish spawning grounds should also be considered EFH. Included in the interpretation of "substrate" are artificial reefs and shipwrecks (if providing EFH), and partially or entirely submerged structures such as jetties.

The Habitat Plan presents the habitat requirements (by life stage where information exists) for species managed by the Council. Available information on environmental and habitat variables that control or limit distribution, abundance, reproduction, growth, survival, and productivity of the managed species is included.

The Council, in working with our Habitat and Coral Advisory Panels and through a series of workshops identified available environmental and fisheries data sources relevant to the

managed species that would be useful in describing and identifying EFH. In addition, the EFH workshop process tapped in on habitat experts, at the State, Federal, and regional level, to participate in the description and identification of EFH in the South Atlantic region.

In assessing the relative value of habitats the Council is taking a risk-averse approach. This approach will ensure that adequate areas are protected as EFH of managed species. The Council used the best scientific information available to describe and identify EFH in the South Atlantic. Habitat loss and degradation may be contributing to species being identified as overfished, therefore all habitats used by these species are considered essential.

Based on the ecological relationships of species and relationships between species and their habitat the Council is taking an ecosystem approach in determining EFH of managed species and species assemblages. This approach is consistent with NMFS guidelines. Through the existing habitat policy, the Council directs the protection of essential fish habitat types and the enhancement and restoration of their quality and quantity.

The general distribution and geographic limits of EFH is described and where information exists presented by life history stage in maps that are part of a developing Council ArcView geographic information system (GIS). Maps developed to date by Council staff, Florida Marine Research Institute, NMFS Southeast Fisheries Science Center, NOAA SEA Division, North Carolina DNR encompass appropriate temporal and spatial variability in presenting the distribution of EFH. Where information exists, seasonal changes are represented in the maps. EFH is identified on maps along with areas used by different life history stages of the species. The maps present the various habitat types described as EFH.

The Habitat Plan and Comprehensive Habitat Amendment present information on adverse effects from fishing and describes management measures the Council has implemented to minimize adverse effects on EFH from fishing. The conservation and enhancement measures implemented by the Council to date may include ones that eliminate or minimize physical, chemical, or biological alterations of the substrate, and loss of, or injury to, benthic organisms, prey species and their habitat, and other components of the ecosystem. The Council has implemented restrictions on fisheries to the extent that no significant activities were identified in the review of gear impact conducted for the NMFS by Auster and Langton (1998) that presented available information on adverse effects of all fishing equipment types used in waters described as EFH. The Council has already prevented, mitigated, or minimized most adverse effects from most fisheries prosecuted in the south Atlantic EEZ.

The Council is considering evidence that a some fishing practices are having an identifiable adverse effect on habitat, and are addressing these in the comprehensive habitat amendment. The Council, as indicated in the previous section, has already used many of the options recommended in the guidelines for managing adverse effects from fishing including: fishing equipment restrictions; seasonal and aerial restrictions on the use of specified equipment; equipment modifications to allow the escape of particular species or particular life stages (e.g., juveniles); prohibitions on the use of explosives and chemicals; prohibitions on anchoring or setting equipment in sensitive areas; prohibitions on fishing activities that cause significant physical damage in EFH; time/area closures including closing areas to all fishing or specific equipment types during spawning, migration, foraging, and nursery activities; designating zones for use as marine protected areas to limit adverse effects of fishing practices on certain vulnerable or rare areas/species/life history stages, such as those areas designated as habitat areas of particular concern; and harvest limits.

The Habitat Plan identifies non-fishing related activities that have the potential to adversely affect EFH quantity or quality. Examples of theses activities are dredging, fill, excavation, mining, impoundment, discharge, water diversions, thermal additions, actions that contribute to non-point source pollution and sedimentation, introduction of potentially hazardous materials, introduction of exotic species, and the conversion of aquatic habitat that may eliminate, diminish, or disrupt the functions of EFH. Included in this document is an analysis of how fishing and non-fishing activities influence habitat function on an ecosystem or watershed scale. This information presents available information describing the ecosystem or watershed and the dependence of managed species on the ecosystem or watershed. An assessment of the cumulative and synergistic effects of multiple threats, including the effects of natural stresses (such as storm damage or climate-based environmental shifts), and an assessment of the ecological risks resulting from the impact of those threats on the managed species' habitat is included.

General conservation and enhancement recommendations are included in Section 6 of this Comprehensive Habitat Amendment document. These include but are not limited to recommending the enhancement of rivers, streams, and coastal areas, protection of water quality and quantity, recommendations to local and state organizations to minimize destruction/degradation of wetlands, restore and maintain the ecological health of watersheds, and replace lost or degraded EFH.

This Comprehensive Habitat Amendment, pursuant to the guidelines, also presents areas which meet the criteria for designation of essential fish habitat-habitat areas of particular concern (EFH-HAPCs) by individual habitat type or managed species or species complex. The following criteria are considered when determining whether a type, or area of EFH is an essential fish habitat-habitat area of particular concern: (1) the importance of the ecological function provided by the habitat; (2) the extent to which the habitat is sensitive to human-induced environmental degradation; and (3) whether, and to what extent, development activities are, or will be, stressing the habitat type. The identification of EFH-HAPCs will continue through the public hearing process and the Council will consider additional areas if identified through this process. A coral HAPC process under the coral plan already exists and differs somewhat from the process recommended in the EFH guidelines.

The Council will periodically review and update EFH information and revise this Habitat Plan document as new information becomes available. NMFS should provide some of this information as part of the annual Stock Assessment and Fishery Evaluation (SAFE) report. A complete review of EFH information will also be conducted as recommended in the guidelines in no longer than 5 years.

The Council is proposing establishment of a framework procedure whereby additional EFH and EFH-HAPCs designations would be accomplished. This is described in Section 4.2.8 of this document (see page 66).

The Council's process for reviewing and commenting on projects affecting EFH is described in Section 4.2.9 and Appendix A.

4.2 Management Options

4.2.1 Amendment 3 to the Fishery Management Plan for the Shrimp Fishery of the South Atlantic Region

4.2.1.1 ACTION 1. Identify Essential Fish Habitat for Penaeid and Rock Shrimp.

For peneaid shrimp, Essential Fish Habitat includes inshore estuarine nursery areas, offshore marine habitats used for spawning and growth to maturity, and all interconnecting water bodies as described in the Habitat Plan. Inshore nursery areas include tidal freshwater (palustrine), estuarine, and marine emergent wetlands (e.g., intertidal marshes); tidal palustrine forested areas; mangroves; tidal freshwater, estuarine, and marine submerged aquatic vegetation (e.g., seagrass); and subtidal and intertidal non-vegetated flats. This applies from North Carolina through the Florida Keys.

For rock shrimp, essential fish habitat consists of offshore terrigenous and biogenic sand bottom habitats from 18 to 182 meters in depth with highest concentrations occurring between 34 and 55 meters. This applies for all areas from North Carolina through the Florida Keys. Essential fish habitat includes the shelf current systems near Cape Canaveral, Florida which provide major transport mechanisms affecting planktonic larval rock shrimp. These currents keep larvae on the Florida Shelf and may transport them inshore in spring. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse rock shrimp larvae.

Essential fish habitat for royal red shrimp include the upper regions of the continental slope from 180 meters (590 feet) to about 730 meters (2,395 feet), with concentrations found at depths of between 250 meters (820 feet) and 475 meters (1,558 feet) over blue/black mud, sand, muddy sand, or white calcareous mud. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse royal red shrimp larvae.

Refer to Section 3.0 in the Habitat Plan for a more detailed description of habitat utilized by the managed species. Also, it should be noted that the Gulf Stream occurs within the EEZ.

Biological Impacts

The identification of essential habitat for penaeid and rock shrimp will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases.

Economic Impacts

The identification of essential fish habitat for penaeid and rock shrimp will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect habitat should result in increased net economic benefit to society in the long-term.

Social Impacts

There will be few social impacts from identifying essential fish habitat itself. The social impacts will most likely come from future actions that are associated with such a designation. The assumption is that such designation will provide protection of penaeid and rock shrimp and eventually improve stocks through protection of shrimp habitat. In that case, the social impacts will be positive in the long run. However, in some cases, protection of habitat may mean harvesting restrictions in areas where harvesting presently takes place or other actions which

may impose similar constraints on shrimp fishermen. This could conceivably impose negative short term impacts that may be mitigated in the long term if productivity is increased. Outside the fishery management arena there is another area where social impacts will occur and that is the permitting process. Designation of essential fish habitat will likely alter the process by which permits for activities which impact essential fish habitat are issued. The potential for increased restrictions, mitigation and permitting requirements may have impacts upon the behavior of individuals and agencies seeking permits. The nature and extent of those impacts is unknown and will undoubtedly vary depending upon the individual and/or agency.

Conclusions

The identification of essential habitat will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat. This action meets this mandate. Any activities impacting this identified essential fish habitat will come under the review process described by the Council. This process (identification and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 1:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the penaeid and rock shrimp fisheries, and minimizing gear related habitat damage from occurring in these fisheries.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the penaeid and rock shrimp fisheries, and minimizing fishing related habitat damage from occurring in these fisheries.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify essential fish habitat. Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation of essential habitat to shrimp can facilitate expeditious Council action in the future to protect habitat and improve shrimp stocks.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens mandates to identify essential fish habitat. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.1.2 Existing Management Measures in the Shrimp Fishery Management Plan Which Directly or Indirectly Protect Essential Fish Habitat

The Rock Shrimp Closed Area established under Amendment 1 to the Shrimp Plan (SAFMC 1996) was established to protect habitat from damage by rock shrimp trawls.

4.2.1.3 Assessment of Present Fishing Activities

See Appendix M in the Habitat Plan, Shrimp Amendment 1 (SAFMC 1996), the Shrimp Fishery Management Plan (SAFMC 1993a), and the Profile of the Penaeid Shrimp Fishery in the South Atlantic (SAFMC 1981). Amendment 1 to the Snapper Grouper Fishery Management Plan (SAFMC 1988) presents information on roller rig trawls.

4.2.1.4 ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Penaeid Shrimp.

Areas which meet the criteria for essential fish habitat-habitat areas of particular concern (EFH-HAPCs) for penaeid shrimp include all coastal inlets, all state-designated nursery habitats of particular importance to shrimp (for example, in North Carolina this would include all Primary Nursery Areas and all Secondary Nursery Areas), and state-identified overwintering areas.

Biological Impacts

The identification of EFH-HAPCs for penaeid and rock shrimp will enable the Council to protect essential fish habitat of particular concern effectively and take timely actions when necessary. This could lead to positive increases in net economic benefit to society.

Economic Impacts

The establishment of EFH-HAPCs for penaeid and rock shrimp will enable the Council to protect EFH-HAPCs effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect EFH-HAPCs should result in increased net economic benefit to society in the long-term.

Social Impacts

The establishment of EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.

Conclusions

The establishment of EFH-HAPCs will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat and allow the Council to designate portions of EFH as being particularly important (EFH-HAPCs). This action meets this provision. Any activities impacting the EFH-HAPCs will come under the review process described by the Council. This process (establishment of EFH-HAPCs and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 2:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the penaeid and rock shrimp fisheries, and minimizing gear related habitat damage from occurring in these fisheries.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the penaeid and rock shrimp fisheries, and minimizing fishing related habitat damage from occurring in these fisheries.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify EFH-HAPCs. Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation of EFH-HAPCs for penaeid shrimp can facilitate expeditious Council action in the future to protect habitat for penaeid shrimp.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens provisions which allow establishment of essential fish habitat-habitat areas of particular concern. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.1.5 ACTION 3. Implement a Voluntary Vessel Monitoring System (VMS) as soon as possible in the Rock Shrimp Fishery.

The voluntary pilot program should run for six months using a "GPS Cell Phone" based system or some other unit that provides the necessary coverage/output. Units are to be placed on 2-4 vessels chosen by the rock shrimp industry. Information collected will be maintained as confidential information. Data will be provided to NMFS and the individual/business involved. The data are to be used for data collection and enforcement. Council staff and members will be provided access to such data under existing guidelines concerning access to confidential data.

Immediately after 6 months of use, the system should be evaluated by NMFS, the Rock Shrimp Advisory Panel, and the Council. A determination would be made, as part of the evaluation, concerning the future use of transponders in the rock shrimp fishery.

Biological Impacts

To the extent enforcement is enhanced and trawling in the rock shrimp nursery grounds is reduced, there will be corresponding benefits in terms of protecting juvenile rock shrimp and essential fish habitat. This could lead to increased biological productivity.

Economic Impacts

The first level consists of a shipboard equipment (transceiver) that is tracked through a global positioning system (GPS) and a shore based station that is programmed to receive signals when a vessel is in close proximity to a closed area. This system would likely have a cellular

phone onboard the vessel for communication with the shore based facility. The cost per vessel is approximately $1,000 to $1,200 including the cellular phone.

Social Impacts

The use of transponders has received mixed reviews within the shrimping industry. The most recent evidence of South Atlantic fishermen's perceptions concerning transponders comes from public hearings held in 1994 for Amendment 1 to the FMP for Shrimp. Overall there tended to be dissatisfaction with this type of monitoring system among commercial fishermen. Commercial fishermen are inclined to see monitoring of this type as an invasion of privacy and an impingement upon their rights as individuals. Their concerns stem from a strong sense of independence that most strive for in their daily lives, but most of all in their work (Acheson 1981; Gatewood and McCay 1988; Poggie and Gersuny 1974). That independence is viewed as being severely compromised by the use of transponders as they see "Big Brother" looking over their shoulder. There also tends to be a certain measure of secrecy regarding fishing locations. Although, trawl fishermen do trade detailed maps of trawling activity from plotter charts, they do explore new areas which are not always revealed to their competitors. The perception may exist that a fisherman's ability to maintain secrecy is compromised by the transponder requirement.

Rock shrimp fishermen are no exception. Sentiments expressed by industry through the public hearing process in 1994 indicated some dislike for this type of system. Some of this resistance is due to unfamiliarity with the use and implementation of transponder systems. The expense of installing transponders is often mentioned as a major detractor also. However, the expense is relative to the type of system that would be required and the type of transponder used. In addition, transponders do reduce risks associated with fishing by providing a measure of safety through vessel tracking in the event of an emergency. Finally, by using transponders fishermen can attest to their good record with proof that they are abiding by rules and regulations. As commercial fishermen become more acquainted with these systems and realize the benefits to be gained by using such monitoring devices, levels of acceptance may change.

One important aspect of requiring the use of transponders relates to difficulty that comes with the transfer of technology. Forced technology transfer is especially difficult when those being required change see no benefit from the adoption of the new technology. If the Council chooses this alternative and requires the use of transponders, a variety of alternative systems should be provided. Technology is more readily accepted if those being forced to adopt it can realize some benefit from its use. By allowing a choice of Vessel Monitoring Systems (VMS), fishermen may adapt the use of transponders to their specific needs and more readily accept this technology.

In this case the Rock Shrimp Advisory Panel has suggested the Council adopt a trial program prior to mandatory use of transponders. This will allow the NMFS to install VMS systems on several rock shrimp vessels for observation, while fishermen also have the opportunity to explore this technology. A trial program may allow for both the industry and the NMFS to adapt to this new technology creating a better atmosphere for technology transfer.

Conclusion

The Council concluded a voluntary vessel monitoring system best meets the objectives of protecting habitat while at the same time taking account of views expressed by the shrimp industry. The NMFS does not have the necessary monitoring units or procedures in place to handle 100% coverage of the rock shrimp fleet. A voluntary program will allow both the

industry and NMFS to work out implementation details. Based on results of the voluntary program, the Council will evaluate expanding coverage in the future.

Other Possible Options for Action 3:

Option 1. No Action.

Biological Impacts

There will continue to be biological losses proportional to the extent trawling takes place within the existing closed areas. No action would not provide any increased enforcement.

Economic Impacts

This option would forgo any benefits that could result from the protection of essential fish habitat.

Social Impacts

The social impacts of no action will be minimal, however, the status quo would mean law enforcement would not be enhanced. Closed fishing areas are difficult to monitor by law enforcement and often take a continuous and coordinated effort which can be very time consuming and costly. If present efforts by law enforcement are unable to continue, or are temporarily redirected to enforcement matters other than fisheries, fishermen may be tempted to fish in closed areas as their probability of being apprehended diminishes. Vessel monitoring systems can enhance law enforcement and provide substantial savings in time and money.

Conclusion

The Council rejected taking no action because it would delay implementation of a vessel monitoring program. The absence of a vessel monitoring system would result in continued public perception that the rock shrimp vessels are trawling within the closed area.

Option 2. Require Use of Transponders by Rock Shrimp Vessels Fishing in the South Atlantic EEZ

Biological Impacts

To the extent enforcement is enhanced and trawling in the rock shrimp nursery grounds is reduced, there will be corresponding benefits in terms of protecting juvenile rock shrimp and protecting essential fish habitat. This could lead to increased biological productivity.

Economic Impacts

Basically, three levels of vessel monitoring system (VMS) could be utilized for this purpose. The first level consists of a shipboard equipment (transceiver) that is tracked through a global positioning system (GPS) and a shore based station that is programmed to receive signals when a vessel is in close proximity to a closed area. This system would likely have a cellular phone onboard the vessel for communication with the shore based facility. The cost per vessel is approximately $1,000 to $1,200 including the cellular phone.

The second level of VMS consists of a shipboard equipment that is tracked through GPS and Inmarsat satellite . The shore based station receives information on vessel speed, position, etc. at regular intervals. Communication is one way to the shore based facility. The information enables the monitoring unit to determine whether the vessel is fishing in the area or not based on vessel speed, movement, etc. The cost per vessel is approximately $3,500.

The third level of VMS consists of the second level plus a computer linked to the shipboard equipment. In addition to the information received by the shore based station, the computer allows for two way communication. Thus, data on catches, etc. can be transmitted in a secured manner. The cost per vessel is approximately $6,000 and higher.

The VMS base station equipment costs approximately $15,000. This includes the computer, tracking software, and ancillary components (McKinney, 1997). Installation cost of shipboard equipment is approximately $600 per vessel. There is a communication cost of $0.10 per individual data report for levels 2 and 3 systems. Assuming that the equipment is programmed to send a position report every hour the vessel is out at sea, the annual cost for an ice vessel that makes an average of 30 trips in one season (average length of trip is five days, season lasts approximately June to October, about 150 days) would be $360 (24 hours x 150 days x $0.10 = $360). For a freezer vessel that makes an average of 10 trips per season, average length of trip is 15 days, the annual costs would also be $360 (24 hours x 150 days x $0.10 = $360).

There are no estimates on repair and maintenance costs because these would depend on frequency and nature of the work done. The useful life of the shipboard equipment is estimated to be approximately five years (McKinney, 1997).

Based on the costs provided above, if the level 1 system is utilized, total cost per vessel (ice and freezer) in the first year would be $2,050 ($1,000 + $600 + $450) to $2,250 ($1,200 + $600 + $450). Communication costs in the next four years would be $450 per year per vessel based on two calls per day at $1.50 per call for 150 days. Maintenance and repair costs should be factored in for each year. The shipboard equipment would be replaced in the sixth year, resulting in additional $1,600 to $1,800 in capital equipment costs if prices of equipment remain unchanged.

If the levels 2 and 3 systems are utilized, total cost per vessel in the first year would be $4,460 ($3,500 + $600 + $360) and $6,960 ($6,000 + $600 + $360) respectively. Communication costs in the next four years would be $360 per year per vessel. Maintenance and repair costs should be factored in for each year. The shipboard equipment would be replaced in the sixth year, resulting in additional $4,100 to $6,600 respectively, in capital equipment costs if prices of equipment remain unchanged. The cost to the industry, assuming 152 vessels (Vondruska, 1998) are fitted with this system in the first year would range from $311,600 to $1,057,920.

The VMS offers a level of monitoring and surveillance coverage that far surpasses traditional methods. The Hawaii fishing vessel monitoring system analysis indicates that the cost-effectiveness of the VMS versus traditional methods for surveillance and enforcement show that the VMS can monitor the activities of an entire fleet at times, for about 1% of the cost of traditional methods (McKinney, 1997). Also, the system has the added benefit of enhancing search and rescue operations. However, this report cautions that running a VMS represents a full-time, constant management and operational burden. "Anyone who decides to utilize a VMS for fisheries management must be willing to make a long-term commitment, in terms of personnel and funding, to the proper design, installation, operation and maintenance of the system". Also, a VMS does not eliminate the need for traditional monitoring and enforcement efforts. It only reduces the magnitude and frequency of such efforts.

Social Impacts

The use of transponders has received mixed reviews within the shrimping industry. The most recent evidence of South Atlantic fishermen's perceptions concerning transponders comes

from public hearings held in 1994 for Amendment 1 to the FMP for Shrimp. Overall there tended to be dissatisfaction with this type of monitoring system among commercial fishermen. Commercial fishermen are inclined to see monitoring of this type as an invasion of privacy and an impingement upon their rights as individuals. Their concerns stem from a strong sense of independence that most strive for in their daily lives, but most of all in their work (Acheson 1981; Gatewood and McCay 1988; Poggie and Gersuny 1974). That independence is viewed as being severely compromised by the use of transponders as they see "Big Brother" looking over their shoulder. There also tends to be a certain measure of secrecy regarding fishing locations. Although, trawl fishermen do trade detailed maps of trawling activity from plotter charts, they do explore new areas which are not always revealed to their competitors. The perception may exist that a fisherman's ability to maintain secrecy is compromised by the transponder requirement.

Rock shrimp fishermen are no exception. Sentiments expressed by industry through the public hearing process in 1994 indicated some dislike for this type of system. Some of this resistance is due to unfamiliarity with the use and implementation of transponder systems. The expense of installing transponders is often mentioned as a major detractor also. However, the expense is relative to the type of system that would be required and the type of transponder used. In addition, transponders do reduce risks associated with fishing by providing a measure of safety through vessel tracking in the event of an emergency. Finally, by using transponders fishermen can attest to their good record with proof that they are abiding by rules and regulations. As commercial fishermen become more acquainted with these systems and realize the benefits to be gained by using such monitoring devices, levels of acceptance may change.

One important aspect of requiring the use of transponders relates to difficulty that comes with the transfer of technology. Forced technology transfer is especially difficult when those being required change see no benefit from the adoption of the new technology. If the Council chooses this alternative and requires the use of transponders, a variety of alternative systems should be provided. Technology is more readily accepted if those being forced to adopt it can realize some benefit from its use. By allowing a choice of Vessel Monitoring Systems (VMS), fishermen may adapt the use of transponders to their specific needs and more readily accept this technology.

In this case the Rock Shrimp Advisory Panel has suggested the Council adopt a trial program prior to mandatory use of transponders. This will allow the NMFS to install VMS systems on several rock shrimp vessels for observation, while fishermen also have the opportunity to explore this technology. A trial program may allow for both the industry and the NMFS to adapt to this new technology creating a better atmosphere for technology transfer.

Conclusion

The Council rejected requiring mandatory implementation of a vessel monitoring program in order to allow the industry and NMFS to work out implementation details. In addition, the NMFS does not have the number of units necessary for the fleet nor do they have the necessary infrastructure established at this time to monitor the fleet.

Option 3. Require Use of Transponders by Rock Shrimp Vessels Fishing in the South Atlantic EEZ South of 28° 30' N. latitude.

Biological Impacts

To the extent enforcement is increased and trawling in the rock shrimp nursery grounds is reduced, there will be corresponding benefits in terms of protecting juvenile rock shrimp. This could lead to increased biological productivity.

Economic Impacts

The difference between Option 3 and Option 2 is that Option 3 proposes the use of transponders only by rock shrimp vessels fishing in the south Atlantic EEZ south of 28° 30' N. latitude. Thus, this option would not affect all vessels in the fishery unless they all fish in this area. However, practically all rock shrimping activity in the south Atlantic area occurs south of the 28° 30' N. Latitude line. Thus, all rock shrimp vessels operating in the south Atlantic EEZ would be affected. Based on the number of vessels issued with rock shrimp permits to fish for rock shrimp in the south Atlantic EEZ in 1997, 152 vessels would be affected (Vondruska, 1998). The analysis for Option 2 also applies to Option 3.

Social Impacts

This option would impact only those rock shrimp vessels fishing near the closed area off Florida. Requiring VMS systems in this area may be more acceptable, because all rock shrimp permitted vessels may not actively rock shrimp off Florida's east coast. However, as mentioned earlier, an important aspect of requiring the use of transponders relates to difficulty that comes with the transfer of technology. Forced technology transfer is especially difficult when those being required to adopt a particular technology see no benefit from the technology. If the Council chooses this alternative and requires the use of transponders, a variety of alternative systems should be provided. Technology is more readily accepted if those being forced to use it can see some benefit from its use. By allowing a choice of Vessel Monitoring Systems (VMS), fishermen may adapt the use of transponders to their specific needs, thereby realizing more benefits and having fewer reasons to resist it.

Conclusions

The Council rejected requiring mandatory implementation of a vessel monitoring program in order to allow the industry and NMFS to work out implementation details. In addition, the NMFS does not have the number of units necessary for the fleet nor do they have the necessary infrastructure established at this time to monitor the fleet.

4.2.2 Amendment 1 to the Fishery Management Plan for the Red Drum Fishery of the South Atlantic Region

4.2.2.1 ACTION 1. Identify Essential Fish Habitat for Red Drum.

For red drum, essential fish habitat includes all the following habitats to a depth of 50 meters offshore: tidal freshwater; estuarine emergent vegetated wetlands (flooded saltmarshes, brackish marsh, and tidal creeks); estuarine scrub/shrub (mangrove fringe); submerged rooted vascular plants (sea grasses); oyster reefs and shell banks; unconsolidated bottom (soft sediments); ocean high salinity surf zones; and artificial reefs. The area covered includes Virginia through the Florida Keys.

Refer to Section 3.0 in the Habitat Plan for a more detailed description of habitat utilized by the managed species.

Biological Impacts

The identification of essential habitat for red drum will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases.

Economic Impacts

The identification of essential fish habitat for red drum will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect habitat should result in increased net economic benefit to society in the long-term.

Social Impacts

There will be few social impacts from identifying essential fish habitat itself. The social impacts will most likely come from future actions that are associated with such a designation. The assumption is that such designation will provide protection of red drum and eventually improve the stock through protection of habitat. In that case, the social impacts will be positive in the long run. However, in some cases, protection of habitat may mean harvesting restrictions in areas where harvesting presently takes place or other actions which may impose similar constraints on red drum fishermen. This could conceivably impose negative short term impacts that may be mitigated in the long term if productivity is increased. Outside the fishery management arena there is another area where social impacts will occur and that is the permitting process. Designation of essential fish habitat will likely alter the process by which permits for activities which impact essential fish habitat are issued. The potential for increased restrictions, mitigation and permitting requirements may have impacts upon the behavior of individuals and agencies seeking permits. The nature and extent of those impacts is unknown and will undoubtedly vary depending upon the individual and/or agency.

Conclusions

The identification of essential habitat will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat. This action meets this mandate. Any activities impacting this identified essential fish habitat will come under the review process described by the Council. This process (identification and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 1:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the red drum fishery, and minimizing gear related habitat damage from occurring in these fisheries.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the red drum fishery, and minimizing fishing related habitat damage from occurring in this fishery.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify essential fish habitat. Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation of essential habitat to red drum can facilitate expeditious Council action in the future to protect habitat for this species.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens mandates to identify essential fish habitat. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.2.2 Existing Management Measures in the Red Drum Fishery Management Plan Which Directly or Indirectly Protect Essential Fish Habitat

None.

4.2.2.3 Assessment of Present Fishing Activities

There is no directed fishery allowed under the Red Drum FMP within the EEZ; therefore, there is no impact from fishing activities on essential fish habitat.

4.2.2.4 ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Red Drum.

Areas which meet the criteria for essential fish habitat-habitat areas of particular concern (EFH-HAPCs) for red drum include all coastal inlets, all state-designated nursery habitats of particular importance to red drum (for example, in North Carolina this would include all Primary Nursery Areas and all Secondary Nursery Areas); documented sites of spawning aggregations in North Carolina, South Carolina, Georgia, and Florida described in the Habitat Plan; other spawning areas identified in the future; and habitats identified for submerged aquatic vegetation.

Biological Impacts

The identification of EFH-HAPCs for red drum will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases.

Economic Impacts

The establishment of EFH-HAPCs for red drum will enable the Council to protect EFH-HAPCs effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect EFH-HAPCs should result in increased net economic benefit to society in the long-term.

Social Impacts

The establishment of EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.

Conclusions

The establishment of EFH-HAPCs will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat and allow the Council to designate portions of EFH as being particularly important (EFH-HAPCs). This action meets this provision. Any activities impacting the EFH-HAPCs will come under the review process described by the Council. This process (establishment of EFH-HAPCs and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 2:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the red drum fishery, and minimizing gear related habitat damage from occurring in this fishery.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the red drum fishery, and minimizing fishing related habitat damage from occurring in this fishery.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify EFH-HAPCs. Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation of EFH-HAPCs to red drum can facilitate expeditious Council action in the future to protect habitat for this species.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens provisions which allow establishment of essential fish habitat-habitat areas of particular concern. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.3 Amendment 10 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

4.2.3.1 ACTION 1. Identify Essential Fish Habitat for Species in the Snapper Grouper Management Unit.

Essential fish habitat for snapper-grouper species includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs and medium to high profile outcroppings on and around the shelf break zone from shore to at least 600 feet (but to at least 2000 feet for wreckfish) where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for larval survival and growth up to and including settlement. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse snapper grouper larvae.

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

Refer to Section 3.0 in the Habitat Plan for a more detailed description of habitat utilized by the managed species. Also, it should be noted that the Gulf Stream occurs within the EEZ.

Biological Impacts

The identification of essential habitat for species in the snapper grouper management unit will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases.

Economic Impacts

The identification of essential fish habitat for species in the snapper grouper management unit will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect habitat should result in increased net economic benefit to society in the long-term.

Social Impacts

There will be few social impacts from identifying essential fish habitat itself. The social impacts will most likely come from future actions that are associated with such a designation. The assumption is that such designation will provide protection of snapper grouper species and eventually improve stocks through protection of habitat. In that case, the social impacts will be positive in the long run. However, in some cases, protection of habitat may mean harvesting restrictions in areas where harvesting presently takes place or other actions which may impose similar constraints on snapper grouper fishermen. This could conceivably impose negative short term impacts that may be mitigated in the long term if productivity is increased. Outside the fishery management arena there is another area where social impacts will occur and that is the

permitting process. Designation of essential fish habitat will likely alter the process by which permits for activities which impact essential fish habitat are issued. The potential for increased restrictions, mitigation and permitting requirements may have impacts upon the behavior of individuals and agencies seeking permits. The nature and extent of those impacts is unknown and will undoubtedly vary depending upon the individual and/or agency.

Conclusions

The identification of essential habitat will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat. This action meets this mandate. Any activities impacting this identified essential fish habitat will come under the review process described by the Council. This process (identification and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 1:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the snapper grouper fisheries, and minimizing gear related habitat damage from occurring in this fishery.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the snapper grouper fishery, and minimizing fishing related habitat damage from occurring in this fishery.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify essential fish habitat. Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation of essential habitat to snapper grouper can facilitate expeditious Council action in the future to protect habitat for this species group.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens mandates to identify essential fish habitat. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.3.2 Existing Management Measures in the Snapper Grouper Fishery Management Plan Which Directly or Indirectly Protect Essential Fish Habitat

Management measures adopted in the original management plan through Amendment 7 combined have significantly reduced the impact of the fishery on essential habitat. The Council has reduced the impact of the fishery and protected essential habitat by prohibiting use of poisons and explosives, prohibiting use of fish traps and entanglement nets in the EEZ, defining allowable gear, banning use of bottom trawls on live/hard bottom habitat north of Cape Canaveral, Florida, restricting use of bottom longlines to depths greater than 50 fathoms north of St. Lucie Inlet, Florida and prohibiting bottom longline use south of St. Lucie, Inlet, and only for species other than wreckfish, and prohibiting the use of black sea bass pots south of Cape Canaveral, Florida. These gear restrictions have significantly reduced the impact of the fishery on coral and live/hard bottom habitat in the South Atlantic region.

Amendment 7 (SAFMC, 1994a) defines allowable gear in the directed snapper grouper fishery. Allowable gear does not include net gear; provision is made for allowing possession of sink nets on multi-gear trips only off North Carolina, however, sink nets may not be used to harvest snapper grouper species.

Management measures proposed in Amendment 8 (SAFMC, 1997) include limiting the number of commercial fishermen which will protect habitat by reducing the quantity of gear used in the fishery.

Additional measures proposed in Amendment 9 (SAFMC, 1998) include further restricting bottom longlines to retention of only deepwater species which will protect habitat by making existing regulations more enforceable. In addition, the requirement that black sea bass pots have escape vents and escape panels with degradable fasteners will reduce catch of undersized fish and ensure that the pot, if lost, will not continue to "ghost" fish.

Measures adopted in the coral plan and shrimp plan have also protected essential snapper grouper habitat including the designation of the Oculina Bank Habitat Area of Particular Concern (SAFMC, 1983) and the rock shrimp closed area (SAFMC, 1996).

4.2.3.3 Assessment of Present Fishing Activities

Present fishing with black sea bass pots could have some impact on essential fish habitat. Trawling for black sea bass north of Cape Hatteras and trawling south of Cape Canaveral (should such trawling occur) could also have some impact on essential fish habitat.

4.2.3.4 ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Species in the Snapper Grouper Management Unit.

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

Biological Impacts

The identification of EFH-HAPCs for species in the snapper grouper management unit will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases.

Economic Impacts

The establishment of EFH-HAPCs for species in the snapper grouper management unit will enable the Council to protect EFH-HAPCs effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect EFH-HAPCs should result in increased net economic benefit to society in the long-term.

Social Impacts

The establishment of EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.

Conclusions

The establishment of EFH-HAPCs will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat and allow the Council to designate portions of EFH as being particularly important (EFH-HAPCs). This action meets this provision. Any activities impacting the EFH-HAPCs will come under the review process described by the Council. This process (establishment of EFH-HAPCs and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 2:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the snapper grouper fisheries, and minimizing gear related habitat damage from occurring in this fishery.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the snapper grouper fishery, and minimizing fishing related habitat damage from occurring in this fishery.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify essential fish habitat. Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation EFH-HAPCs for

snapper grouper can facilitate expeditious Council action in the future to protect habitat for this species group.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens provisions which allow establishment of essential fish habitat-habitat areas of particular concern. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.3.5 ACTION 3. No Action to Prohibit All Fishing in the Experimental Closed Area.

To protect a fragile limited coral habitat, a 92 square mile Oculina Bank Habitat Area of Particular Concern (HAPC) was established under the Federal Fishery Management Plan for Coral and Coral Reefs (GMFMC and SAFMC, 1982). In 1994, the HAPC was also designated an Experimental Closed Area under the Snapper Grouper Fishery Management Plan (SAFMC, 1993b). The objective was to provide researchers with an area in the South Atlantic region to describe the effects of prohibiting fishing for snapper grouper species and the characteristics of an unfished resource area that is protected from habitat damage.

The Experimental Closed Area is located approximately 15 nautical miles east of Fort Pierce, Florida, at its nearest point to shore. The area measures 4 by 23 nautical miles and the water depth is between 30 and 75 fathoms. The experimental closed area is bounded on the north by 27°53' N. latitude, on the south by 27°30' N. latitude, on the east by 79°56' W. longitude, and on the west by 80°00' W. longitude. Within the experimental closed area the following apply:

(1) Fishing with a bottom longline, bottom trawl, dredge, pot, or trap is prohibited.

(2) A fishing vessel may not anchor, use an anchor and chain, or use a grapple and chain.

(3) No fishing for South Atlantic snapper-grouper is allowed, and South Atlantic snapper-grouper may not be retained, in or from the experimental closed area. South Atlantic snapper-grouper taken incidentally in the HAPC by hook-and-line gear must be released immediately by cutting the line without removing the fish from the water.

Biological Impacts

There will continue to be biological losses proportional to the extent fishing takes place within the existing closed areas. No action would not enhance enforcement.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the snapper grouper fishery, and preventing the incidental capture of snapper grouper species by allowable gear types fishing for other species in this area. This could result in reduced net economic benefits to society in the long-term.

Social Impacts

Testimony during public hearings suggests that this area is an important fishing ground for regional fishermen. It is especially important during fishing tournaments for coastal pelagics and to fishermen seeking highly migratory species. The no action alternative will have positive social impacts by not forcing fishermen in this area to seek alternative fishing sites. Although the Council considered the alternative action to enhance law enforcement in its efforts to monitor

other fisheries prohibited from this area, it is likely that the negative social impacts from a closure outweigh the enhancement of law enforcement at this time.

Conclusion

Based on recommendations from the Habitat and Coral Advisory Panels and the Habitat Committee, the Council concluded additional regulations on gears other than those in the calico scallop fishery are not necessary to enforce the no fishing provision of the experimental closed area. A voluntary vessel monitoring system will be implemented on a portion of the rock shrimp vessels and 100% of the calico scallop vessels will be required to have a vessel monitoring system. These additional regulations, more public education, and more enforcement effort will adequately prevent fishing within the closed area.

Other Possible Options for Action 3:

Option 1. Prohibit All Fishing in the Experimental Closed Area.

Biological Impacts

To the extent enforcement is increased and fishing mortality on species in the snapper grouper management unit is reduced, there will be corresponding benefits in terms of rebuilding overfished species. This could result in increased biological productivity.

Economic Impacts

Although fishing with certain allowable gears is permissible in the Experimental Closed Area, there is presently no retention of snapper grouper species in this area. Thus, the prohibition of all fishing in this area would have no impact on snapper grouper fishermen. On the contrary, it would protect snapper grouper species from being taken as incidental catches in other fisheries since there will be a total prohibition of all fishing in this area.

At the Joint Habitat Committee, Habitat Advisory Panel, and Coral Advisory Panel meeting held in Charleston, South Carolina (August 11-13, 1998), some AP members indicated that a number of fishing tournaments are usually held annually and most of these tournaments occur in close proximity to this area. At certain times when a cold front is occurring, the closed area would be the only area available to fish during these tournaments. The fishing gears utilized for these tournaments have not caused any damage to habitat in this area. There would be severe economic impacts with prohibition of all fishing in the closed area. Also, these AP members expressed concern that the total fishing prohibition is for enforcement purposes only and there is no reason why other ways cannot be explored to ensure effective enforcement of current regulations in this area. It would be unfair to the tournaments to prohibit all fishing in this area solely for enforcement reasons.

During Public Hearings for the Habitat Comprehensive Amendment, a number of fishermen indicated that prohibiting all fishing in the experimental closed area will not only affect fishermen and the boating industry, but also fuel suppliers, restaurants, grocery stores, metal fabricators, fiberglass shops, canvass shops, etc. in the area. Also, many boaters travel to fish in this area from the central part of Florida (Lake Wales, Lakeland, Barlow, and Orlando). Thus, the economic impact would extend to central Florida. This will affect boat sales, tackle sales, marine supplies, etc. The fishermen indicated that St. Lucie County, which is adjacent to the experimental closed area, has one of the highest unemployment rates in the State of Florida and that boating / fishing related activities are very important to such a fragile, local economy.

No recent studies have been conducted to determine the impact of fishing tournaments on the local economy. Michael Hogan, President, Fort Pierce Sportfishing Club (personal

communication, June 1998) indicated that there are 8 - 10 fishing tournaments in this area each year. In 1984 the Florida Sea Grant Program (University of Florida) conducted a study on the Fort Pierce Sportfishing Club's July 4th tournament to determine its impact on the local economy. The study concluded that direct expenditures of the tournament were $186,000 and total local impact was $406,000 (Michael Hogan, personal communication, June 1998). Based on this information, it is likely that fishing tournaments could provide as much as $2,000,000 in direct expenditures, and as much as $5,000,000 in total local expenditure annually to the local economy.

Mr. Hogan indicated that the average angler in this area spends $4,500 on fuel, $1,000 on bait and ice, $2,100 on dockage, $1,500 - $2,000 on tackle and rigging, and $500 on beverages and food annually. Also, $800 for scrapping/paint jobs, $500 - $600 on maintenance and supplies, and $800 on insurance, on an annual basis. Thus, according to Mr. Hogan, the average angler in this area spends approximately $12,300 to operate his fishing vessel each year. This amount does not account for depreciation on the vessel. There are no data on the number of anglers with fishing vessels in this area, but it is likely that there are many recreational boats in this area. This implies that if these anglers cannot fish in this area and have to move elsewhere, there would be a significant impact on the local economy.

Commercial impacts are discussed in Action 3 under each of the FMP specific prohibitions on fishing within the Experimental Closed Area.

Social Impacts

The prohibition of all fishing in the Experimental Closed area may have important social impacts primarily on the recreational fishery. This area is presently closed to fishing for snapper grouper species, however, trolling for non snapper grouper species is allowed. During public hearings in Ft. Pierce testimony from recreational fishermen indicated that a closure of the Oculina Bank would have considerable impact on charter fishing operations and the private boat fishery. Apparently, this is a popular fishing area for mackerel, dolphin and many highly migratory species plus spiny lobster. There are several tournaments held in Ft. Pierce throughout the year and closing this area may impact tournament participation. This action can have unforeseen impacts such as a reduction in the number of fishermen that travel from as far as Orlando to fish the waters off Ft. Pierce. Their fishing experience may be diminished if the Experimental Closed Area is off limits and which may persuade them to find another destination for their fishing endeavor. This would certainly have a negative impact on the Ft. Pierce economy, but would benefit the substitute destination. There was little testimony on the impacts to the commercial fishery, although it is assumed that there will be negative impacts to those individuals who troll in this area commercially. Another impact of closure would be what is called the "edge effect." This phenomenon is where fishing would take place on all sides of the closed area, or possibly more on those areas closer to shore. This may cause crowding and create future conflict. There would certainly be impacts to the community of Ft. Pierce from this action. Present data do not support community impact analysis. Future data collection at the community level would enhance this analysis.

Conclusion

Based on recommendations from the Habitat and Coral Advisory Panels and the Habitat Committee, the Council concluded additional regulations on gears other than those in the calico scallop fishery are not necessary to enforce the no fishing provision of the experimental closed area. A voluntary vessel monitoring system will be implemented on a portion of the rock shrimp

vessels and 100% of the calico scallop vessels will be required to have a vessel monitoring system. These additional regulations, more public education, and more enforcement effort will adequately prevent fishing within the closed area. Therefore, this action was rejected.

4.2.3.6 Recommendations for other managed species harvested in the Experimental Closed Area.

The Council has requested the Secretary of Commerce prohibit all fishing for highly migratory species (including sharks) within the experimental closed area (letter from Ben Hartig to Rolland Schmitten dated April 20, 1998).

4.2.4 Amendment 10 to the Fishery Management Plan for the Coastal Migratory Pelagics Fishery of the South Atlantic Region

4.2.4.1 ACTION 1. Identify Essential Fish Habitat for Coastal Migratory Pelagics.

Essential fish habitat for coastal migratory pelagic species includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone, but from the Gulf stream shoreward, including *Sargassum*. In addition, all coastal inlets, all state-designated nursery habitats of particular importance to coastal migratory pelagics (for example, in North Carolina this would include all Primary Nursery Areas and all Secondary Nursery Areas).

For Cobia essential fish habitat also includes high salinity bays, estuaries, and seagrass habitat. In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse coastal migratory pelagic larvae.

For king and Spanish mackerel and cobia essential fish habitat occurs in the South Atlantic and Mid-Atlantic Bights.

Refer to Section 3.0 in the Habitat Plan for a more detailed description of habitat utilized by the managed species. Also, it should be noted that the Gulf Stream occurs within the EEZ.

Biological Impacts

The identification of essential habitat for coastal migratory pelagics will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases.

Economic Impacts

The identification of essential fish habitat for coastal migratory pelagic species will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect habitat should result in increased net economic benefit to society in the long-term.

Social Impacts

There will be few social impacts from identifying essential fish habitat itself. The social impacts will most likely come from future actions that are associated with such a designation. The assumption is that such designation will provide protection for coastal migratory species and eventually improve stocks through protection of habitat. In that case, the social impacts will be

positive in the long run. However, in some cases, protection of habitat may mean harvesting restrictions in areas where harvesting presently takes place or other actions which may impose similar constraints on coastal migratory pelagic fishermen. This could conceivably impose negative short term impacts that may be mitigated in the long term if productivity is increased. Outside the fishery management arena there is another area where social impacts will occur and that is the permitting process. Designation of essential fish habitat will likely alter the process by which permits for activities which impact essential fish habitat are issued. The potential for increased restrictions, mitigation and permitting requirements may have impacts upon the behavior of individuals and agencies seeking permits. The nature and extent of those impacts is unknown and will undoubtedly vary depending upon the individual and/or agency.

Conclusions

The identification of essential habitat will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat. This action meets this mandate. Any activities impacting this identified essential fish habitat will come under the review process described by the Council. This process (identification and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 1:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the coastal migratory pelagics fisheries, and minimizing gear related habitat damage from occurring in these fisheries.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the coastal migratory pelagics fishery, and minimizing fishing related habitat damage from occurring in this fishery.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify essential fish habitat. Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation of essential habitat can facilitate expeditious Council action in the future to protect habitat for coastal migratory pelagics.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens mandates to identify essential fish habitat. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.4.2 Existing Management Measures in the Coastal Migratory Pelagics Fishery Management Plan Which Directly or Indirectly Protect Essential Fish Habitat

See Section 4.2.2 in the Habitat Plan.

4.2.4.3 Assessment of Present Fishing Activities

See the Coastal Migratory Pelagics Amendments. Use of nets in hard bottom areas could have some impact on essential fish habitat.

4.2.4.4 ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Coastal Migratory Pelagics.

Areas which meet the criteria for essential fish habitat-habitat areas of particular concern (EFH-HAPCs) include sandy shoals of Capes Lookout, Cape Fear, and Cape Hatteras from shore to the ends of the respective shoals, but shoreward of the Gulf stream; The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and Hurl Rocks (South Carolina); The Point off Jupiter Inlet (Florida); *Phragmatopoma* (worm reefs) reefs off the central east coast of Florida; nearshore hard bottom south of Cape Canaveral; The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; Pelagic *Sargassum*; and Atlantic coast estuaries with high numbers of Spanish mackerel and cobia based on abundance data from the ELMR Program. Estuaries meeting this criteria for Spanish mackerel include Bogue Sound and New River, North Carolina; Bogue Sound, North Carolina (Adults May-September salinity >30 ppt); and New River, North Carolina (Adults May-October salinity >30 ppt). For Cobia they include Broad River, South Carolina; and Broad River, South Carolina (Adults & juveniles May-July salinity >25ppt).

Biological Impacts

The establishment of EFH-HAPCs for coastal migratory pelagics will enable the Council to protect EFH-HAPCs effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases.

Economic Impacts

The establishment of EFH-HAPCs for coastal migratory pelagics will enable the Council to protect EFH-HAPCs effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect EFH-HAPCs should result in increased net economic benefit to society in the long-term.

Social Impacts

The establishment of EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.

Conclusions

The establishment of EFH-HAPCs will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat and allow the Council to designate portions of EFH as being particularly important (EFH-HAPCs). This action meets this provision. Any activities impacting the EFH-HAPCs will come under the review process described by the Council. This process (establishment of EFH-HAPCs and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 2:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the coastal migratory pelagics fisheries, and minimizing gear related habitat damage from occurring in these fisheries.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the snapper grouper fishery, and minimizing fishing related habitat damage from occurring in this fishery.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify HAPCs. Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation of EFH-HAPCs can facilitate expeditious Council action in the future to protect habitat for coastal migratory pelagics.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens provisions which allow establishment of essential fish habitat-habitat areas of particular concern. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.4.5 ACTION 3. No Action to Prohibit Fishing for Coastal Migratory Pelagics in the Experimental Closed Area.

Biological Impacts

There will continue to be biological losses proportional to the extent fishing takes place within the existing closed area. No action would not provide any increased enforcement.

Economic Impacts

There would be no economic impact to king and Spanish mackerel fishermen. However, the Council would be limited in the future in protecting habitat and preventing incidental catches of snapper grouper species by fishermen trolling for coastal migratory pelagics. This could result in reduced net economic benefits to society in the long-term.

Social Impacts

Coastal pelagic fishermen indicated during public hearings that they use this area as an important fishing ground during tournaments and when fishing for dolphin. Some fishermen from inland counties commented that they travel specifically to the Ft. Pierce area to fish and that closing an area of this magnitude would force them to fish elsewhere. Prior to public hearings, the Council was unaware as to the amount of coastal pelagic fishing that took place in the Experimental Closed Area. Taking no action will have positive social impacts in that it will allow recreational and commercial fishermen to continue to use established fishing patterns and an important resource that may contribute more to the regional economy than was previously known.

Conclusion

Based on recommendations from the Habitat and Coral Advisory Panels and the Habitat Committee, the Council concluded additional regulations on gears other than those in the calico scallop fishery are not necessary to enforce the no fishing provision of the experimental closed area. A voluntary vessel monitoring system will be implemented on a portion of the rock shrimp vessels and 100% of the calico scallop vessels will be required to have a vessel monitoring system. These additional regulations, more public education, and more enforcement effort will adequately prevent fishing within the closed area.

Other Possible Options for Action 3:

Option 1. Prohibit Fishing for Coastal Migratory Pelagics in the Experimental Closed Area.

Fishing for coastal migratory pelagics (cero, cobia, dolphin, king mackerel, little tunny, and Spanish mackerel) would be prohibited within the experimental closed area.

Biological Impacts

To the extent enforcement is enhanced and fishing mortality on species in the snapper grouper management unit is reduced, there will be corresponding benefits in terms of rebuilding overfished species. There may also be biological benefits (e.g., reducing fishing mortality and protection spawning areas) for coastal migratory pelagic species which could result in increased biological productivity.

Economic Impacts

Fishing with certain allowable gear types is permissible in the Experimental Closed Area. For example, trolling takes place for coastal pelagics and other non-snapper grouper species in this area. Thus, the prohibition of all fishing in this area would impact fishermen who have fished for coastal migratory pelagic species. Statistics from the Department of Environmental Protection, Florida Marine Research Institute, Division of Marine Resources (Martha Norris, July 28, 1998) show that between 1994 and 1997, an average of 342,014 pounds and 641,513 pounds of king and Spanish mackerels respectively were harvested from this area. It should be noted that these catches are from statistical areas used by the State of Florida which include the experimental closed area. The portion of actual catches from within the experimental closed area is unknown. This highlights the need for better catch by area data. Such data will be available in the future after implementation of the ACCSP data collection program.

Using 1997 average exvessel prices of $1.24 and $0.47 per pound for king and Spanish mackerels respectively (Vondruska, 1998), the average annual value of the harvest from this area from 1994 to 1997 was $424,097 from king mackerel and $301,511 from Spanish mackerel; the total impact would have been up to $725,608 depending on the portion from within the experimental closed area. Assuming the same harvest trend continues, the prohibition of all fishing in this area would result in lost exvessel value of approximately $726,000 to king and Spanish mackerel fishermen who have fished this area in the first year of the prohibition.

This action would also affect anglers and fishing tournaments in this area. The discussion and analysis under Section 4.2.3.5, Action 3 for Snapper Grouper applies.

Social Impacts

The prohibition of fishing for coastal pelagics in the Experimental Closed area may have important social impacts, primarily on the recreational fishery. During public hearings in Ft. Pierce testimony from recreational fishermen indicated that a closure of the Oculina Bank would have considerable impact on charter fishing operations and the private boat fishery. Apparently, this is a popular fishing area for mackerel, dolphin and many highly migratory species. There are several tournaments held in Ft. Pierce throughout the year and closing this area may impact tournament participation. This action, in conjunction with other actions prohibiting other types of fishing, can have unforeseen impacts such as a reduction in the number of fishermen that travel from as far as Orlando to fish the waters off Ft. Pierce. Their fishing experience may be diminished if the Experimental Closed Area is off limits and which may persuade them to find another destination for their fishing endeavor. This would certainly have a negative impact on the Ft. Pierce economy, but would benefit the substitute destination. Another impact of closure would be what is called the "edge effect." This phenomenon is where fishing would take place on all sides of the closed area, or possibly more on those areas closer to shore. This may cause crowding and create future conflict.

Conclusion

Based on recommendations from the Habitat and Coral Advisory Panels and the Habitat Committee, the Council concluded additional regulations on gears other than those in the calico scallop fishery are not necessary to enforce the no fishing provision of the experimental closed area. A voluntary vessel monitoring system will be implemented on a portion of the rock shrimp vessels and 100% of the calico scallop vessels will be required to have a vessel monitoring system. These additional regulations, more public education, and more enforcement effort will adequately prevent fishing within the closed area. Therefore, this action was rejected.

4.2.5 Amendment 1 to the Fishery Management Plan for the Golden Crab Fishery of the South Atlantic Region

4.2.5.1 ACTION 1. Identify Essential Fish Habitat for Golden Crab

Essential fish habitat for golden crab includes the U.S. Continental Shelf from Chesapeake Bay south through the Florida Straits (and into the Gulf of Mexico). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse golden crab larvae. The detailed description of seven essential fish habitat types (a flat foraminferan ooze habitat; distinct mounds, primarily of dead coral; ripple habitat; dunes; black pebble habitat; low outcrop; and soft-bioturbated habitat) for golden crab is provided in Wenner et al. (1987).

Refer to Section 3.0 in the Habitat Plan for a more detailed description of habitat utilized by the managed species. Also, it should be noted that the Gulf Stream occurs within the EEZ.

Biological Impacts

The identification of essential habitat for golden crab will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases.

Economic Impacts

The identification of essential fish habitat for the golden crab fishery will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect habitat should result in increased net economic benefit to society in the long-term.

Social Impacts

There will be few social impacts from identifying essential fish habitat itself. The social impacts will most likely come from future actions that are associated with such a designation. The assumption is that such designation will provide protection for golden crab and eventually improve stocks through protection of habitat. In that case, the social impacts will be positive in the long run. However, in some cases, protection of habitat may mean harvesting restrictions in areas where harvesting presently takes place or other actions which may impose similar constraints on golden crab fishermen. This could conceivably impose negative short term impacts that may be mitigated in the long term if productivity is increased. Outside the fishery management arena there is another area where social impacts will occur and that is the permitting process. Designation of essential fish habitat will likely alter the process by which permits for activities which impact essential fish habitat are issued. The potential for increased restrictions, mitigation and permitting requirements may have impacts upon the behavior of individuals and agencies seeking permits. The nature and extent of those impacts is unknown and will undoubtedly vary depending upon the individual and/or agency.

Conclusions

The identification of essential habitat will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat. This action meets this mandate. Any activities impacting this identified essential fish habitat will come under the review process described by the Council. This process (identification and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 1:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the golden crab fishery, and minimizing gear related habitat damage from occurring in this fishery.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the golden crab fishery, and minimizing fishing related habitat damage from occurring in this fishery.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify essential fish habitat. Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation of essential habitat to golden crab can facilitate expeditious Council action in the future to protect essential fish habitat for golden crab.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens mandates to identify essential fish habitat. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.5.2 Existing Management Measures in the Golden Crab Fishery Management Plan Which Directly or Indirectly Protect Essential Fish Habitat

The following measures were established in the Golden Crab Fishery Management Plan (SAFMC, 1995) and all provide protection to essential fish habitat: limiting allowable gear to traps, limiting trap size (to a maximum of 64 cubic feet in the northern zone and 48 cubic feet in the middle and southern zones), depth limitations (traps can only be deployed in waters deeper than 900 feet in the northern zone and 700 feet in the middle and southern zones), and limiting the number of vessels.

4.2.5.3 Assessment of Present Fishing Activities

No additional impacts have been identified.

4.2.5.4 ACTION 2. No Action to Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Golden Crab.

There is insufficient knowledge of the biology of golden crabs to identify spawning and nursery areas and to identify HAPCs at this time. As information becomes available, the Council will evaluate such data and identify HAPCs as appropriate through the framework.

4.2.6 Amendment 5 to the Fishery Management Plan for the Spiny Lobster Fishery of the South Atlantic Region

4.2.6.1 ACTION 1. Identify Essential Fish Habitat for Spiny Lobster.

Essential fish habitat for spiny lobster includes nearshore shelf/oceanic waters; shallow subtidal bottom; seagrass habitat; unconsolidated bottom (soft sediments); coral and live/hard bottom habitat; sponges; algal communities (*Laurencia*); and mangrove habitat (prop roots). In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse spiny lobster larvae.

Refer to Section 3.0 in the Habitat Plan for a more detailed description of habitat utilized by the managed species. Also, it should be noted that the Gulf Stream occurs within the EEZ.

Biological Impacts

The identification of essential fish habitat for spiny lobster will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases.

Economic Impacts

The identification of essential fish habitat for spiny lobster will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect habitat should result in increased net economic benefit to society in the long- term.

Social Impacts

There will be few social impacts from identifying essential fish habitat itself. The social impacts will most likely come from future actions that are associated with such a designation. The assumption is that such designation will provide protection for spiny lobster and eventually improve stocks through protection of habitat. In that case, the social impacts will be positive in the long run. However, in some cases, protection of habitat may mean harvesting restrictions in areas where harvesting presently takes place or other actions which may impose similar constraints on spiny lobster fishermen. This could conceivably impose negative short term impacts that may be mitigated in the long term if productivity is increased. Outside the fishery management arena there is another area where social impacts will occur and that is the permitting process. Designation of essential fish habitat will likely alter the process by which permits for activities which impact essential fish habitat are issued. The potential for increased restrictions, mitigation and permitting requirements may have impacts upon the behavior of individuals and agencies seeking permits. The nature and extent of those impacts is unknown and will undoubtedly vary depending upon the individual and/or agency.

Conclusions

The identification of essential habitat will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat. This action meets this mandate. Any activities impacting this identified essential fish habitat will come under the review process described by the Council. This process (identification and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 1:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the spiny lobster fisheries, and minimizing gear related habitat damage from occurring in these fisheries.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the spiny lobster fishery, and minimizing fishing related habitat damage from occurring in this fishery.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify essential fish habitat. Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation of essential fish habitat for spiny lobster can facilitate expeditious Council action in the future to protect such habitat for lobsters.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens mandates to identify essential fish habitat. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.6.2 Existing Management Measures in the Spiny Lobster Fishery Management Plan Which Directly or Indirectly Protect Essential Fish Habitat

The trap limitation program provides habitat protection.

4.2.6.3 Assessment of Present Fishing Activities

See the Spiny Lobster Fishery Management Plan and Amendments. Use of spiny lobster traps on hard bottom and turtle grass beds could have some impact on essential fish habitat.

4.2.6.4 ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Spiny Lobster.

Areas which meet the criteria for essential fish habitat-habitat areas of particular concern (EFH-HAPCs) for spiny lobster include Florida Bay, Biscayne Bay, Card Sound, and coral/hard bottom habitat from Jupiter Inlet, Florida through the Dry Tortugas, Florida.

Biological Impacts

The establishment of EFH-HAPCs for the spiny lobster fishery will enable the Council to protect EFH-HAPCs effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases.

Economic Impacts

The establishment of EFH-HAPCs for the spiny lobster fishery will enable the Council to protect EFH-HAPCs effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect EFH-HAPCs should result in increased net economic benefits to society in the long-term.

Social Impacts

The establishment of EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.

Conclusions

The establishment of EFH-HAPCs will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat and allow the Council to designate portions of EFH as being particularly important (EFH-HAPCs). This action meets this provision. Any activities impacting the EFH-HAPCs will come under the review process described by the Council. This process (establishment of EFH-HAPCs and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 2:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the spiny lobster fisheries, and minimizing gear related habitat damage from occurring in these fisheries.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the spiny lobster fishery, and minimizing fishing related habitat damage from occurring in this fishery.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify EFH-HAPCs. Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation of EFH-HAPCs for spiny lobster can facilitate expeditious Council action in the future to protect essential fish habitat for lobsters.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens provisions which allow establishment of essential fish habitat-habitat areas of particular concern. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.6.5 ACTION 3. No Action to Prohibit Fishing for Spiny Lobster in the Experimental Closed Area.

The use of traps is already prohibited in the Experimental Closed Area. No action would continue to allow harvest by hook and line or diving.

Biological Impacts

There will continue to be biological losses proportional to the extent fishing takes place within the existing closed areas. No action would not provide any increased enforcement.

Economic Impacts

There would be no economic impact to spiny lobster fishermen. However, the Council would be limited in the future in protecting habitat and preventing incidental catches of snapper grouper species by fishermen fishing for spiny lobster in this area This could result in reduced net economic benefits to society in the long-term.

Social Impacts

As stated under previous actions, this area is important to regional fishermen who have established fishing patterns in this area. The social impacts from no action should be positive as the benefits from enhancing law enforcement do not outweigh the negative social impacts from the prohibition at this time.

Conclusion

Based on recommendations from the Habitat and Coral Advisory Panels and the Habitat Committee, the Council concluded additional regulations on gears other than those in the calico scallop fishery are not necessary to enforce the no fishing provision of the experimental closed area. A voluntary vessel monitoring system will be implemented on a portion of the rock shrimp vessels and 100% of the calico scallop vessels will be required to have a vessel monitoring system. These additional regulations, more public education, and more enforcement effort will adequately prevent fishing within the closed area.

Other Possible Options for Action 3:

Option 1. Prohibit Fishing for Spiny Lobster in the Experimental Closed Area.

Biological Impacts

To the extent enforcement is increased and fishing mortality on species in the snapper grouper management unit is reduced, there will be corresponding benefits in terms of rebuilding overfished species. There may also be biological benefits for lobster species by establishing a no fishing area. This could result in increased biological productivity.

Economic Impacts

Fishing with certain allowable gear types is permissible in the Experimental Closed Area. For example, trolling takes place for coastal pelagics and other non-snapper grouper species in this area. Statistics from the Department of Environmental Protection, Florida Marine Research Institute, Division of Marine Resources (Martha Norris, July 28, 1998) show that between 1994 and 1997, an average of 4,569 pounds of spiny lobster were harvested from the entire statistical sample area which includes the Experimental Closed Area. Using 1996 average exvessel price of $4.00 per pound (1996 Snapper Grouper Commercial Logbook Report), the average annual value of the harvest from this area from 1994 to 1997 was $18,276. Assuming the same harvest trend continues, the prohibition of all fishing in this area would result in lost exvessel value of up to approximately $18,000 to spiny lobster fishermen who have fished this area in the first year if the harvest is from the Experimental Closed Area and not in adjacent waters. If all lobster are trapped or harvested by divers outside the Experimental Closed Area, or are harvested by divers within the Experimental Closed Area, the impact will range from $0 to $18,000.

Social Impacts

The prohibition of fishing for spiny lobster in the Experimental Closed area may have important social impacts on the commercial fishery as Florida Trip Ticket Data suggests there is harvest of spiny lobster in this area. The impacts to the recreational fishery are probably minimal because the depth of water may prevent many recreational fishermen from harvesting spiny lobster here. This action in conjunction with other prohibitions may have larger social impacts since closing this area may impact the recreational charter and private boat industry to a much larger extent than was previously known.

Conclusion

Based on recommendations from the Habitat and Coral Advisory Panels and the Habitat Committee, the Council concluded additional regulations on gears other than those in the calico scallop fishery are not necessary to enforce the no fishing provision of the experimental closed area. A voluntary vessel monitoring system will be implemented on a portion of the rock shrimp vessels and 100% of the calico scallop vessels will be required to have a vessel monitoring system. These additional regulations, more public education, and more enforcement effort will adequately prevent fishing within the closed area. Therefore, this action was rejected.

4.2.7 Amendment 4 to the Fishery Management Plan for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region

4.2.7.1 ACTION 1. Identify Essential Fish Habitat for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region.

Essential fish habitat for corals (stony corals, octocorals, and black corals) must incorporate habitat for over 200 species. EFH for corals include the following:

A. Essential fish habitat for hermatypic stony corals includes rough, hard, exposed, stable substrate from Palm Beach County south through the Florida reef tract in subtidal to 30 m depth, subtropical (15°-35° C), oligotrophic waters with high (30-35°/$_{oo}$) salinity and turbidity levels sufficiently low enough to provide algal symbionts adequate sunlight penetration for photosynthesis. Ahermatypic stony corals are not light restricted and their essential fish habitat includes defined hard substrate in subtidal to outer shelf depths throughout the management area.

B. Essential fish habitat for *Antipatharia* (black corals) includes rough, hard, exposed, stable substrate, offshore in high (30-35°/$_{oo}$) salinity waters in depths exceeding 18 meters (54 feet), not restricted by light penetration on the outer shelf throughout the management area.

C. Essential fish habitat for octocorals excepting the order Pennatulacea (sea pens and sea pansies) includes rough, hard, exposed, stable substrate in subtidal to outer shelf depths within a wide range of salinity and light penetration throughout the management area.

D. Essential fish habitat for Pennatulacea (sea pens and sea pansies) includes muddy, silty bottoms in subtidal to outer shelf depths within a wide range of salinity and light penetration.

Refer to Section 3.0 in the Habitat Plan for a more detailed description of habitat utilized by the managed species.

Biological Impacts

The identification of essential habitat for coral, coral reefs, and live/hard bottom habitats will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases.

Economic Impacts

The identification of essential fish habitat for coral, coral reefs, and live/hard bottom will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect habitat should result in increased net economic benefit to society in the long-term.

Social Impacts

There will be few social impacts from identifying essential fish habitat itself. The social impacts will most likely come from future actions that are associated with such a designation. The South Atlantic Council has already taken action to protect corals and live bottom. Outside the fishery management arena there is another area where social impacts will occur and that is

the permitting process. Designation of essential fish habitat will likely alter the process by which permits for activities which impact essential fish habitat are issued. The potential for increased restrictions, mitigation, and permitting requirements may have impacts upon the behavior of individuals and agencies seeking permits. The nature and extent of those impacts is unknown and will vary depending upon the individual and/or agency.

Conclusions

The identification of essential habitat will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat. This action meets this mandate. Any activities impacting this identified essential fish habitat will come under the review process described by the Council. This process (identification and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 1:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the coral, coral reefs, and live/hard bottom habitat, and minimizing gear related habitat damage from occurring in these fisheries.

Economic Impacts

The Council would be limited in the future in protecting the long-term economic viability of coral, coral reefs, and live/hard bottom habitat, and minimizing fishing related habitat damage from occurring.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify essential fish habitat. Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation of essential coral habitat can facilitate expeditious Council action in the future to protect coral habitat.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens mandates to identify essential fish habitat. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.7.2 Existing Management Measures in the Fishery Management Plan for Coral, Coral Reefs, and Live/Hard Bottom Habitats which Directly or Indirectly Protect Essential Fish Habitat

Establishment of the Oculina Bank HAPC in the Coral Plan (GMFMC and SAFMC, 1982), prohibition on anchoring and establishment of the experimental closed area, prohibition of live rock harvest, and encouragement for live rock aquaculture all provide protection for essential fish habitat.

4.2.7.3 Assessment of Present Fishing Activities

There is no directed taking allowed except under permit. Scientific permits may be granted by the NMFS for limited harvest of all species. There is a quota of 50,000 colonies for the harvest of octocorals. In the South Atlantic, octocoral harvest is allowed south of Cape Canaveral, Florida (28°35.1' N. latitude or due east of the NASA Vehicle Assembly Building) and the quota is limited to 25,000 colonies (one-half of the total quota of 50,000 colonies for the Gulf of Mexico and South Atlantic; A colony is a continuous group of coral polyps forming a single unit.). Stony coral harvest is allowable from permitted live rock aquaculture sites with no limits.

4.2.7.4 ACTION 2. Establish Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for Coral, Coral Reefs, and Live/Hard Bottom.

Areas which meet the criteria for essential fish habitat-habitat areas of particular concern (EFH-HAPCs) for coral, coral reefs, and live/hard bottom include The 10-Fathom Ledge, Big Rock, and The Point (North Carolina); Hurl Rocks and The Charleston Bump (South Carolina); Gray's Reef National Marine Sanctuary (Georgia); The *Phragmatopoma* (worm reefs) reefs off the central east coast of Florida; Oculina Banks off the east coast of Florida from Ft. Pierce to Cape Canaveral; nearshore (0-4 meters; 0-12 feet) hard bottom off the east coast of Florida from Cape Canaveral to Broward County); offshore (5-30 meter; 15-90 feet) hard bottom off the east coast of Florida from Palm Beach County to Fowey Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary.

Biological Impacts

The establishment of EFH-HAPCs for coral, coral reefs, and live/hard bottom will enable the Council to protect EFH-HAPCs effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases.

Economic Impacts

The establishment of EFH-HAPCs for coral, coral reefs, and live/hard bottom will enable the Council to protect EFH-HAPCs effectively and take timely actions when necessary. It should be noted that this action by itself would not impact fishermen, but other actions resulting from this one could impact fishermen. This action, together with other actions that protect EFH-HAPCs should result in increased net economic benefits to society in the long-term.

Social Impacts

The establishment of EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.

Conclusions

The establishment of EFH-HAPCs will enable the Council to protect essential fish habitat effectively and take timely actions when necessary. This will prevent further decreases in biological productivity and could lead to possible increases in the abundance of species dependent upon the habitat being protected.

Recent amendments (1996) to the Magnuson-Stevens Act require the Council identify essential fish habitat and allow the Council to designate portions of EFH as being particularly important (EFH-HAPCs). This action meets this provision. Any activities impacting the EFH-HAPCs will come under the review process described by the Council. This process (establishment of EFH-HAPCs and commenting) will allow the Council to provide additional protection for habitat important to species for which the Council has management authority.

Other Possible Options for Action 2:

Option 1. No Action.

Biological Impacts

The Council would be limited in the future in terms of protecting the long-term biological productivity of the coral, coral reefs, and live/hard bottom habitat, and minimizing gear related habitat damage from occurring in these fisheries.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of coral, coral reefs, and live/hard bottom, and minimizing fishing related habitat damage from occurring.

Social Impacts

The no action alternative would not meet Magnuson-Stevens mandates to identify EFH-HAPCs Although there would be few social impacts from no action, it is in the best interest of the Council and fishermen to identify this habitat. Designation of important coral habitat can facilitate expeditious Council action in the future to protect coral habitat.

Conclusions

The Council rejected taking no action because this would not provide habitat protection and it would not meet Magnuson-Stevens provisions which allow establishment of essential fish habitat-habitat areas of particular concern. Taking no action would lead to continued declines in the amount of and quality of habitat important to species for which the Council has management authority.

4.2.7.5 ACTION 3A. Expand the Oculina Bank Habitat Area of Particular Concern (HAPC) to an area bounded to the west by 80°W longitude, to the north by 28°30' N latitude, to the south by 27°30' N latitude, and to the east by the 100 fathom (600 feet) depth contour.

The current Oculina Bank HAPC is located approximately 15 nautical miles east of Fort Pierce, Florida, at its nearest point to shore. The area measures 4 by 23 nautical miles and the water depth is between 30 and 75 fathoms. The current Oculina Bank HAPC area is bounded on the north by 27°53' N. latitude, on the south by 27°30' N. latitude, on the east by 79°56' W. longitude, and on the west by 80°00' W. longitude.

This action would expand the Oculina Bank HAPC area to include the area currently closed to rock shrimp harvest. The Calico Scallop FMP proposes to close this area to calico scallop harvest. The expanded Oculina Bank HAPC would be 60 nautical miles long by about 5 nautical miles wide although the width tracks the 100 fathom (600 foot) depth contour rather than a longitude line. Within the expanded Oculina Bank HAPC area the following regulations would apply:

(1) Fishing with a bottom longline, bottom trawl, dredge, pot, or trap is prohibited.
(2) A fishing vessel may not anchor, use an anchor and chain, or use a grapple and chain.

This action will separate the Oculina Bank HAPC from the experimental closed area which are currently the same area as shown in Figure 1. Should this measure be approved, the existing experimental closed area would remain the same area while the Oculina Bank HAPC would be expanded with the above specified regulations applying within the Oculina Bank HAPC.

Biological Impacts

This action reduces the impact of the rock shrimp and calico scallop fisheries on live/hard bottom and coral habitat by eliminating trawl gear from being used in the expanded area. It would also eliminate damage from other gear which contacts the bottom. In addition, this area corresponds to the current area closed to rock shrimping.

The calico scallop fishery historically occurred in the EEZ off North Carolina through the east coast of Florida and into the Gulf of Mexico. The primary fishing area is centered around Cape Canaveral, Florida (Figure 1). The fishable grounds are hard sand to shell hash bottoms which run north and south. Shell distribution is shown in Figure 2.

Trawl damage occurs from direct contact with live/hard bottom, including *Oculina* coral. *Oculina* is only known to be distributed in bank formation south of 29° N. latitude. Amendment 1 to the snapper grouper fishery management plan prohibited use of bottom tending roller rig trawls on live/hard bottom habitat north of Cape Canaveral, Florida. Habitat damage occurs from the use of bottom tending trawl gear. The effects of research trawls on hard bottom sponge and coral (including *Oculina*) assemblages are well documented. Therefore, implementation of this measure will prevent the loss of this essential snapper grouper habitat.

The rock shrimp fishery historically occurred in the EEZ off St. Augustine to Cape Canaveral, Florida (Hetzal Shoals). Today the fishery operates north of Cape Canaveral through Jupiter Inlet, Florida (Figure 3). The fishable grounds are hard sand to shell hash bottoms which run north and south with a width as narrow as one mile. It is only in recent years (after 1991) that the effort shifted south of Cape Canaveral exposing the known concentrations of *Oculina* coral, live/hard bottom, and the Oculina Bank HAPC to bottom trawl damage. More recently the fishery has also shifted offshore and south of the Oculina Bank HAPC.

The most extensive *Oculina* coral concentration exists in the Oculina Bank Habitat Area of Particular Concern (HAPC) which was established under the Coral Fishery Management Plan. *Oculina varicosa*, a slow growing delicate stony coral, is easily damaged by bottom tending trawl gear, anchoring, fishing leads, etc. *Oculina* is distributed mainly in deepwater along the south Atlantic coast with the largest known concentrations occurring off Cape Canaveral, south through the Oculina Bank HAPC. Effective June 27, 1994 as part of Amendment 6 to the snapper grouper plan, the Oculina HAPC was also designated an experimental closed area in which fishing or anchoring to fish for species in the snapper grouper management unit is prohibited. Therefore, the additional protection afforded by this action extends the protection

from trawl gear north through 28° 30' N. latitude and east out to 100 fathoms, enhancing the biological integrity of the HAPC and the possible effectiveness of the closed area.

Another habitat concern which has been raised is the repetitive trawling of the limited fishable bottom over the years which may impact the benthic habitat and the shrimp resource it sustains. In addition, the Council's Scientific and Statistical Committee reiterated that although limited, the information provided from research efforts has indicated that large spawning rock shrimp tend to be associated with the *Oculina* live/hard bottom habitat. Therefore, an additional benefit which may come with protecting these habitats is protection of a portion of the rock shrimp and calico scallop spawning stock. This would help the fishery in years when recruitment is low due to poor environmental conditions.

The area closure may also protect juvenile rock shrimp in their nursery grounds. Public testimony at scoping meetings and public hearings indicated that nursery grounds may be southeast of Cape Canaveral in depths greater than 180 feet. The rock shrimp fishery during the 1993/94 season, occurred at depths of 180 feet and deeper. In earlier years the fishery took place at depths around 120 feet. Some fishermen feel the fishery prevents rock shrimp from moving up and on the shelf and distributing over the grounds since rock shrimp are being caught as they move up onto the slope.

Economic Impacts

The expansion of the Oculina Bank HAPC would provide added protection to delicate corals and live bottoms. This would create a buffer zone which would prevent fishing vessels from straying into the original Oculina HAPC unintentionally. This area is already prohibited to rock shrimping, thus there would be no impact on rock shrimp vessels.

Given the lack of catch by specific area it is difficult to analyze the impacts of this action. In the future, data collected through the Atlantic Coast Cooperative Statistical Program (ACCSP) will provide specific area of capture. In the interim, catch by statistical area and information from fishermen must be used. The following economic analysis presents the upper limit on impacts from this action. Based on information from the Calico Scallop Advisory Panel, the Panel feels the fishery can continue with the proposed area closure. In fact, the Calico Scallop Advisory Panel supports the proposed closed area. The primary fishing areas are inshore of the proposed closed area as shown in Figure 1. The economic analysis presented below indicates that if the majority of the catch were to come from within the proposed closed area, the impacts would be large.

The prohibition will include portions of Statistical Areas 732 and 736, areas used in the Florida data collection program. In 1997, 82 percent of the reported harvest in Florida came from area 732.9 which is indicated as Federal waters (Martha Norris, Department of Environmental Protection, Florida Marine Research Institute, Division of Marine Resources). Thus, this proposed action prohibiting calico scallop harvest from this area could result in lost harvest of up to this magnitude. Based on an average exvessel value of $0.85 per pound in 1995 (Table 4), and assuming that the landings trend from this area follows the 1997 pattern, exvessel value would be reduced by up to $1,077,069 (1,545,292 x 82% x $0.85) in the first year. This represents 82 percent of the 1997 exvessel value of $1,313,498 (1,545,292 x $0.85).

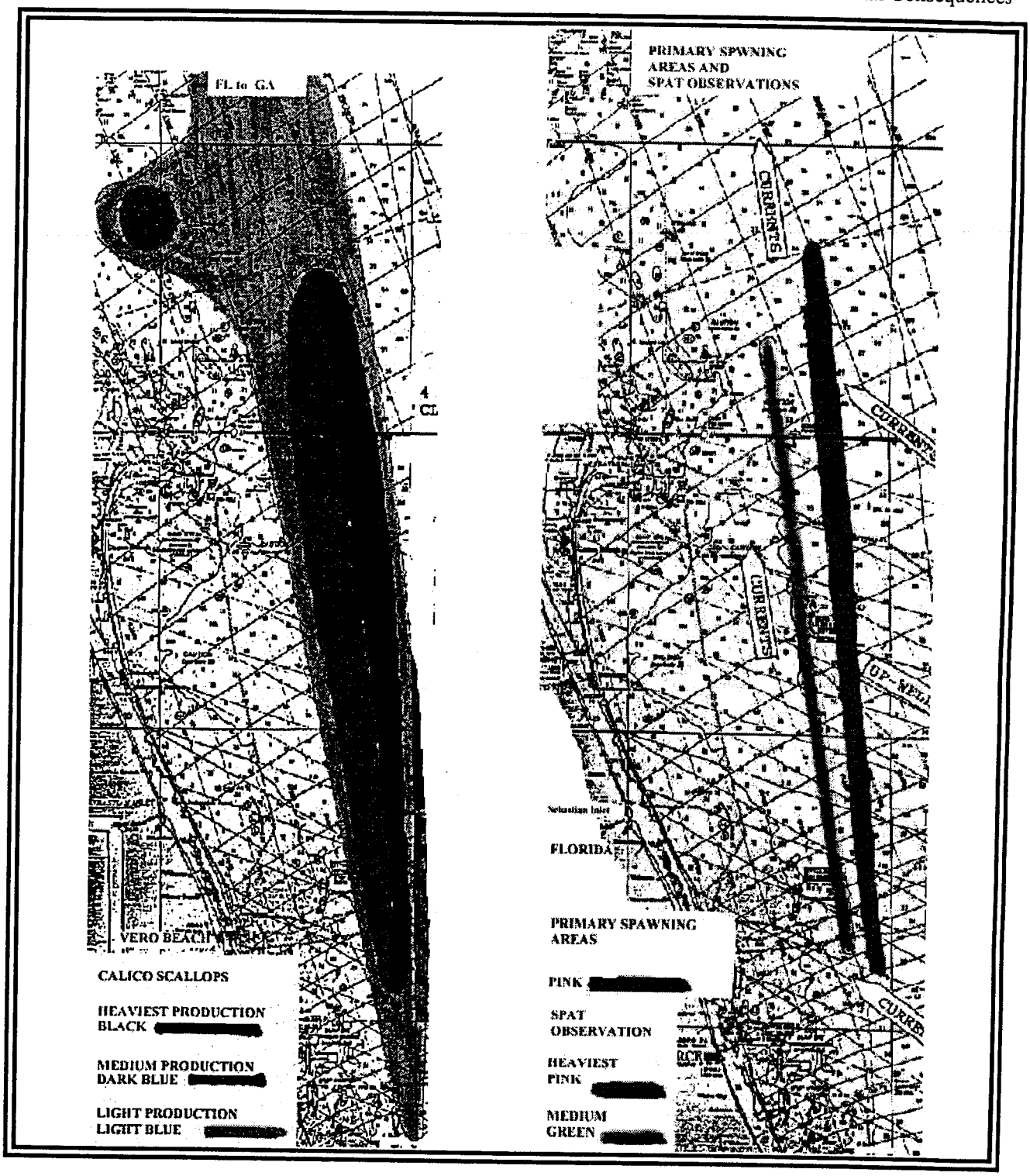


Figure 1. Calico scallop spawning areas and fishing grounds (Source: William Burkhardt, Calico Scallop Advisory Panel).

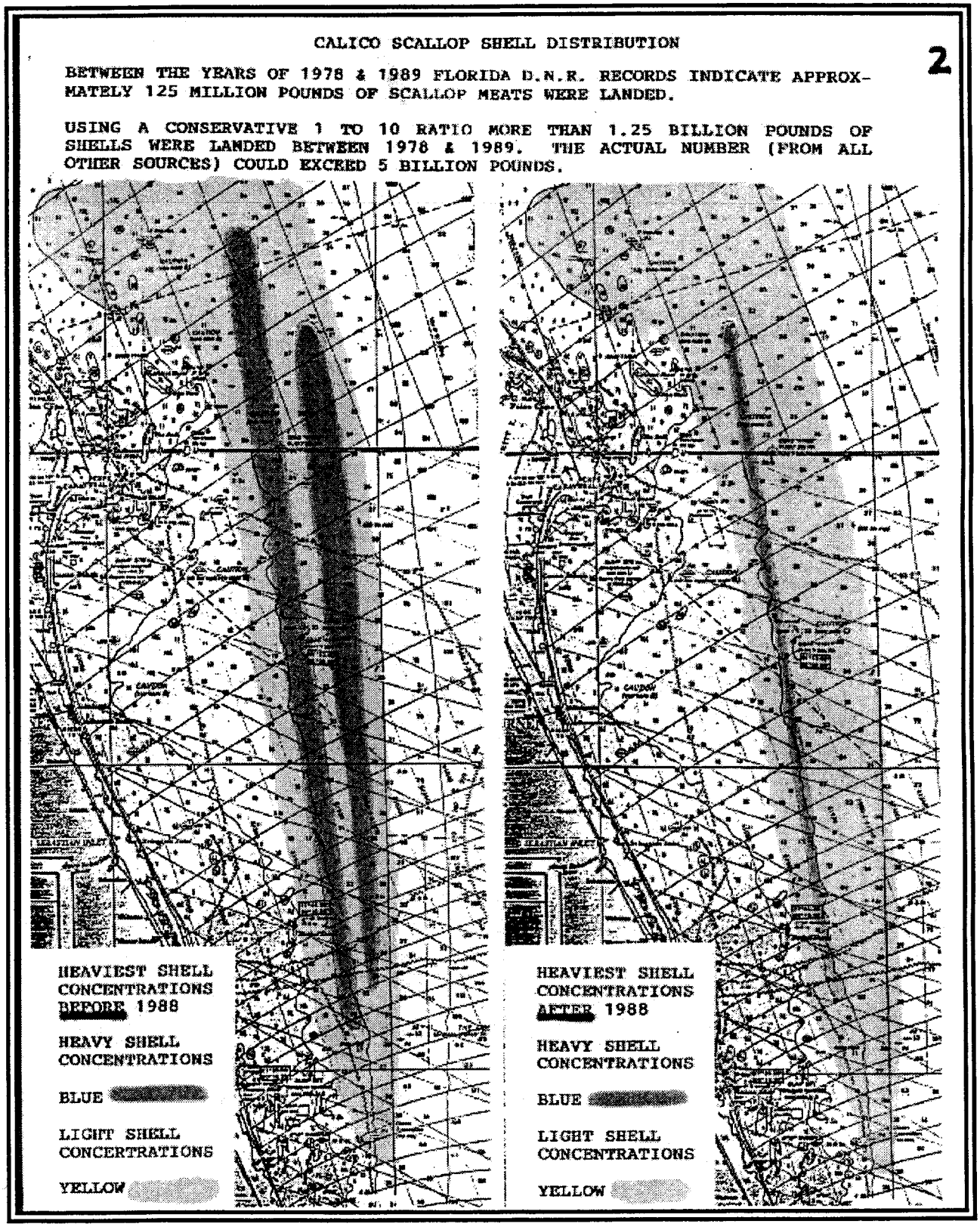


Figure 2. Calico scallop shell distribution (Source: William Burkhardt, Calico Scallop Advisory Panel).

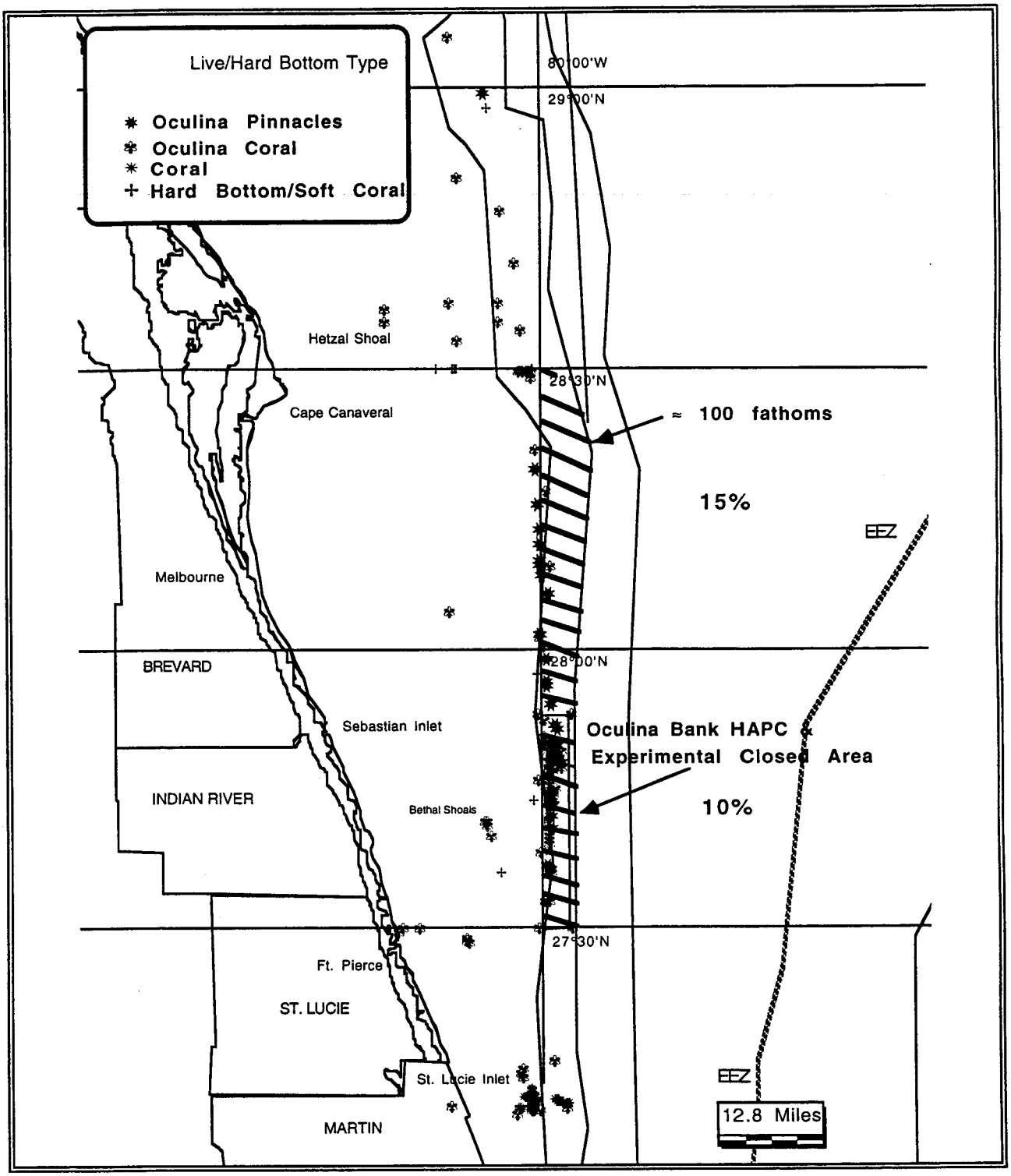


Figure 3. Map of hashed areas prohibited under Management Action 2 and coral, coral reef and live/hard bottom habitat associated with rock shrimp harvest areas (Source: SAFMC 1995).

Easley and Prochaska (1985) indicate that a 1 million pound change in landings of calico scallops produces a $0.49 change in exvessel price per pound in the opposite direction. Thus, a reduction in landings of 1,267,139 (82% x 1,545,292) pounds would create an increase of $0.62 per pound other things being equal. If this price change holds, the new price as a result of the decreased landings would be $1.47 per pound ($0.85 + $0.62). Based on 1997 landings of 1,545,292 pounds, if landings are decreased by 1,267,139 pounds, the difference of 278,153 pounds (1,545,292 -1,267,139) would result in an exvessel value of $408,885 (278,153 x $1.47). The actual reduction in value in the first year would be up to $904,613 ($1,313,498-408,885). This represents a reduction of 69 percent (instead of the original 82 percent without including the price effect) of the 1997 exvessel value.

Table 4. Calico Scallop Landings and Exvessel Value in the South Atlantic 1981 - 1996. (Source: Linda Hardy, NMFS, Beaufort Laboratory, July 22, 1998. Note: Pounds are in meat weight.)

YEAR	POUNDS	VALUE ($)
1981	15,417,756	14,587,183
1982	11,036,112	11,459,703
1983	9,470,942	11,776,929
1984	42,966,920	23,377,756
1985	12,521,311	11,655,518
1986	1,565,784	2,860,645
1987	10,933,064	11,000,598
1988	12,706,752	9,454,013
1989	4,066,521	3,531,597
1990	1,259,159	2,241,249
1991	39,000	127,149
1992	205,061	768,996
1993	501,793	422,033
1994	4,989,600	2,784,612
1995	945,093	804,628
1996	0	0

Note: Landings in the south Atlantic are mainly from the EEZ off Florida. Some landings were reported from the EEZ off North Carolina in some years.

However, it may be unrealistic to think that with total annual exvessel value reduced by up to 69 percent in the first year, calico scallop fishermen would still find it profitable to continue in this fishery unless the bulk of the catch comes from outside this area or the potential exists for the fishery to shift to other areas. This could happen if calico scallop beds are discovered in areas outside the prohibited area. It is also likely that calico scallop vessels could increase effort in other fisheries because of this prohibition. If this could be done successfully, lost revenues to calico scallop fishermen would be lower than the values computed above. It should be noted that in the event of this scenario occurring, effort shift to other fisheries would only increase fishing pressure on otherwise stressed fisheries.

The high level of support from the Advisory Panel indicates they will not be impacted near to the degree indicated by the available data. Input from the Advisory Panel indicates there will be some level of impact but they are willing to accept the proposed area closure given the need to protect habitat. The Panel has indicated if the boundary is shifted towards the west, the impacts would be large, perhaps on the order of the magnitude shown by the available data.

Other gear types (excluding bottom trawls and other bottom tending gears) will be allowed to fish in the section of the expanded area that does not include the Experimental Closed Area. Thus, it is likely that the calico scallop fishery is the one that would be impacted.

Social Impacts

Expansion of the HAPC would extend the prohibition of bottom tending gear and the anchoring prohibition to the area no presently closed to rock shrimping. This expansion will assist the Council in meeting its mandate to protect essential fish habitat. This expansion will also create a more equitable regulatory regime that does not single out rock shrimpers. In that sense, there should be positive social impacts.

Conclusion

Based on recommendations from the Calico Scallop, Habitat, and Coral Advisory Panels, the Council approved this action to provide additional protection for essential fish habitat. The Council is expanding the Oculina Bank HAPC to protect the *Oculina* coral and the hard bottom/soft coral habitat within the area north of the current Oculina Bank HAPC boundary (Figure 1).

The Council concluded this action is necessary to protect the *Oculina* habitat present in the affected area. This action meets the mandates of the Magnuson-Stevens Act to protect essential fish habitat. The Council reviewed the potential economic impacts and concluded that the actual impact will be much less given the input of the Calico Scallop Advisory Panel which indicates that most of the harvest comes from the portions of the statistical areas outside of the proposed closed area. The Council concluded this area closure best achieves the objectives of the Calico Scallop Fishery Management Plan.

4.2.7.6 ACTION 3B. Establish the following two Satellite Oculina HAPCs: (1) Satellite Oculina HAPC #1 is bounded on the north by 28°30'N. Latitude, on the south by 28°'29'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude, and (2) Satellite Oculina HAPC #2 is bounded on the north by 28°17'N. Latitude, on the south by 28°'16'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude.

It is the Council's intent that possession of calico scallops and rock shrimp within these areas is also prohibited. This will enhance enforceability of the prohibition of harvest in these areas and the prohibition on use of bottom-tending gear in these areas. A more detailed discussion of these two areas is contained in the Habitat Comprehensive Amendment.

The coordinates for these two areas are shown in Appendix C along with distribution information for *Oculina* coral and hard bottom. Within the two Satellite Oculina Bank HAPCs, the following regulations would apply:

(1) Fishing with a bottom longline, bottom trawl, dredge, pot, or trap is prohibited.

(2) A fishing vessel may not anchor, use an anchor and chain, or use a grapple and chain.

Biological Impacts

See discussion under Action 3A. This option would provide additional protection for the *Oculina* and other essential fish habitat occurring within these areas.

Economic Impacts

Industry officials indicated at the Joint Calico Scallop Committee and Advisory Panel meeting held on July 29-30, 1998 in Charleston, South Carolina that the bulk of their harvest comes from statistical area 732. The level of calico scallop landings from these two 1 mile by 3 mile areas is unknown but is likely minimal based on input from the Calico Scallop Advisory Panel.

Social Impacts

The social impacts of this action should be positive. With the identification of satellite HAPCs, the Council will be protecting coral outcroppings that are outside the larger HAPC expansion without impacting the trawl fisheries which fish the area just west of the 80° line. Rock shrimpers and calico scallop harvesters have indicated that the do fish that area and would have been impacted by a 1 mile closure. The establishment of satellite HAPCs should have minimal impact on these fisheries. With satellite HAPCs, the goals of the Council to protect essential fish habitat and to not unnecessarily adversely impact present harvesting activity can both be met, thereby creating positive social impact.

Conclusions

The Habitat and Coral Advisory Panels support prohibiting establishing these two areas as coral HAPCs. The Council concluded this action is necessary to protect the *Oculina* habitat present in the affected area. This action meets the mandates of the Magnuson-Stevens Act to protect essential fish habitat. The Council reviewed the potential economic impacts and concluded that the actual impact will be minimal given the input of the Calico Scallop Advisory Panel which indicates that their harvest comes from outside of the two proposed closed areas. The Council concluded these area closures best achieve the objectives of the Calico Scallop Fishery Management Plan. This option protects important habitat without the large negative impacts to the calico scallop fishery from other alternatives considered.

Other Possible Options for Action 3:

Option 1. No Action.

Biological Impacts

This option would not provide as much protection as the proposed Action for *Oculina* coral which is easily damaged by bottom tending gear. Having less gear fishing within this area may provide greater protection to other species by not disrupting spawning and migration behavior.

Economic Impacts

The Council would be limited in the future in terms of protecting coral, coral reefs and live/hard bottom habitat, and minimizing any possible habitat damage. This option could result in reduced net economic benefits in the long-term. Any habitat damage resulting from calico scallop fishing activity in this area could affect other fisheries and result in reduced economic benefits from those fisheries.

Social Impacts

The no action alternative will leave the Council open to criticism from rock shrimp fishermen who have been prohibited from trawling in this area to enhance coral habitat. With other types of destructive gear being allowed in this area, the argument for the rock shrimp closure is less defensible.

Conclusions

The Council rejected the no action option because it would not protect essential fish habitat. Also, no action would violate the mandates of Magnuson-Stevens Act and the objectives of the calico scallop plan. Rock shrimp trawling is proposed to be prohibited within this area and were the Council to adopt no action, the Council would be treating two gears with the same impact very differently.

Option 2. Expand the Oculina Bank HAPC by 1 mile on the western side between 28° and 28°30' N. latitude.

Biological Impacts

See discussion under Action 3A. This option would provide additional protection for the *Oculina* and other essential fish habitat occurring within this 1 mile strip.

Economic Impacts

Industry officials indicated at the Joint Calico Scallop Committee and Advisory Panel meeting held on July 29-30, 1998 in Charleston, South Carolina that the bulk of their harvest comes from this area which is included in statistical area 732. Thus, the analysis for proposed Action 8A applies to this option in terms of providing an upper bound on potential impacts. It is estimated that the total reduction in exvessel value would be up to $904,613 in the first year. This represents 69 percent of the 1997 exvessel value.

Social Impacts

The social impacts from this action are difficult to assess. The Advisory Panel indicated that the bulk of their harvest comes from the area within one mile of the western side of the HAPC and did not support this option. However, much of that harvest may be below the 28° line. It is likely that there will be some loss of harvest. The location of calico scallop beds varies from year to year as indicated by the Advisory Panel. For that reason, it is likely that the impacts will vary from year to year depending upon what percentage of calico scallop beds lie within this area. There is some indication that primary spawning areas and the location of scallop beds may be outside of this area according to maps provided by one harvester. However, those maps also indicate that harvest does take place within the one mile expansion proposed.

Conclusions

The Council rejected this option because it would result in much larger negative economic impacts while protecting essential fish habitat. Establishment of the Satellite HAPCs provides protection to important concentrations of *Oculina* coral without the larger economic impacts.

4.2.7.7 ACTION 4. No Action to Prohibit all Fishing within the Experimental Closed Area.

Biological Impacts

This option would not provide as much protection as the proposed Action 4 for *Oculina* coral which is easily damaged by bottom tending gear. Having less gear fishing within this area may provide greater protection to other species by not disrupting spawning and migration behavior.

Economic Impacts

The Council would be limited in the future in terms of promoting the long-term economic viability of the coral, coral reefs and live/hard bottom habitat. This could result in reduced net economic benefits to society in the long-term.

Social Impacts

Testimony during public hearings suggests that this area is an important fishing ground for regional recreational fishermen. It is especially important during fishing tournaments for coastal pelagics and to fishermen seeking highly migratory species. Although the Council considered the alternative action to enhance law enforcement in its efforts to monitor other fisheries prohibited from this area, it is likely that the negative social impacts from a closure outweigh the enhancement of law enforcement at this time. Coastal pelagic fishermen indicated that they use this area as an important fishing ground during tournaments and when fishing for dolphin. Fishermen from inland counties commented that they travel specifically to the Ft. Pierce area to fish and that closing an area of this magnitude would force them to fish elsewhere. Prior to public hearings, the Council was unaware of the amount of recreational fishing that took place in the Experimental Closed Area. Although there was little testimony from commercial fishermen, they may have also been impacted as Florida trip ticket information suggests they do fish in the general area. Taking no action will have positive social impacts in that it will allow recreational and commercial fishermen to continue to use established fishing patterns and an

important resource which may contribute more to the regional economy than was previously known.

Additional social impacts from this action are related to the Council's activity regarding marine reserves. The Council is presently studying marine reserves as an alternate management strategy. The action to prohibit all fishing would have been contradictory to the Council's present position that is to examine the efficacy of marine reserves as a management tool and develop criteria for their use. The no action alternative provides consistency with the Council's stated goals for the use and implementation of marine reserves.

Conclusion

Based on recommendations from the Habitat and Coral Advisory Panels and the Habitat Committee, the Council concluded additional regulations on gears other than those in the calico scallop fishery are not necessary to enforce the no fishing provision of the experimental closed area. A voluntary vessel monitoring system will be implemented on a portion of the rock shrimp vessels and 100% of the calico scallop vessels will be required to have a vessel monitoring system. These additional regulations, more public education, and more enforcement effort will adequately prevent fishing within the closed area.

Other Possible Options for Action 4:

Option 1. Prohibit all fishing within the experimental closed area.

Part of the Council's intent with this measure is to reduce any impacts on *Oculina* coral from use of any fishing gear within the experimental closed area.

Biological Impacts

To the extent fishing is reduced there will be corresponding reductions in impacts on *Oculina* coral.

Economic Impacts

Some fishing takes place presently in the experimental closed area. There is commercial fishing for coastal migratory pelagics and possibly spiny lobster by divers. There is also recreational fishing activity going on in this area. Prohibiting all fishing in the experimental closed area would reduce commercial exvessel value by up to $726,000 to coastal pelagics fishermen, and up to $18,000 to spiny lobster fishermen in the first year. Based on information received from Mr. Hogan, President, Fort Pierce Sportsfishing Association, annual revenue flow to the local economy could decrease by $5,000,000 if recreational fishermen cannot fish in this area. See discussion in Section 4.2.3.5, Action 3 (and alternatives), under economic impacts.

Social Impacts

The prohibition of all fishing in the Experimental Closed area may have important social impacts primarily on the recreational fishery. This area is presently closed to fishing for snapper grouper species, however, trolling for non snapper grouper species is allowed. During public hearings in Ft. Pierce testimony from recreational fishermen indicated that a closure of the Oculina Bank would have considerable impact on charter fishing operations and the private boat fishery. Apparently, this is a popular fishing area for mackerel, dolphin and many highly migratory species plus spiny lobster. There are several tournaments held in Ft. Pierce throughout the year and closing this area may impact tournament participation. This action can have unforeseen impacts such as a reduction in the number of fishermen that travel from as far as

Orlando to fish the waters off Ft. Pierce. Their fishing experience may be diminished if the Experimental Closed Area is off limits and which may persuade them to find another destination for their fishing endeavor. This would certainly have a negative impact on the Ft. Pierce economy, but would benefit the substitute destination. There was little testimony on the impacts to the commercial fishery, although it is assumed that there will be negative impacts to those individuals who troll in this area commercially. Another impact of closure would be what is called the "edge effect." This phenomenon is where fishing would take place on all sides of the closed area, or possibly more on those areas closer to shore. This may cause crowding and create future conflict. There would certainly be impacts to the community of Ft. Pierce from this action. Present data do not support community impact analysis. Future data collection at the community level would enhance this analysis.

Conclusion

Based on recommendations from the Habitat and Coral Advisory Panels and the Habitat Committee, the Council concluded additional regulations on gears other than those in the calico scallop fishery are not necessary to enforce the no fishing provision of the experimental closed area. A voluntary vessel monitoring system will be implemented on a portion of the rock shrimp vessels and 100% of the calico scallop vessels will be required to have a vessel monitoring system. These additional regulations, more public education, and more enforcement effort will adequately prevent fishing within the closed area. Therefore, this action was rejected.

4.2.8 Mechanism for Determination of Framework Adjustments/ Framework Procedure and Activities Authorized by the Secretary of Commerce.

Establish a procedure to allow for rapid modification to definitions of Essential Fish Habitat (EFH); establishment of new, or modification of existing, Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs); and establishment of new, or modification of existing, Coral-Habitat Areas of Particular Concern. This adjustment procedure will allow the Council to add or modify measures through a streamlined public review process. As such, measures that have been identified could be implemented or adjusted at any time during the year. The process is as follows:

1. The Council will call upon the Habitat and Environmental Protection Advisory Panel (Panel) for EFH-related actions and the Coral Advisory Panel for Coral-HAPC related actions. The Habitat and/or Coral Advisory Panel(s) will present a report of their assessment and recommendations to the Council.
2. The Council may take framework action one or more times during a year based on need. Such action(s) may come from the Panel report or the Council may take action based on issues/problems/information that surface separate from the Panel. The steps are as follows:

A. Habitat or Coral Advisory Panel Report— The Council will consider the report and recommendations of the Panel and hold public hearings at a time and place of the Council's choosing to discuss the Panel's report. The Council will consult the Advisory Panel(s) and the Scientific and Statistical Committee to review the Panel's report and provide advice prior to taking final action. After receiving public input, the Council will make findings on the need for changes.

B. Information separate from Panel report — The Council will consider information that surfaces separate from the Panel. Council staff will compile the information and analyze the

impacts of likely alternatives to address the particular situation. The Council staff report will be presented to the Council. A public hearing will be held at the time and place where the Council considers the Council staff report. The Council will consult the Advisory Panel(s) and the Scientific and Statistical Committee to review the staff report and provide advice prior to taking final action. After receiving public input, the Council will make findings on the need for changes.

3. If the Council determines that an addition or adjustment (e.g., in a species or species complex definition of EFH or EFH-HAPCs or a new EFH-HAPC is proposed for a species or species complex) to EFH, EFH-HAPCs, or Coral-HAPCs is necessary to meet the goals and objectives of the Habitat Plan, it will recommend, develop, and analyze appropriate action over the span of at least two Council meetings. The Council will provide the public with:

A. Advance notice of the availability of the recommendation.

B. The appropriate justifications, and biological, economic, and social analyses.

C. An opportunity to comment on the proposed adjustments prior to and at the second Council meeting.

4. After developing management actions and receiving public testimony, the Council will then submit the recommendation to the Regional Administrator. The Council's recommendation to the Regional Administrator must include supporting rationale, an analysis of impacts, and a recommendation to the Regional Administrator on whether to publish the management measure(s) as a final rule.

5. If the Council recommends that the management measures should be published as a final rule, the Council must consider at least the following factors and provide support and analysis for each factor considered:

A. Whether the availability of data on which the recommended management measures are based allows for adequate time to publish a proposed rule.

B. Whether regulations have to be in place for an entire harvest/fishing season.

C. Whether there has been adequate notice and opportunity for participation by the public and members of the affected industry in the development of the Council's recommended management measures.

D. Whether there is an immediate need to protect the resource.

E. Whether there will be a continuing evaluation of management measures adopted following their promulgation as a final rule.

6. If, after reviewing the Council's recommendation and supporting information based on the FMP and the administrative record:

A. The Regional Administrator concurs with the Council's recommended management measures and determines that the recommended management measures may be published as a final rule then the action will be published in the Federal Register as a final rule; or

B. The Regional Administrator concurs with the Council's recommendation and determines that the recommended measures should be published first as a proposed rule, the action will be published as a proposed rule in the Federal Register. After additional public comment, if the Regional Administrator concurs with the Council recommendation, the action will be published as a final rule in the Federal Register; or

C. The Regional Administrator does not concur, the Council will be notified, in writing, of the reason for non-concurrence and recommendations to address those concerns.

7. Appropriate adjustments that may be implemented by the Secretary by proposed and final rules in the Federal Register are:

A. Definition of or modification of a current definition of Essential Fish Habitat for a managed species or species complex.
B. Establishment of or modification of EFH-HAPCs for managed species or species complex.
C. Establishment of or modifications of Coral-HAPCs.

The procedure described above will provide for timely adjustments to definitions of Essential Fish Habitat (EFH); establishment of new, or modification of existing, Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs); and establishment of new, or modification of existing, Coral-Habitat Areas of Particular Concern. It is the Council's intent that definitions of EFH and the establishment of new or modification of existing EFH-HAPCs or Coral-HAPCs be periodically assessed. Reviews would occur as sufficient information becomes available such that the Panel, the species Advisory Panel, the Scientific and Statistical Committee, and the Council feel confident in the recommendations. Complete reviews will be conducted as needed. Council staff and NMFS will specify such reviews in the annual NMFS/Council planning process (called operations plans).

Biological Impacts

This procedure allows for rapid modification of a definition of EFH for a managed species or species complex or establishment of new or modification of existing EFH-HAPCs for a managed species or species complex. Providing a mechanism for such modification will allow the Council to better protect the biological integrity of the fishery resources.

Economic Impacts

Reviews and adjustments are described above. This action will require some expenditures of public funds for meetings and staff work. However, an estimate of these costs is not available at this time. Although specific actions may have some economic impacts on fishery participants, the consequences cannot be assessed until such time as the actions are implemented. In principle, this action should allow for additional flexibility in management. To the extent that flexibility is increased, positive net benefits to user groups can be expected at some future time.

Social Impacts

By specifying a mechanism for modifying a definition of EFH for a managed species or species complex or establishing new or modifying existing EFH-HAPCs for a managed species or species complex or Coral-HAPC s, there can be a more rapid response to changes in available information on EFH distribution, description, ecology or use by managed species or species complexes..

Conclusion

The Council concluded this procedure, which allows a more rapid response to changes in available information on EFH and coral distribution, description, ecology or use by managed species or species complexes, is necessary to allow the Council to better protect the biological integrity of fishery resources and the habitat they depend upon.

Rejected Options:

Rejected Option 1. Do not include a framework for future adjustments.

Biological Impacts

This option would not allow for rapid modification to definitions of EFH or establishment of new or modification of existing EFH-HAPCs. Not providing a mechanism for such modification would not allow the Council to protect the biological integrity of the fishery resources and the habitat they depend upon.

Economic Impacts

This option would not allow the Council to take timely action if and when needed.

Social Impacts

This option would not allow for timely and informed action by the Council due to the time required for an amendment to the plan to be implemented.

Conclusion

The Council rejected this option because a procedure which allows for rapid modification of to definitions of EFH or EFH-HAPCs is necessary to allow the Council to better protect the biological integrity of fishery resources and the habitat they depend upon. This procedure meets the Council's objective to provide a flexible system that minimizes regulatory delays while retaining substantial Council and public involvement in management decisions, and rapidly adapts to changes in new scientific information.

4.2.9 SAFMC Proposed Process for Reviewing and Commenting on Projects Affecting Essential Fish Habitat

The Council's current process for reviewing and commenting on projects is described in the Habitat Plan (Appendix N). The proposed process to meet requirements under the Magnuson-Stevens Act and Interim Final Rule Guidelines is contained in Appendix A of this comprehensive amendment. The public and reviewers were urged to comment on this process. The Council reviewed comments and finalized this process during the September 21-25, 1998 Council meeting. This Final Comprehensive Amendment contains the approved process.

4.3 Unavoidable Adverse Effects

The following summarizes the short-term losses which will be mitigated by long-term gains with the effective protection of essential fish habitat (see Table 1 and the discussion under each action item for more details):

Penaeid and Rock Shrimp

ACTION 1. Identify Essential Fish Habitat for Penaeid and Rock Shrimp: This action would protect habitat. There would be no impact on the penaeid and rock shrimp fisheries. However, future actions could have impacts on shrimp vessels or the industry in the long-term.

ACTION 2. Establish Habitat Areas of Particular Concern for Penaeid Shrimp: This action would protect habitat areas of particular concern. There would be no impact on the penaeid and rock shrimp fisheries. However, future actions could have impacts on shrimp vessels or the industry in the long-term.

ACTION 2. Establish Habitat Areas of Particular Concern for Penaeid Shrimp: This action would protect habitat areas of particular concern. There would be no impact on the penaeid and rock shrimp fisheries. However, future actions could have impacts on shrimp vessels or the industry in the long-term.

ACTION 3. Implement a Voluntary Vessel Monitoring System (VMS) as soon as possible in the Rock Shrimp Fishery: This system would likely have a cellular phone onboard the vessel for communication with the shore based facility. The cost per vessel is approximately $1,000 to $1,200 including the cellular phone.

Red Drum

ACTION 1. Identify Essential Fish Habitat for Red Drum: This action would protect habitat. There would be no impact on the red drum fishery. However, future actions could have impacts on the industry in the long-term.

ACTION 2. Establish Habitat Areas of Particular Concern for Red Drum: This action would protect habitat areas of particular concern. There would be no impact on the red drum fishery. However, future actions could have impacts on the industry in the long-term.

Snapper Grouper

ACTION 1. Identify Essential Fish Habitat for Snapper Grouper: This action would protect habitat. There would be no impact on the species in the snapper grouper management unit. However, future actions could have impacts on the fishery in the long-term.

ACTION 2. Establish Habitat Areas of Particular Concern for Snapper Grouper: This action would protect habitat areas of particular concern. There would be no impact on the snapper grouper fishery. However, future actions could have impacts on the industry in the long-term.

ACTION 3. No Action to Prohibit All Fishing in the Experimental Closed Area: There would be no impact.

Coastal Migratory Pelagics

ACTION 1. Identify Essential Fish Habitat for Coastal Migratory Pelagics: This action would protect habitat. There would be no impact on the coastal migratory pelagic fishery. However, future actions could have impacts on the fishery in the long-term.

ACTION 2. Establish Habitat Areas of Particular Concern for Coastal Migratory Pelagics: This action would protect habitat areas of particular concern. There would be no impact on the coastal migratory pelagic fishery. However, future actions could have impacts on the fishery in the long-term.

ACTION 3. No Action to Prohibit Fishing for Coastal Migratory Pelagics in the Experimental Closed Area: There would be no impact.

Golden Crab

ACTION 1. Identify Essential Fish Habitat for Golden Crab: This action would protect habitat. There would be no impact on the golden crab fishery. However, future actions could have impacts on the fishery in the long-term.

ACTION 2. No Action to Establish Habitat Areas of Particular Concern for Golden Crab in the South Atlantic EEZ: There would be no impact.

Spiny Lobster

ACTION 1. Identify Essential Fish Habitat for Spiny Lobster: This action would protect habitat. There would be no impact on the spiny lobster fishery. However, future actions could have impacts on the fishery in the long-term.

ACTION 2. Establish Habitat Areas of Particular Concern for Spiny Lobster: This action would protect habitat areas of particular concern. There would be no impact on the spiny lobster fishery. However, future actions could have impacts on the fishery in the long-term.

ACTION 3. No Action to Prohibit Fishing for Spiny Lobster in the Experimental Closed Area: There would be no impact.

Coral, Coral Reefs, and Live/Hard Bottom Habitat

ACTION 1. Identify Essential Fish Habitat for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region: This action would protect habitat. It will enable the Council to protect coral, coral reefs and live/hard bottom. However, future actions could have impacts on the fishery in the long-term.

ACTION 2. Establish Habitat Areas of Particular Concern for Coral, Coral Reefs, and Live/Hard Bottom Habitat: This action would protect habitat areas of particular concern. It will enable the Council to protect coral, coral reefs and live/hard bottom. However, future actions could have impacts on the fishery in the long-term.

ACTION 3A. Prohibit harvest of calico scallops in the area bounded to the west by 80° W. Longitude, to the north by 28° 30'N. Latitude, to the south by 27°30'N. Latitude, and to the east by the 100 fathom (600 feet) depth contour: This action should protect delicate corals and hard bottom. Assuming that all harvest from the statistical areas was from within the proposed closed area results in the conclusion that catches would be reduced by up to 1,267,139 pounds in the first year; reduction in exvessel value could be up to $904,613 in the first year. Based on input from the Calico Scallop Advisory Panel and other reasons stated in Action 3A the impacts will not be this large.

ACTION 3B. Establish the follwing two Satellite Oculina HAPCs: (1) Satellite Oculina HAPC #1 is bounded on the north by 28°30'N. Latitude, on the south by 28°29'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude, and (2) Satellite Oculina HAPC #2 is bounded on the north by 28°17'N. Latitude, on the south by 28°16'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude: This action should protect delicate coral and hard bottom. Based on input from the Calico Scallop Advisory Panel, revenue would be reduced by a minimal amount.

ACTION 4. No Action to Prohibit all fishing within the Experimental Closed Area: There would be no impact.

Mechanism for Determination of Framework Adjustment/Framework Procedure and Activities Authorized by the Secretary of Commerce: None.

4.4 Relationship of Short-Term and Long-Term Productivity

The measures proposed are necessary to protect essential fish habitats (EFH) and habitat areas of particular concerns (HAPCs). The proposed actions could result in less than the 69 percent reduction in exvessel value to calico scallop fishermen in the first year. The industry and the Calico Scallop Advisory Panel support this action which indicates their conclusion that they

can fish outside of the proposed closed areas. The Council weighed the likely short-term losses to fishermen against the long-term yields for the various fisheries and the need to protect ecosystems, and concluded the proposed actions would likely result in net benefit to society. Without such regulations, the long-term productivity of these fisheries and ecosystems in general would be jeopardized.

4.5 Irreversible and Irretrievable Commitments of Resources

There are no irreversible or irretrievable commitments of resources associated with the proposed actions. If the Council does not take action to regulate the impact of fishing activities on EFHs and HAPCs there will be reduction in yields and damage to essential bottom habitats.

4.6 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 fishery resource or any related stocks, including endangered and threatened species, such as turtles. In fact, the proposed measures will improve status of stocks and minimize habitat damage. See Table 1 for more information.

4.7 Public and Private Costs

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

Council costs of document preparation, meetings, scoping meetings, workshops, public hearings, and information dissemination	$495,000
NMFS administrative costs of document preparation, meetings and review	$?
NMFS law enforcement costs	$?
Total	$495,000+

4.8 Effects on Small Businesses: Initial Regulatory Flexibility Analysis

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

This proposed rule, if promulgated, will :

(i) Identify Essential Fish Habitat for Penaeid and Rock Shrimp.
(ii) Establish EFH-HAPCs for Penaeid Shrimp.
(iii) Establish a Voluntary Vessel Monitoring System (VMS) as soon as Possible in the Rock Shrimp Fishery.

(iv) Identify Essential Fish Habitat for Red Drum.
(v) Establish EFH-HAPCs for Red Drum.
(vi) Identify Essential Fish Habitat for Snapper Grouper.
(vii) Establish EFH-HAPCs for Snapper Grouper.
(viii) No Action to Prohibit All Fishing in the Experimental Closed Area.
(ix) Identify Essential Fish Habitat for Coastal Migratory Pelagics.
(x) Establish EFH-HAPCs for Coastal Migratory Pelagics.
(xi) No Action to Prohibit Fishing for Coastal Migratory Pelagics in the Experimental Closed Area.
(xii) Identify Essential Fish Habitat for Golden Crab.
(xiii) No Action to Establish EFH-HAPCs for Golden Crab.
(xiv) Identify Essential Fish Habitat for Spiny Lobster.
(xv) Establish EFH-HAPCs for Spiny Lobster.
(xvi) No Action to Prohibit Fishing for Spiny Lobster in the Experimental Closed Area.
(xvii) Identify Essential Fish Habitat for Coral, Coral Reefs, and Live/Hard Bottom Habitat.
(xviii) Establish EFH-HAPCs for Coral, Coral Reefs, and Live/Hard Bottom Habitat.
(xix) Expand the Oculina Bank Habitat Area of Particular Concern (HAPC) to an area bounded to the west by 80°W longitude, to the north by 28°30' N latitude, to the south by 27°30' N latitude, and to the east by the 100 fathom (600 feet) depth contour.
(xx) Establish the following two Satellite Oculina HAPCs: (1) Satellite Oculina HAPC #1 is bounded on the north by 28°30'N. Latitude, on the south by 28°29'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude, and (2) Satellite Oculina HAPC #2 is bounded on the north by 28°17'N. Latitude, on the south by 28°16'N. Latitude, on the east by 80°W. Longitude, and on the west by 80°3'W. Longitude: This action should protect delicate coral and hard bottom. Based on input from the Calico Scallop Advisory Panel, revenue would be reduced by a minimal amount.
(xxi) No Action to Prohibit all Fishing in the Experimental Closed Area.
(xxii) Establish a Mechanism for Determination of Framework Adjustment/Framework Procedure and Activities Authorized by the Secretary of Commerce.

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

The regulations are likely to result in a change in annual gross revenues by more than 5 percent. The discussions under economic impacts in Section 4 details the effects on fishing entities for each proposed action to the extent possible. Based on input from the Calico Scallop Advisory Panel, the regulations are not likely to result in a change in annual gross revenues by more than 5 percent. The decrease in exvessel value resulting from proposed Actions 3A & 3B is anticipated to be much below the estimated upper limit of $904,613 in the first year. While this represents up to a 69 percent reduction in the exvessel value for the fishery reported in 1997 it is clear that the impacts will be minimal based on input from the affected individual businesses.

Annual compliance costs (annualized capital, operating, reporting, etc.) increase total costs of production for small entities by more than 5 percent. Voluntary use of an approved vessel monitoring system could increase cost to the individual rock shrimp fishing entities, in the first year, by between $1,915 and $6,676. The former cost increase is more likely since NMFS is recommending the first level of VMS. This represents less than 2 percent of the industry's production costs.

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. All the firms expected to be impacted by the rule are small entities and hence there is no differential impact.

Capital costs of compliance represents a significant portion of capital available to small entities considering internal cash flow and external financing capabilities. Voluntary use of an approved vessel monitoring system could require investment in capital of between $1,900 and $6,700 per vessel in the first year. This will depend on the system to be utilized. Three systems are described in Section 4. This level of capital investment is not expected to represent a significant portion of capital available to calico scallop fishing entities.

The requirements of the regulation are likely to result in a number of the small entities affected being forced to cease business operations. This number is not precisely defined by SBA but a "rule of thumb" to trigger this criterion would be two percent of the small entities affected. The analyses under economic impacts for each proposed action indicate that proposed Actions 3A & 3B will not have a significant impact on the exvessel revenues of calico scallop vessels. However it cannot be determined whether any entity will be forced out of business although input from the Calico Scallop Advisory Panel would suggest that no entities would be forced out of business.

Considering all the criteria discussed above, the conclusion is that small businesses will not be significantly affected by the proposed rule. Hence, the determination is made the proposed rule will not have a significant impact on a substantial number of small business entities and an Initial Regulatory Flexibility Analysis (IRFA) is not required.

The full details of the economic analyses conducted for the proposed rule are contained in the RIR under the heading "Economic Impacts" in Section 4.

Description of the reasons why action by the agency is being considered: The Magnuson- Stevens Fishery Conservation and Management Act provides for the identification of all essential fish habitats and for taking steps to minimize any fishing related damage to these habitats.

Statement of the objectives of, and legal basis for, the proposed rule: See Section 1.2 of this Comprehensive Habitat Amendment. The Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265) as amended through October 11, 1996 provides the legal basis for the rule.

Description and estimate of the number of small entities to which the proposed rule will apply: The proposed rule will apply to all of the entities that are fishing legally in the fisheries affected by these actions. In 1997, federal fishing permits were issued to 1,416 vessels in the mackerel fishery; 1,255 vessels in the snapper grouper fishery; 257 vessels in the spiny lobster fishery; 152 vessels in the rock shrimp fishery; and 702 vessels in charter fishing (Vondruska, March 5, 1998).

Description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records: The proposed rule will not require any additional reporting or recordkeeping on the part of commercial and recreational entities. Compliance will be monitored through systems established by the National Marine Fisheries Service and the U.S. Coast Guard. The professional skills necessary to meet these requirements will not change relative to the level that all the fishermen are familiar with and have previously used.

Identification of all relevant Federal rules which may duplicate, overlap or conflict with the proposed rule: No duplicative, overlapping or conflicting Federal rules have been identified.

Description of significant alternatives to the proposed rule and discussion of how the alternatives attempt to minimize economic impacts on small entities: In Section 4, each proposed action includes a number of options under the heading: "Other Possible Options". Each of these options include an economic impact assessment. Refer to Section 4.2: "Management Options" for details of the economic impact assessment on small entities for each option. The status quo or "no action" option was also considered for each proposed action. Relative to the proposed actions, the other possible options would result in less net benefits from protecting essential fish habitats in the long-term.

5.0 THREATS TO ESSENTIAL FISH HABITAT

5.1 Adverse Impacts of Non-Fishing Activities on Essential Fish Habitat

See Section 4.1 of the Habitat Plan.

5.2 Adverse Impacts of Fishing Activities on Essential Fish Habitat

See Section 4.2 of the Habitat Plan.

5.3 Cumulative Impacts

See Section 4.3 of the Habitat Plan.

6.0 ESSENTIAL FISH HABITAT PRESERVATION RECOMMENDATIONS

The following information is taken directly from the Habitat Plan:

"**5.0 ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS**

Established policies and procedures of the SAFMC and the NMFS (Appendix N) provide the framework for conserving and enhancing essential fish habitat. Integral components of this framework include adverse impact avoidance and minimization; provision of compensatory mitigation whenever the impact is significant and unavoidable; and incorporation of enhancement as a fundamental component of fishery resource recovery. New and expanded responsibilities contained in the MSFCMA will be met through appropriate application of these policies and principles. In assessing the potential impacts of proposed projects, the SAFMC, the NMFS, and USFWS are guided by the following general considerations:

- The extent to which the activity would directly and indirectly affect the occurrence, abundance, health, and continued existence of fishery resources;

- The extent to which the goal of "no net-loss of wetlands" would be attained;

- The extent to which an unacceptable precedent may be established or potential for a significant cumulative impact exists;

- The extent to which adverse impacts can be avoided through project modification or other safeguards;

- The availability of alternative sites and actions that would reduce project impacts;

- The extent to which the activity is water dependent if loss or degradation of EFH is involved; and

- The extent to which mitigation may be used to offset unavoidable loss of aquatic habitat functions and values.

5.1 SAFMC Essential Fish Habitat and Environmental Protection Policy

In recognizing that managed 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 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 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.

5.2 SAFMC Essential Fish Habitat Policy Statements

5.2.1 SAFMC Policy Statements on Essential Fish Habitat Types

5.2.1.1 SAFMC Policy for Protection and Enhancement of Marine Submerged Aquatic Vegetation (SAV) Habitat.

The South Atlantic Fishery Management Council (SAFMC) and the Habitat and Environmental Protection Advisory Panel has considered the issue of the decline of Marine Submerged Aquatic Vegetation SAV (or seagrass) habitat in Florida and North Carolina as it relates to Council habitat policy. Subsequently, the Council's Habitat Committee requested that the Habitat Advisory Panel develop the following policy statement to support Council efforts to protect and enhance habitat for managed species.

Description and Function:

In the South Atlantic region, SAV is found primarily in the states of Florida and North Carolina where environmental conditions are ideal for the propagation of seagrasses. The distribution of SAV habitat is indicative of its importance to economically important fisheries: in North Carolina, total SAV coverage is estimated to be 200,000 acres; in Florida, the total SAV coverage is estimated to be 2.9 million acres. SAV serves several valuable ecological functions in the marine systems where it occurs. Food and shelter afforded by SAV result in a complex and dynamic system that provides a primary nursery habitat for various organisms that is important both to the overall system ecology as well as to commercial and recreationally important fisheries. SAV habitat is valuable both ecologically as well as economically; as feeding, breeding, and nursery ground for numerous estuarine species, SAV provides for rich ecosystem diversity. Further, a number of fish and shellfish species, around which is built several vigorous commercial and recreational fisheries, rely on SAV habitat for a least a portion of their life cycles.

Status:

SAV habitat is currently threatened by the cumulative effects of overpopulation and consequent commercial development and recreation in the coastal zone. The major anthropogenic threats to SAV habitat include:

(1) mechanical damage due to:
- (a) propeller damage from boats,
- (b) bottom-disturbing fish harvesting techniques,
- (c) dredging and filling;

(2) biological degradation due to:
- (a) water quality deterioration by modification of temperature, salinity, and light attenuation regimes;
- (b) addition of organic and inorganic chemicals.

SAV habitat in both Florida and North Carolina has experienced declines from both natural and anthropogenic causes. However, conservation measures taken by state and federal agencies have produced positive results. The National Marine Fisheries Service has produced maps of SAV

habitat in the Albemarle-Pamlico Sound region of North Carolina to help stem the loss of this critical habitat. The threats to this habitat and the potential for successful conservation measures highlight the need to address the decline of SAV. Therefore, the South Atlantic Council recommends immediate and direct action be taken to stem the loss of this essential habitat. For more detailed discussion, please see Appendix 2.

Management:

Conservation of existing SAV habitat is critical to the maintenance of the living resources that depend on these systems. A number of federal and state laws and regulations apply to modifications, either direct or indirect, to SAV habitat. However, to date the state and federal regulatory process has accomplished little to slow the decline of SAV habitat. Furthermore, mitigative measures to restore or enhance impacted SAV have met with little success. These habitats cannot be readily restored; the South Atlantic Council is not aware of any seagrass restoration project that has ever prevented a net loss of SAV habitat. It has been difficult to implement effective resource management initiatives to preserve existing seagrass habitat resources due to the lack of adequate documentation and specific cause/effect relationships. (for more detailed discussion, please see Appendix 3)

Because restoration/enhancement efforts have not met with success, the South Atlantic Council considers it imperative to take a directed and purposeful action to protect remaining SAV habitat. The South Atlantic Council strongly recommends that a comprehensive strategy to address the disturbing decline in SAV habitat in the South Atlantic region be developed. Furthermore, as a stepping stone to such a long-term protection strategy, the South Atlantic Council recommends that a reliable status and trend survey be adopted to verify the scale of local declines of SAV.

The South Atlantic Council will address the decline of SAV, and consider establishing specific plans for revitalizing the SAV resources of the South Atlantic region. This may be achieved by the following integrated triad of efforts:

Planning:

- The Council promotes regional planning which treats SAV as a integral part of an ecological system.

- The Council supports comprehensive planning initiatives as well as interagency coordination and planning on SAV matters.

- The Council recommends that the Habitat Advisory Panel members actively seek to involve the Council in the review of projects which will impact, either directly or indirectly, SAV habitat resources.

Monitoring and Research:

- Periodic surveys of SAV in the region are required to determine the progress toward the goal of a net resource gain.

- The Council supports efforts to
  (1) standardize mapping protocols,

(2) develop a Geographic Information System databases for essential habitat including seagrass, and
(3) research and document causes and effects of SAV decline including the cumulative impacts of shoreline development.

Education and Enforcement:

The Council supports education programs designed to heighten the public's awareness of the importance of SAV. An informed public will provide a firm foundation of support for protection and restoration efforts.

Existing regulations and enforcement need to be reviewed for their effectiveness.

Coordination with state resource and regulatory agencies should be supported to assure that existing regulations are being enforced.

SAFMC SAV Policy Statement- Appendix 1

DESCRIPTION AND FUNCTION

Worldwide, Submerged Aquatic Vegetation (SAV) constitutes one of the most conspicuous and common shallow-water habitat types. These angiosperms have successfully colonized standing and flowing fresh, brackish, and marine waters in all climatic zones, and most are rooted in the sediment. Marine SAV beds occur in the low intertidal and subtidal zones and may exhibit a wide range of habitat forms, from extensive collections of isolated patches to unbroken continuous beds. The bed is defined by the presence of either aboveground vegetation, its associated root and rhizome system (with living meristem), or the presence of a seed bank in the sediments, as well as the sediment upon which the plant grows or in which the seed back resides. In the case of patch beds, the unvegetated sediment among the patches is considered seagrass habitat as well.

There are seven species of seagrass in Florida's shallow coastal areas: turtle grass (*Thalassia testudium*); manatee grass (*Syringodium filiforme*); shoal grass (*Halodule wrightii*); star grass (*Halophila engelmanni*); paddle grass (*Halophila decipiens*); and Johnson's seagrass (*Halophila johnsonii*) (See distribution maps in Appendix 4). Recently, *H. johnsonii* has been proposed for listing by the National Marine Fisheries Service as an endangered plant species. Areas of seagrass concentration along Florida's east coast are Mosquito Lagoon, Banana River, Indian River Lagoon, Lake Worth and Biscayne Bay. Florida Bay, located between the Florida Keys and the mainland, also has an abundance of seagrasses, but is currently experiencing an unprecedented decline in SAV distribution.

The three dominant species found in North Carolina are shoalgrass (*Halodule wrightii*), eelgrass (*Zostera marina*), and widgeongrass (*Ruppia maritima*). Shoalgrass, a subtropical species has its northernmost distribution at Oregon Inlet, North Carolina. Eelgrass, a temperate species, has its southernmost distribution in North Carolina. Areas of seagrass concentration in North Carolina are southern and eastern Pamlico Sound, Core Sound, Back Sound, Bogue Sound and the numerous small southern sounds located behind the beaches in Onslow, Pender, Brunswick, and New Hanover Counties (See distribution maps in Appendix 4).

Seagrasses serve several valuable ecological functions in the marine estuarine systems where they occur. Food and shelter afforded by the SAV result in a complex and dynamic system that provides a primary nursery habitat for various organisms that are important both ecologically and to commercial and recreational fisheries. Organic matter produced by these seagrasses is transferred to secondary consumers through three pathways: herbivores that consume living plant matter; detritivores that exploit dead matter; and microorganisms that use seagrass-derived particulate and dissolved organic compounds. The living leaves of these submerged plants also provide a substrate for the attachment of detritus and epiphytic organisms, including bacteria, fungi, meiofauna, micro- and marcroalgae, macroinvertebrates. Within the seagrass system, phytoplankton also are present in the water column, and macroalgae and microalgae are associated with the sediment. No less important is the protection afforded by the variety of living spaces in the tangled leaf canopy of the grass bed itself. In addition to

biological benefits, the SAVs also cycle nutrients and heavy metals in the water and sediments, and dissipate wave energy (which reduces shoreline erosion and sediment resuspension).

There are several types of association fish may have with the SAVs. Resident species typically breed and carry out much of their life history within the meadow (e.g., gobiids and syngnathids). Seasonal residents typically breed elsewhere, but predictably utilize the SAV during a portion of their life cycle, most often as a juvenile nursery ground (e.g., sparids and lutjanids). Transient species can be categorized as those that feed or otherwise utilize the SAV only for a portion of their daily activity, but in a systematic or predictable manner (e.g., haemulids).

In Florida many economically important species utilize SAV beds as nursery and/or spawning habitat. Among these are spotted seatrout (*Cynoscion nebulosus*), grunts (Haemulids), snook (*Centropomus sp.*), bonefish (*Albulu vulpes*), tarpon (*Megalops atlanticus*) and several species of snapper (Lutianids) and grouper (Serranids). Densities of invertebrate organisms are many times greater in seagrass beds than in bare sand habitat. Penaeid shrimp, spiny lobster (*Panulirus argus*), and bay scallops (*Argopecten irradians*) are also dependent on seagrass beds.

In North Carolina 40 species of fish and invertebrates have been captured on seagrass beds. Larval and juvenile fish and shellfish including gray trout (*Cynoscion regalis*), red drum (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), mullet (*Mugil cephalus*), spot (*Leiostomus xanthurus*), pinfish (*Orthopristis chrysoptera*), gag (*Mycteroperca microlepis*), white grunt (*Haemulon plumieri*), silver perch (*Bairdiella chrysoura*), summer flounder (*Paralichthys dentatus*), southern flounder (*P. lethostigma*), blue crabs (*Callinectes sapidus*), hard shell clams (*Mercenaria mercenaria*), and bay scallops (*Argopecten irradains*) utilize the SAV beds as nursery areas. They are the sole nursery grounds for bay scallops in North Carolina. SAV meadows are also frequented by adult spot, spotted seatrout, bluefish (*Pomatomus saltatrix*), menhaden (*Brevortia tyrannus*), summer and southern flounder, pink and brown shrimp, hard shell clams, and blue crabs and offshore reef fishes including black sea bass (*Centropristis striata*), gag (*Mycteroperca microlepis*), gray snapper (*Lutianus griseus*), lane snapper (*Lutjanus synagris*), mutton snapper (*Lutianus analis*), and spottail pinfish (*Diplodus holbrooki*). Ospreys, egrets, herons, gulls and terns feed on fauna in SAV beds, while swans, geese, and ducks feed directly on the grass itself. Green sea turtles (*Chelonia mydas*) also utilize seagrass beds, and juveniles may feed directly on the seagrasses.

SAFMC SAV Policy Statement- Appendix 2

STATUS

The SAV habitat represents a valuable natural resource which is now threatened by overpopulation in coastal areas. The major anthropogenic activities that impact seagrass habitats are: 1) dredging and filling, 2) certain fish harvesting techniques and recreational vehicles, 3) degradation of water quality by modification of normal temperature, salinity, and light regimes, and 4) addition of organic and inorganic chemicals. Although not caused by man, disease ("wasting disease" of eelgrass) has historically been a factor. Direct causes such as dredging and filling, impacts of bottom disturbing fishing gear, and impacts of propellers and boat wakes are easily observed, and can be controlled by wise management of our seagrass resources (See Appendix 3). Indirect losses are more subtle and difficult to assess. These losses center around changes in light availability to the plants by changes in turbidity and water color. Other indirect causes of seagrass loss may be ascribed to changing hydrology which may in turn affect salinity levels and circulation. Reduction in flushing can cause an increase in salinity and the ambient temperature of a water body, stressing the plants. Increase in flushing can mean decreased salinity and increased turbidity and near-bottom mechanical stresses which damage or uproot plants.

Increased turbidity and decreasing water transparency are most often recognized as the cause of decreased seagrass growth and altered distribution of the habitats. Turbidity may result from upland runoff, either as suspended sediment or dissolved nutrients. Reduced transparency due to color is affected by freshwater discharge. The introduction of additional nutrients from terrigenous sources often leads to plankton blooms and increased epiphytization of the plants, further reducing light to the plants. Groundwater enriched by septic systems also may infiltrate the sediments, water column, and near-shore seagrass beds with the same effect. Lowered dissolved oxygen is detrimental to invertebrate and vertebrate grazers. Loss of these grazers results in overgrowth by epiphytes.

Large areas of Florida where seagrasses were abundant have now lost these beds from both natural and man-induced causes. (This is not well documented on a large scale except in the case of Tampa Bay). One of these depleted areas is Lake Worth in Palm Beach County. Here, dredge and fill activities, sewage disposal and stormwater runoff have almost eliminated this resource. North Biscayne Bay lost most of its seagrasses from urbanization. The Indian River Lagoon has lost many seagrass beds from stormwater runoff has caused a decrease in water transparency and reduced light penetration. Many seagrass beds in Florida have been scarred from boat propellers disrupting the physical integrity of the beds. Vessel registrations, both commercial and recreational, have tripled from 1970-71 (235, 293) to 1992-93 (715,516). More people engaged in marine activities having an effect on the limited resources of fisheries and benthic communities, Florida's assessment of dredging/propeller scar damage indicates that Dade, Lee, Monroe, and Pinellas Counties have the most heavily damaged seagrass beds. Now Florida Bay, which is rather remote from human population concentrations, is experiencing a die-off of seagrasses, the cause of which has not yet been isolated. Cascading effects of die-offs cause a release of nutrients resulting in algal blooms which, in turn, adversely affect other seagrass areas, and appear to be preventing recolonization and natural succession in the bay. It appears that Monroe County's commercial fish and shellfish resources, with a dockside landing value of $50 million per year, is in serious jeopardy.

In North Carolina total SAV coverage is estimated a 200,000 acres. Compared to the state's brackish water SAV community, the marine SAVs appear relatively stable. The drought and increased water clarity during the summer of 1986 apparently caused an increase in SAV abundance in southeastern Pamlico Sound and a concomitant increase in bay scallop densities. Evidence is emerging, however, that characteristics of "wasting disease" are showing up in some of the eelgrass populations in southern Core Sound, Back Sound, and Bogue Sound. The number of permits requested for development activities that potentially impact SAV populations is increasing. The combined impacts of a number of small, seemingly isolated activities are cumulative and can lead to the collapse of large seagrass biosystems. Also increasing is evidence of the secondary removal of seagrasses. Clam-kicking (the harvest of hard clams utilizing powerful propeller wash to dislodge the clams from the sediment) is contentious issue within the state of North Carolina. The scientific community is convinced that mechanical harvesting of clams damages SAV communities. The scallop fishery also could be harmed by harvest-related damage to eelgrass meadows.

SAFMC SAV Policy Statement- Appendix 3

MANAGEMENT

Conservation of existing SAV habitat is critical to the maintenance of the living resources that depend on these systems. A number of federal and state laws require permits for modification and/or development in SAV. These include Section 10 of the Rivers and Harbors Act (1899), Section 404 of the Clean Water Act (1977), and the states' coastal area management programs. Section 404 prohibits deposition of dredged or fill material in waters of the United States without a permit from the U.S. Army Corps of Engineers. The Fish and Wildlife Coordination Act gives federal and state resource agencies the authority to review and comment on permits, while the National Environmental Policy Act requires the development and review of Environmental Impact Statements. The Magnuson Fisheries Conservation and Management Act has been amended to require that each fishery management plan include a habitat section. The Council's habitat subcommittee may comment on permit requests submitted to the Corps of Engineers when the proposed activity relates to habitat essential to managed species.

State and federal regulatory processes have accomplished little to slow the decline of SAV habitat. Many of the impacts cannot be easily controlled by the regulations as enforced. For example, water quality standards are written so as to allow a specified deviation from background concentration, in this manner standards allow a certain amount of degradation. An example of this is Florida's class III water transparency standard, which defines the compensation depth to be where 1% of the incident light remains. The compensation depth for seagrass is in excess of 10% and for some species is between 15 and 20%. The standard allows a deviation of 10% in the compensation depth which translates into 0.9% incident light or an order of magnitude less than what the plants require.

Mitigative measures to restore or enhance impacted areas have met with little success. SAV habitats cannot be readily restored; in fact, the South Atlantic Council is not aware of any seagrass restoration project that has ever avoided a net loss of seagrass habitat. It has been difficult to implement effective resource management initiatives to preserve seagrass habitat due to the lack of documentation on specific cause/effect relationships. Even though studies have identified certain cause/effect relationships in the destruction of these areas, lack of long-term, ecosystem-scale studies precludes an accurate scientific evaluation of the long-term deterioration of seagrasses. Some of the approaches to controlling propeller scar damage to seagrass beds include: education, improved channel marking restricted access zones, (complete closure to combustion engines, pole or troll areas), and improved enforcement. The South Atlantic Council sees the need for monitoring of seagrass restoration and mitigation not only to determine success from plant standpoint but also for recovery of faunal populations and functional attributes of the essential habitat type. The South Atlantic Council also encourages long-term trend analysis monitoring of distribution and abundance using appropriate protocols and Geographic Information System approaches.

SAFMC SAV Policy Statement- Appendix 4
(SAV Distribution Maps in SAFMC 1995 and Revised in Appendix C)

5.2.2 SAFMC Policy Statements on Activities Affecting Habitat

5.2.2.1 SAFMC Policy Statement Concerning Dredging and Dredge Material Disposal Activities

5.2.2.1.1 Ocean Dredged Material Disposal Sites (ODMDS) and SAFMC Policies

The shortage of adequate upland disposal sites for dredged materials has forced dredging operations to look offshore for sites where dredged materials may be disposed. These Ocean Dredged Material Disposal Sites (ODMDSs) have been designated by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE) as suitable sites for disposal of dredged materials associated with berthing and navigation channel maintenance activities. The South Atlantic Fishery Management Council (SAFMC; the Council) is moving to establish its presence in regulating disposal activities at these ODMDSs. Pursuant to the Magnuson Fishery Conservation and Management Act of 1976 (the Magnuson Act), the regional fishery management Councils are charged with management of living marine resources and their habitat within the 200 mile Exclusive Economic Zone (EEZ) of the United States. Insofar as dredging and disposal activities at the various ODMDSs can impact fishery resources or essential habitat under Council jurisdiction, the following policies address the Council's role in the designation, operation, maintenance, and enforcement of activities in the ODMDSs:

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

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

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

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

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

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

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

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

acknowledged and the feasibility of their using the ODMDSs site should be assessed in the management plan.

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

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

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

5.2.2.1.2 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 are determined, the Council recommends that disposal activities should be confined to approved ODMDSs. Further, new offshore and near shore underwater berm creation activities should be reviewed under the most rigorous criteria, on a case-by-case basis.

5.2.2.1.3 Maintenance Dredging and Sand Mining for Beach Renourishment

The Council recognizes that construction and maintenance dredging of the seaward portions of entrance channels and dredging borrow areas for beach re-nourishment occur in the

EEZ. These activities should be done in an appropriate manner in accordance with the policies adopted by the Council.

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

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

5.2.2.1.4 Open Water Disposal

The SAFMC is opposed to the open water disposal of dredged material into aquatic systems which may adversely impact habitat that fisheries under Council jurisdiction are dependent upon. The Council urges state and federal agencies, when reviewing permits considering open water disposal, to identify the direct and indirect impacts such projects could have on fisheries habitat.

The SAFMC concludes that the conversion of one naturally functioning aquatic system at the expense of creating another (marsh creation through open water disposal) must be justified given best available information.

5.2.2.2 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 Council's objection to the proposed exploration activities is based on the potential degradation or loss of extensive live bottom and other habitat essential to fisheries under Council jurisdiction.

The SAFMC also supported North Carolina's determination that the plans of exploration filed with MMS by Mobil Exploration and Producing North America, Inc. for Lease OCS Manteo Unit are not consistent with North Carolina's Coastal Zone Management program.

The Council has expressed concern to the Outer Continental Shelf Leasing and Development Task Force about the proposed area and recommends that no further exploration or production activity be allowed in the areas subject to Presidential Task Force Review (the section of Sale 116 south of 26° N latitude).

The SAFMC recommends the following to the MMS when considering proposals for oil and gas activities for previously leased areas under Council jurisdiction:

1) That oil or gas drilling for exploration or development on or closely associated with live bottom habitat, or other special biological resources essential to commercial and recreational fisheries under Council jurisdiction, be prohibited.
2) That all facilities associated with oil and gas exploration, development, and transportation be designed to avoid impacts on coastal wetlands and sand sharing systems.
3) That adequate spill containment and cleanup equipment be maintained for all development and transportation facilities and, that the equipment be available on site within the trajectory time to land, and have industry post a bond to assure labor or other needed reserves.
4) That exploration and development activities should be scheduled to avoid northern right whales in coastal waters off Georgia and Florida as well as migrations of that species and other marine mammals off South Atlantic states.
5) That the EIS for Lease Sale 56 be updated to address impacts from activities related to specifically natural gas production, safety precautions which must be developed in the event of a discovery of a "sour gas" or hydrogen sulfide reserve, the potential for southerly transport of hydrocarbons to near shore and inshore estuarine habitats resulting from the cross-shelf transport by Gulf Stream spin-off eddies, the development of contingency plans to be implemented if problems arise due to the very dynamic oceanographic conditions and the extremely rugged bottom, and the need for and availability of onshore support facilities in coastal North and South Carolina, and an analysis of existing facilities and community services in light of existing major coastal developments.

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

1) Identification of the on-site fisheries resources, including both pelagic and benthic communities, that inhabit, spawn, or migrate through the lease sites with special focus on those specific lease blocks where industry has expressed specific interest in the pre-lease phases of the leasing process. Particular attention should be given to critical life history stages. Eggs and larvae are most sensitive to oil spills, and seismic exploration has been documented to cause mortality of eggs and larvae in close proximity.
2) Identification of on-site species designated as endangered, threatened, or of special concern, such as shortnose sturgeon, striped bass, blueback herring, American shad, sea turtles, marine mammals, pelagic birds, and all species regulated under federal fishery management plans.
3) Determination of impacts of all exploratory and development activities on the fisheries resources prior to MMS approval of any applications for permits to drill in the Exploratory Unit area, including effects of seismic survey signals on fish behavior, eggs and larvae; temporary preclusion from fishing grounds by exploratory drilling; and permanent preclusion from fishing grounds by production and transportation.
4) Identification of commercial and recreational fishing activities in the vicinity of the lease or Exploratory Unit area, their season of occurrence and intensity.
5) Determination of the physical oceanography of the area through field studies by MMS or the applicant, including on-site direction and velocity of currents and tides, sea states, temperature, salinity, water quality, wind storms frequencies, and intensities and icing conditions. Such studies must be required prior to approval of any exploration plan submitted in order to have an adequate informational database upon which to base subsequent decision making on-site specific proposed activities.

6) Description of required existing and planned monitoring activities intended to measure environmental conditions, and provide data and information on the impacts of exploration activities in the lease area or the Exploratory Unit area.
7) Identification of the quantity, composition, and method of disposal of solid and liquid wastes and pollutants likely to be generated by offshore, onshore, and transportation operations associated with oil and gas exploration development and transportation.
8) Development of an oil spill contingency plan which includes oil spill trajectory analyses specific to the area of operations, dispersant-use plan including a summary of toxicity data for each dispersant, identification of response equipment and strategies, establishment of procedures for early detection and timely notification of an oil spill including a current list of persons and regulatory agencies to be notified when an oil spill is discovered, and well defined and specific actions to be taken after discovery of an oil spill.
9) Studies should include detailing seasonal surface currents and likely spill trajectories.
10) Mapping of environmentally sensitive areas (e.g., spawning aggregations of snappers and groupers); coral resources and other significant benthic habitats (e.g., tilefish mudflats) along the edge of the continental shelf (including the upper slope); the calico scallop, royal red shrimp, and other productive benthic fishing grounds; other special biological resources; and northern right whale calving grounds and migratory routes, and subsequent deletion from inclusion in the respective lease block(s).
11) Planning for oil and gas product transport should be done to determine methods of transport, pipeline corridors, and onshore facilities. Siting and design of these facilities as well as onshore receiving, holding, and transport facilities could have impacts on wetlands and endangered species habitats if they are not properly located.
12) Develop understanding of community dynamics, pathways, and flows of energy to ascertain accumulation of toxins and impacts on community by first order toxicity.
13) Determine shelf-edge down-slope dynamics and resource assessments to determine fates of contaminants due to the critical nature of canyons and steep relief to important fisheries (e.g., swordfish, billfish, and tuna).
14) Discussion of the potential adverse impacts upon fisheries resources of the discharges of all drill cuttings that may result from activities in, and all drilling muds that may be approved for use in the lease area or the Exploration Unit area including: physical and chemical effects upon pelagic and benthic species and communities including their spawning behaviors and effects on eggs and larval stages; effects upon sight feeding species of fish; and analysis of methods and assumptions underlying the model used to predict the dispersion and discharged muds and cuttings from exploration activities.
15) Discussion of secondary impacts affecting fishery resources associated with on-shore oil and gas related development such as storage and processing facilities, dredging and dredged material disposal, roads and rail lines, fuel and electrical transmission line routes, waste disposal, and others.

The following section addresses the recommendations, concerns and issues expressed by the South Atlantic Council (Source: Memorandum to Regional Director, U.S. Fish and Wildlife Service, Atlanta, Georgia from Regional Director, Gulf of Mexico OCS Region dated October 27, 1995):

"The MMS, North Carolina, and Mobil entered into an innovative Memorandum of Understanding on July 12, 1990, in which the MMS agreed to prepare an Environmental Report (ER) on proposed drilling offshore North Carolina. The scope of the ER prepared by the MMS was more comprehensive than and EIS would be. The normal scoping process used in

preparation of a NEPA-type document would not only "identify significant environmental issues deserving of study" but also "deemphasize insignificant issues, narrowing the scope" (40 CFR 1500.4) by scoping out issues not ripe for decisions.

Of particular interest to North Carolina are not the transient effects of exploration, but rather the downstream and potentially broader, long-term effects of production and development. The potential effects associated with production and development would normally be "scoped out" of the (EIS-type) document and would be the subject of extensive NEPA analysis only after the exploration phase proves successful, and the submittal of a full-scale production and development program has been received for review and analysis. The ER addressed three alternatives: the proposed Mobil plan to drill a single exploratory well, the no-action alternative; and the alternative that the MMS approve the Mobil plan with specific restrictions (monitoring programs and restrictions on discharges). The ER also analyzes possible future activities, such as development and production, and the long-term environmental and socioeconomic effects associated with such activities. The MMS assured North Carolina that all of the State's comments and concerns would be addressed in the Final ER (MMS, 1990).

The MMS also funded a Literature Synthesis study (USDOI MMS, 1993a) and a Physical Oceanography study (USDOI MMS, 1994), both recommended by the Physical Oceanography Panel and the Environmental Sciences Review Panel (ESRP). Mobil also submitted a draft report to the MMS titled, Characterization of Currents at Manteo Block 467 off Cape Hatteras, North Carolina. The MMS also had a Cooperative Agreement with the Virginia Institute of Marine Science to fund a study titled, Seafloor Survey in the Vicinity of the Manteo Prospect Offshore North Carolina (USDOI MMS, 1993b). The MMS had a Cooperative Agreement with East Carolina University to conduct a study titled, Coastal North Carolina Socioeconomic Study (USDOI MMS, 1993c). The above-mentioned studies were responsive to the ESRP's recommendations as well as those of the SAFMC and the State of North Carolina.

Citations:

USDOI, MMS. 1990. Atlantic Outer Continental Shelf, Final Environmental Report on Proposed Exploratory Drilling Offshore North Carolina, Vols. I-III.

USDOI, MMS. 1993a. North Carolina Physical Oceanography Literature Study. Contract No. 14-35- 0001-30594.

USDOI, MMS. 1993b. Benthic Study of the Continental Slope Off Cape Hatteras, North Carolina. Vols. I-III. MMS 93-0014, -0015, -0016.

USDOI, MMS. 1993c. Coastal North Carolina Socioeconomic Study. Vols. I-V. MMS 93-0052, -0053, -0054, -0055, and -0056.

USDOI, MMS. 1994. North Carolina Physical Oceanographic Field Study. MMS 94-0047.

Copies of these studies can be acquired from the address below:
Minerals Management Service, Technical Communication Services
MS 4530
381 Elden Street
Herndon, VA 22070-4897 (703) 787-1080

5.2.2.3 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 supports the phase out of ocean dumping of the above described materials.

5.3 Activity Based Policies

5.3.1 Docks and Piers

Docks and piers, whether built over or floating on the water, are generally acceptable methods of gaining access to deep water. General considerations include:

a. Docks and piers should be constructed so that waterflow restriction and blockage of sunlight on wetland surfaces is avoided or minimized;

b. Docks and piers should be of adequate length to reach navigational depths without increasing dredging needs; and

c. Docks and piers should be designed and located to avoid areas that support submerged aquatic vegetation, shellfish beds and harvest areas, and other fragile and productive habitats.

5.3.2 Boat Ramps

a. Sites should be located along shorelines that do not support wetland vegetation and where adjacent waters have adequate navigational depths. Acceptable sites may include existing marinas; bridge approaches and causeways (with highway agency approval) where construction access channels exist; and natural and previously created deep water habitats;

b. Preferably, sites should be restricted to areas that do not require dredging to gain access to navigable waters. When located in the vicinity of seagrass beds, adequate navigation channels must exist and should be clearly marked. Boat ramps should not be located in areas where boats will encroach on sensitive and productive habitats;

c. Ramps should not be located in areas where encroachment into wetlands is likely to occur. Sites should contain adequate upland area for parking and for boat launching/removal; and

d. Adequate waste collection facilities should be required at public facilities.

5.3.3 Marinas

All marinas adversely affect aquatic habitats to some degree. These effects can be minimized through proper location and design. In addition to applicable recommendations for boat ramps, bulkheads, and seawalls, the following apply:

a. Marinas should be located in areas where suitable physical conditions exist. For example, potential sites should be located close to navigable waters and in locations where marina-related activities would not affect living marine resource forage, cover, harvest, and/or nursery habitats. Attention also should be given to sediment deposition rates and maintenance dredging requirements;

b. Marinas should be located at least 1,000 feet from shellfish harvest areas, unless state regulations or other considerations specify differently;

c. Dry-stack storage is generally preferable to wet mooring of boats. Open dockage extending into deep water is generally preferable to basin excavation;

d. Mooring basins should be sited in uplands rather than wetlands, and they should be designed so that water quality degradation does not occur. This may require consideration of basin flushing characteristics and incorporation of other design features such as surface and waste water collection and treatment facilities;

e. Turning basins and navigation channels should not create sumps and other slack-water areas that could degrade water quality nor should they be located in areas where circulation is poor. Depths generally should not exceed those of adjoining waters and, where practicable, they should provide for light penetration that is capable of sustaining benthic plant life. Dissolved oxygen levels in channels and basins should be adequate for fish and macroinvertebrate survival;

f. Consideration should be given to aligning access channels and configuring marinas to take full advantage of circulation from prevailing summer winds;

g. Permanent dredged material disposal sites (for use in initial and maintenance dredging) that do not impact wetland areas should be identified and acquired. Suitable disposal alternatives include placing dredged material on uplands, and using dredged material to create/restore wetlands. Projects that lack permanent disposal sites should not be authorized if maintenance dredging is needed and disposal sites/options are not available;

h. Catchment basins for collecting and storing surface runoff should be included as components of the site development plan. Marine railways or upland repair facilities should be equipped with hazardous material containment facilities so that biocides such as marine paints, oil and grease, solvents, and related materials are not directly or indirectly discharged into coastal waters and wetlands;

I. Consideration should be given to parking and other support facilities when it appears that available uplands are not adequate to support such needs and wetland encroachment is anticipated;

j. Marinas with fueling facilities should be designed to include practical measures for reducing oil and gas spillage into the aquatic environment. Spill control plans may be needed when marina facilities are to be located in the vicinity of large, emergent wetland areas, shellfish harvest sites, and other fragile/productive aquatic sites; and

k. Facilities for collection of trash and potential marine debris should be required. Where vessels with marine toilets will be moored, pump out facilities and notices regarding prohibition of sewage and other discharges should be provided.

5.3.4 Bulkheads and Seawalls

Bulkheads are used to protect adjacent shorelines from wave and current action and to enhance water access. Applications for bulkheads usually specify construction in open water followed by placing fill material behind the structure. Bulkheads may adversely impact wetlands through direct filling; through isolation; and through exacerbation of wave scour. Adverse impacts may be reduced by applying the following criteria:

a. Except in cases of recent and rapid erosion, structures should be aligned at or shoreward of the normal high waterline. Structures should be constructed so that reflective wave energy does not scour or otherwise adversely affect adjacent EFH or wetlands. For example, in areas that support fringing wetlands consideration should be given to the use of breakwaters (with regular openings -- see item c., below) or placement of riprap at the toe of the bulkhead or along the waterward edge of eroding wetlands;

b. Where possible, sloping (3:1) riprap, gabions, or vegetation should be used rather than vertical seawalls; and

c. Shoreline protection devices that are located in areas having fringe wetlands should have openings that allow for fish ingress and egress and water circulation. Recommended spacing for structure openings is no less than one linear foot per five linear feet of structure.

5.3.5. Cables, Pipelines, and Transmission Lines

Wetland excavation is sometimes required for installing submerged cables, pipelines, and transmission lines. Construction also may require temporary or permanent wetlands filling. The following recommendations apply:

a. Wetland crossings should be aligned along the least environmentally damaging route. Submerged aquatic vegetation, shellfish beds, coral reefs, etc., must be avoided;

b. Construction of permanent access channels should be avoided since they disrupt natural drainage patterns and destroy wetlands through direct excavation, filling, and bank erosion. The push-ditch method, in which the trench is immediately backfilled, reduces the impact duration;

c. Excavated wetlands should be backfilled with either the same material as removed or a comparable material that is capable of supporting suitable replacement wetlands. Original marsh elevations should be restored and, where practicable, excavated vegetation should be stockpiled, kept viable, and returned to the excavated site. After backfilling, erosion protection measures should be implemented where needed to prevent fish habitat degradation and loss;

d. Excavated materials should be stored on uplands. If storage in wetlands cannot be avoided, discontinuous stock-piles should be used to allow continuation of sheet flow. Where practicable, stockpiled materials should be stored on construction cloth rather than bare marsh surfaces. Topsoil and organic surface material such as root mats should be stockpiled separately and returned to the surface of the restored site;

e. In open-water areas, excavated materials should be deposited in discontinuous piles to preclude significant blockage of water movement. Back-filling is recommended if the excavated material would alter circulation patterns or interfere with fishing;

f. Use of existing rights-of-way should be recommended when use of these areas would lessen overall wetland encroachment and disturbance; and

g. Directional drilling, a technique that allows horizontal, sub-surface, placement of pipelines should be used in situations where normal trenching and backfill would cause unacceptable levels of habitat loss or alteration.

5.3.6. Transportation

State and federal highway agencies generally have the capability of conducting advanced planning with road, causeway, and bridge construction. To the extent possible, NMFS Branch Office and USFWS personnel should participate in early planning efforts. Since highway projects are generally considered to be in the public interest and frequently require wetland crossings, identification of mitigation needs, and development of suitable mitigation plans should be undertaken early in the planning process. The following criteria should be considered:

a. Transportation corridors/facilities should avoid wetlands. Where wetland crossings cannot be avoided, bridging should be used rather than filling, and the least environmentally damaging route, preferably along existing rights-of-way and road beds, should be followed;

b. Disrupting or reducing fish and invertebrate migration routes should be avoided. In areas that support or could support anadromous fish migrations, low, narrow, and/or dark passageways such as culverts and small bridges should not be utilized unless aligned and designed so that elimination of or significant reductions in fish migrations do not occur;

c. Structures should be designed to prevent shoaling and alteration of natural water circulation. Suitable erosion control and vegetation restoration should be implemented at wetland crossings; and

d. Transportation facilities should be designed to accommodate other public utilities, thus avoiding the need for additional wetland alteration. An example would be using bridges to support transmission lines and pipelines.

5.3.7. Navigation Channels and Boat Access Canals

Construction and maintenance of navigation channels and boat access canals may cause severe environmental harm. In addition to direct habitat losses associated with wetland and deepwater excavation and filling, these activities may significantly modify salinity and water

circulation patterns. These changes could greatly modify the distribution and abundance of living marine resources. The following criteria should be followed:

a. Where possible, dredging should be minimized through the use of natural and existing channels;

b. Alignments should avoid sensitive habitats such as shellfish beds, finfish and invertebrate nurseries, submerged aquatic vegetation, and emergent wetlands;

c. Permanent dredged material disposal sites should be located in non-wetland areas. Where long-term maintenance excavation is anticipated, disposal sites should be acquired and maintained for the entire project life;

d. Boat access canals should be designed to ensure adequate flushing and should be uniform in depth or made progressively deeper in the direction of receiving waters. Where possible, they should be aligned to take advantage of wind and lunar tides;

e. Construction techniques that minimize turbidity and dispersal of dredged materials into sensitive wetland areas (e.g., submerged grasses and shellfish beds) are encouraged. Work should be scheduled to avoid periods of high biological activity such as fish and invertebrate migration and spawning;

f. Care should be taken to avoid adverse alteration of tidal circulation patterns, salinity regimes, or other factors that influence local ecological and environmental conditions;

g. Channels and access canals should not be constructed in areas known to have high sediment contaminant levels. If construction must occur in these areas, consideration should be given to the use of silt curtains or other techniques needed to contain suspended contaminants; and

h. Use of sidecast dredges should be confined to areas such as inlets and open water areas where benthic communities are limited and hopper or pipeline dredging is not possible.

5.3.8. Disposal of Dredged Material

Previous and on-going disposal of dredged material is a major contributor to wetland losses in marine and estuarine ecosystems. Recognizing that most navigation channels and access canals require periodic maintenance dredging, it is important that long-range plans be developed and that they provide for mitigation of unavoidable adverse environmental impacts. Implementing the following criteria would minimize adverse impacts associated with most dredged material disposal activities:

a. Dredged material should be viewed as a potentially reusable resource and beneficial uses of these materials should be encouraged. Materials that are suitable for beach replenishment, construction, or other useful purposes should be placed in accessible non-wetland disposal areas;

b. Disposal sites that are located in unprotected coastal areas and adjacent to wetlands are especially susceptible to wind and water erosion. These forces can carry substantial quantities of

dredged material into aquatic habitats. If located near wetlands, disposal site surfaces should be stabilized using vegetation or other means to eliminate possible erosion or encroachment onto adjacent wetlands;

c. Dredged material should be placed in contained upland sites or approved open-water locations where adverse impacts to living marine resources are minimal. When placed in open water, dredged material should be used to enhance marine fishery resources. For example, materials could be used to renourish eroding wetlands or to fill previous borrow sites;

d. The capacity of existing disposal areas should be used to the fullest extent possible. This may necessitate increasing the elevation of embankments to augment the holding capacity of the site and applying techniques that render dredged material suitable for export or for use in reestablishing wetland vegetation;

e. Where possible, outfalls should be positioned so that they discharge into the dredged area or other sites that lack biological/ecological significance. When evaluating potential upland disposal sites, the possibility of saltwater intrusion into ground water and surrounding freshwater habitats should be assessed by the construction/regulatory agencies. Groundwater contamination could necessitate redesign of disposal practices, with subsequent harm to living marine resources; and

f. Toxic and highly organic materials should be disposed in impervious containment basins located on upland. Effluent should be monitored to ensure compliance with state and federal water quality criteria and measures should be incorporated to ensure that surface runoff and leachate from dredged material disposal sites do not enter aquatic ecosystems.

5.3.9. Impoundments and Other Water-Level Controls

A. Wetland impoundments:

Thousands of wetland acres are impounded each year in the Southeast for purposes such as waterfowl habitat creation, aquaculture, agriculture, flood control, hurricane protection, mosquito control, and control of marsh subsidence and erosion. Projects range in size from minor, such as repair of existing embankments, to large-scale marsh management projects where constructing dikes and water- control structures may affect thousands of wetland acres.

Proposals to impound or control marsh water levels should contain water management plans with sufficient detail to determine the accessibility of impounded areas to marine organisms and the degree to which detrital and nutrient export into adjacent estuarine areas will be affected. Significant adverse impacts can be avoided or minimized with implementation of the following recommendations:

a. Proposals to impound or reimpound previously unimpounded wetlands are unacceptable unless designed to accommodate (1) normal access and wetland use by marine fish and invertebrates and (2) continuation of other biological interaction, such as nutrient exchange, and other similarly important physical and chemical interactions; and

b. Proposals to repair or replace water control structures will be assessed on a case-by-case basis.

B. Watershed Impoundments:

Water-development agencies sometimes propose impounding rivers, bayous, and tributaries for such purposes as flood control or creation of industrial, municipal, and agricultural water supplies. Activities of this type are usually unacceptable because associated alteration of the quality, quantity, and timing of freshwater flow into estuaries may cause large-scale adverse modification or elimination of estuarine and marine habitats. Such actions also may block fish and invertebrate migrations.

5.3.10. Drainage Canals and Ditches

Drainage canals may be important components of upland development. Their potential to shunt polluted runoff and fresh water directly into tidal waters requires intermediate connection to retention ponds or wetlands. This allows natural filtration and assimilation of pollutants and dampening of freshwater surges prior to discharge into tidal waters. Recommendations include:

a. Drainage canals that dewater or cause other adverse wetland impacts are unacceptable and should not be built;

b. Drainage canals and ditches from upland development generally should not extend or discharge directly into wetlands;

c. Constructing upland retention ponds and other water management features such as sheet-flow diffusers is encouraged. A retention pond or other pollution elimination/assimilation structure should be required if the effluent contains or may contain materials that are toxic to marsh vegetation or other aquatic life,

d. Excavated materials resulting from canal and retention pond construction should be placed on upland or used to restore wetlands;

e. Proposed drainage plans should be in accordance with comprehensive flood plain management plan(s) and applicants should be encouraged to consult with the EPA and appropriate state agencies to ensure that federal and state water quality standards are met;

f. Locating mosquito control ditches in wetlands should be discouraged. If built, they should be designed so that they do not drain coastal wetlands. They also should be designed to avoid water stagnation, and they should provide access for aquatic organisms that feed on mosquito larvae; and

g. Use of innovative techniques such as rotary ditching, spray dispersal of dredged materials, and open-water marsh management should be encouraged where appropriate.

5.3.11 Oil and Gas Exploration and Production

Exploration and production of oil and gas resources in wetlands usually have adverse impacts since excavation and filling are generally required to accommodate access and production needs. In open marine waters, dredging and filling is usually not necessary, but special stipulations are required to minimize adverse impacts to living marine resources. In addition to the above recommendations for navigation channels, access canals, and pipeline installation, the following apply:

A. In coastal wetlands:

a. Activities should avoid wetland use to the extent practicable. Alternatively, the use of uplands, existing drilling sites and roads, canals, and naturally deep waters should be encouraged. When wetland use is unavoidable, work in unvegetated and disturbed wetlands is generally preferable to work in high quality and undisturbed wetlands;

b. Temporary roadbeds (preferably plank roads) generally should be used instead of canals for access to well sites;

c. Water crossings should be bridged or culverted to prevent alteration of natural drainage patterns;

d. Culverts or similar structures should be installed and maintained at sufficient intervals (never more than 500-feet apart) to prevent blockage of surface drainage or tidal flow;

e. Petroleum products, drilling muds, drill cuttings, produced water, and other toxic substances should not be placed in wetlands;

f. If the well is productive, the drill pad and levees should be reduced to the minimum size necessary to conduct production activities; and

g. Defunct wells and associated equipment should be removed and the area restored to the extent practicable. Upon abandonment of wells in coastal wetlands, the well site, various pits, levees, roads, and work areas should be restored to preproject conditions by restoring natural elevations and planting indigenous vegetation whenever practicable. Abandoned well access canals should generally be plugged at their origin (mouths) to minimize bank erosion and saltwater intrusion, and spoil banks should be graded back into borrow areas or breached at regular intervals to establish hydrological connections.

B. In open estuarine waters:

Activities in estuarine waters should be conducted as follows:

a. Existing navigable waters already having sufficient width and depth for access to mineral extraction sites should be used to the extent practicable;

b. Petroleum products, drilling muds, drill cuttings, produced water, and other toxic substances should not be placed in wetlands; and

c. Defunct equipment and structures should be removed.

C. On the continental shelf:

Activities should be conducted so that petroleum-based substances such as drilling mud, oil residues, produced waters, or other toxic substances are not released into the water or onto the sea floor. The following measures may be recommended with exploration and production activities located close to hard banks and banks containing reef building coral:

a. Drill cuttings should be shunted through a conduit and discharged near the sea floor, or transported ashore or to less sensitive, NMFS-approved offshore locations. Usually, shunting is effective only when the discharge point is deeper than the site that is to be protected;

b. Drilling and production structures, including pipelines, generally should not be located within one mile of the base of a live reef;

c. All pipelines placed in waters less than 300 feet-deep should be buried to a minimum of three feet beneath the sea floor, where possible. Where this is not possible and in deeper waters where user-conflicts are likely, pipelines should be marked by lighted buoys and/or lighted ranges on platforms to reduce the risk of damage to fishing gear and the pipelines. Pipeline alignments should be located along routes that minimize damage to marine and estuarine habitat. Buried pipelines should be examined periodically for maintenance of adequate earthen cover.

5.3.12. Other Mineral Mining/Extraction

a. Proposals for mining mineral resources (sand, gravel, shell, phosphate, etc.) from or within 1,500 feet of exposed shell reefs and vegetated wetlands, and within 1,500 feet of shorelines are unacceptable except when the material is to be used for oyster cultch; and

b. All other proposals will be considered on a case-by-case basis.

5.3.13. Sewage Treatment and Disposal

Urbanization and high density development of coastal areas has resulted in a substantial increase in proposals to construct sewage treatment and discharge facilities in coastal wetlands. Since many of these facilities utilize gravity flow systems for movement of waste water and materials, wetlands and other low-lying areas are often targeted as sites for placement of pipelines and treatment facilities. Since pipelines and treatment facilities are not water dependent with regard to positioning, it is not essential that they be placed in wetlands or other fragile coastal habitats. The guidance provided in Section 5.3.5., "Cables, Pipelines, and Transmission Lines," also applies to sewage collector and discharge pipelines. The following guidance should be considered with other aspects of sewage treatment and discharge:

a. Discharges should be treated to the maximum extent practicable, including implementation of up-to-date methodologies for reducing discharges of biocides (e.g., chlorine) and other toxic substances;

b. Use of land treatment and upland disposal/storage techniques should be implemented where possible. Use of vegetated wetlands as natural filters and pollutant assimilators for large scale discharges should be limited to those instances where other less damaging alternatives are not available and the overall environmental and ecological suitability of such an action has been demonstrated;

c. Discharging into open ocean waters is generally preferable to discharging into estuarine waters since discharging into estuarine waters is more likely to result in living marine resources contamination and nutrient overloading. Discharge points in coastal waters should be located well away from shellfish beds, seagrass beds, coral reefs, and other similar fragile and productive habitats. Proposals to locate outfalls in coastal waters must be accompanied by hydrographic

studies that demonstrate year round dispersal characteristics and provide proof that effluents will not reach or affect fragile and productive habitats.

5.3.14. Steam-Electric Plants and Other Facilities Requiring Water for Cooling or Heating

Facilities that require substantial intake and discharge of water, especially heated and chemically-treated discharge water, are generally not suited for construction and operation in estuarine and near-shore marine environments. Major adverse impacts may be caused by impingement of organisms on intake screens; entrainment of organisms in heat-exchange systems or discharge plumes; and through the discharge of toxic materials in discharge waters. Protected Species Branch personnel should be notified of such projects early in the planning process since the operation of steam-electric plants often affects endangered species such as shortnose sturgeon and West Indian manatee. Projects that must be sited in the coastal zone and utilize estuarine and marine waters are subject to the following recommendations:

a. Facilities that rely on surface waters for cooling should not be located in areas such as estuaries, inlets, or small coastal embayments where fishery organisms are concentrated. Discharge points should be located in areas that have low concentrations of living marine resources, or they should incorporate cooling towers that employ sufficient safeguards to ensure against release of blow-down pollutants into the aquatic environment;

b. Intakes should be designed to minimize impingement. Velocity caps that produce horizontal intake/discharge currents should be employed and intake velocities across the intake screen should not exceed 0.5 feet per second;

c. Discharge temperatures (both heated and cooled effluent) should not exceed the thermal tolerance of the majority of the plant and animal species in the receiving body of water;

d. The use of construction materials that may release toxic substances into receiving waters should be minimized. The use of biocides (e.g., chlorine) to prevent fouling should be avoided where possible and least damaging antifouling alternatives should be implemented; and

e. Intake screen mesh should be sized to avoid entrainment of most larval and post-larval marine fishery organisms. Acceptable mesh size is generally in the range of 0.5 mm and rarely exceeds 1.0 mm in estuarine waters or waters that support anadromous fish eggs and larvae.

5.3.15. Mariculture/Aquaculture

The culture of estuarine and marine species in coastal areas can reduce or degrade habitats used by native stocks of commercially and recreationally important fisheries. The following criteria should be employed to reduce or eliminate adverse impacts:

a. Facilities should be located on upland. Tidally influenced wetlands should not be enclosed or impounded for mariculture purposes. This includes hatchery and grow-out operations;

b. Water intakes should be designed to avoid entrainment and impingement of native fauna;

c. Water discharge should be treated to avoid contamination of the receiving water, and should be located only in areas having good mixing characteristics;

d. Where cage mariculture operations are undertaken, water depths and circulation patterns should be investigated and should be adequate to preclude the buildup of waste products, excess feed, and chemical agents; and

e. Mariculture sites should be stocked with hatchery-reared organisms only. Non-native species should be certified to be disease free, and project design features that minimize escape or accidental release of cultured species should be required. The rearing of ecologically undesirable species is unacceptable since escape and accidental release of these species is virtually assured.

5.3.16. Mitigation

Sections 5.3.1 - 5.3.15 provide specific guidance for avoiding and reducing adverse impacts to fishery resources and their habitats. Compensatory mitigation is considered in cases where a resource is not unique and irreplaceable and only after a project has been demonstrated to be water-dependent, has no feasible alternative, is clearly in the public interest, and all significant impacts are found to be unavoidable. In all cases, mitigation shall comply with the definition of mitigation that is provided at 40 CFR 1508.20 of the Council on Environmental Quality Recommendations. Those recommendations define mitigation as a sequential process whereby impacts are avoided, minimized, rectified, reduced over time, or are offset through compensation.

Despite increasing use of mitigation to offset wetland and other losses, there are situations (e.g., projects affecting seagrass) where the affected habitats are of such enormous value that the anticipated adverse impacts cannot be offset. In instances involving such unique and irreplaceable resources, mitigation is not acceptable. There is also disagreement over the functional equivalency of created and natural wetlands and it should not be assumed they are equivalent in habitat value.

As a general rule, mitigation that restores previously existing habitats is more desirable and likely to succeed than that which seeks to create new habitat. The numerous impacted wetlands that exist in the Southeast provide substantial opportunity for wetlands restoration. Restoration may be relatively simple, such as restoring tidal flows to an impounded wetland area, or more complex such as restoring dredged cuts and disposal areas. Restoration of destroyed emergent and, to a lesser degree, submerged vegetation is a feasible and recognized option when implemented with the services of experienced restoration personnel.

The creation of new wetland habitat involves conversion of uplands or, in some situations, submerged bottom to vegetated wetlands or another desirable habitat such as oyster reef. Generation of wetland habitat should not involve converting one valuable wetland type to another. For example, building emergent wetlands in shallow water is unacceptable unless it can be demonstrated that the site is insignificant with regard to habitat or water quality function(s) or it previously supported wetland vegetation and restoration is desirable in terms of the ecology of the overall hydrological unit (e.g., estuary). Regardless of which option is used (restoration or creation), a ratio of at least two acres of mitigation for each acre of habitat destroyed should be recommended.

Four basic considerations involved in the planning for habitat generation are type of habitat to be created, and its location, size, and configuration. Each of these considerations must

be applied to the specific ecological setting and in accordance with the following recommendations:

a. Habitat type - As a general rule the created habitat should be vegetatively, functionally, and ecologically comparable to that which is being replaced. For example, a smooth cordgrass marsh should be created if a smooth cordgrass marsh is eliminated. The principal exception would be those cases where a different habitat is shown to be more desirable based on overall ecological considerations.

b. Location - Except in the case of overriding ecological considerations, the new site should be located as near as possible to the site that would be eliminated. In any event, the new site should be in the same estuarine system as the habitat that is being replaced. The replacement wetland should consider physical implications such as shoaling and existing circulation and drainage patterns.

NMFS and USFWS considers the overall ecological and environmental implications of its recommendations, including upland impacts. Mitigation that may alleviate impacts to aquatic environments, but cause significant adverse impacts to important upland habitats should be carefully evaluated.

c Size - The habitat to be restored or created should be at least twice the (areal) size of that which would be destroyed. This requirement is designed to offset differences in productivity and habitat functions that may exist between established project site wetlands and newly developed replacement wetlands. This size difference is also designed to address the possibility that the overall, long-term functional and ecological value of replacement habitats may be less than those of the impacted wetlands at the worksite.

d. Configuration - The configuration of replacement habitats is determined by the ecological setting and physical factors such as existing drainage and circulation patterns. Consideration should be given to maximizing edge habitat and to the needs of desirable biota that may inhabit the site.

Interest in the use of "mitigation banks" or created/restored wetlands that are intended for use in offsetting anticipated future wetland losses is increasing nationwide. Because of the complexity of developing and administering mitigation banks, guidance concerning their creation is beyond the scope of this document. NMFS Southeast Region Habitat Conservation Division Branch Office personnel that are participating in such efforts should consult early with other NMFS office personnel that have undertaken or are involved in such efforts since reliance on existing mitigation banking agreements may be beneficial. Habitat Conservation Division Branch Office personnel also should notify other participating agencies that signatory authority for mitigation bank agreements rests with the Regional Director. In all cases, consideration of mitigation banks should be guided by the principle that no net-loss of wetlands would be incurred.

5.3.17 Detailed listing of non-fishing activities that may adversely impact habitat, including EFH, of managed species.

A. Physical Alterations

1. Hydrologic modifications
    - (a). Navigation channel construction/expansion
    - (b). Canals and ditches
    - (c). Dams and water control structures
        - (1). Hydropower operations
        - (2). Flood control
        - (3). Water supply
        - (4). Navigation
        - (5). Water diversion
    - (d). Levees, embankments, and impoundments
        - (1). Water management
        - (2). Wildlife Management
        - (3). Aquaculture
    - (e). Utility crossings and right-of-ways
    - (f). Roads, causeways, and bridges
    - (g). Alteration of freshwater inflow
    - (h). Ground water withdrawals
    - (i). Interbasin transfers/surface water withdrawals

2. Dredged material disposal and fills
    - (a). Open water disposal
    - (b). Placement of confined/unconfined material in wetlands
    - (c) Burial of nearshore habitats
3. Excavation
    - (a). Removal/alteration of wetlands and submerged bottoms
4. Minerals exploration and mining
    - (a). Removal/alteration of wetlands and submerged bottoms
5. Placement of structures in the coastal environment
    - (a). Industrial and Commercial
        - (1). Petroleum exploration and production platform operations
        - (2). Port development waterfront facilities
        - (3). Municipal wastewater outfall structures
    - (b). Navigation
        - (1). Breakwaters
        - (2). Jetties
        - (3). Anchorage/mooring areas
    - (c). Recreational/Environmental Structures
        - (1). Artificial reefs
        - (2). Fishing piers
    - (d). Beach Erosion Control Structures
        - (1). Jetties
        - (2). Groins
        - (3). Bulkheads
        - (4). Special purpose structures

6. Ocean dumping
   - (a). Dredged materials
   - (b). Hazardous materials
   - (c). Municipal solid waste
   - (d). Municipal wastewater/sludge

7. Introduction of exotic species
   - (a). Pet and agriculture (including mariculture) related industries
   - (b). Ship ballast water releases
   - (c). Incidential relocation on vessels, machinery, and animals

8. Watershed land use practices
   - (a). Agriculture
   - (b). Silviculture

9. Erosion/Subsidence
   - (a). Channel and shoreline erosion from vessel wakes.
   - (b). Shoreline erosion caused by manmade structures
     - (1). Jetties
     - (2). Groins
     - (3). Breakwaters
   - (c). Faulting induced by ground water extraction
   - (d). Relative sea level rise
   - (e). Reduced sediment renourishment
   - (f). Barrier islands and shorelines

10. Recreational boating impacts
    - (a). Propeller scarring
    - (b). Anchor scarring
    - (c). Grounding
    - (d). Trash
    - (e). Oil and gasoline spillage
    - (f). Boat wakes

11. Military Facilities
    - (a). Degaussing facilities
    - (b). Ordnance disposal areas
    - (c). Special training areas, bombing ranges

B. Water Quality Issues

1. Non-point-source Pollution (Percent)
   - (a). Agriculture
   - (b). Urbanization
   - (c). Silviculture

2. Point-source Pollution (PS)
   - (b). Industrial discharges
   - (c). Municipal wastewater discharges
   - (d). Urban stormwater discharges
   - (e). Vessel wastewater discharges
   - (f). Thermal effluents from electric power generation facilities

3. Oil spills
   - (a). Hydrocarbon pollution
   - (b). Toxic substances in cleaning materials

4. Chemical contaminant spills
5. Air emissions
6. Ocean dumping
7. Salinity
8. Turbidity
9. Recreational boating impacts
    (a). Fuel/oil contamination
    (b). Overboard discharges
    (c). Prop and anchor damage to reefs/bottoms

5.4 Interagency and Interstate Policies

5.4.1 Joint Agency Habitat Statement

The SAFMC has endorsed a "Joint Statement to Conserve Marine, Estuarine, and Riverine Habitat" to promote interagency coordination in the preservation, restoration, and enhancement of fishery habitat. This statement as adopted by state, Federal, and regional bodies concerned over fishery habitat, is presented in Appendix VII of The Fishery Management Plan for Shrimp (SAFMC 1993a).

5.4.2 Atlantic States Marine Fisheries Commission Seagrass Policy/ Implementation Plan.

The Atlantic States Marine Fisheries Commission seagrass policy and implementation plan for the seagrass policy is also presented in Appendix I.

5.5 Federal Habitat Protection Laws, Programs, and Policies.

See Appendix J for a listing and brief description of environmental laws directly, or indirectly protecting marine resources and the habitat they depend on.

5.6 State Habitat Protection Programs

5.6.1 North Carolina

The Coastal Area Management Act was passed in 1974 to protect North Carolina's fragile coastal resources through planning and management at the state and local level. The Department of Environment, Health and Natural Resources administers the program. Policy direction is provided by the Coastal Resources Commission, a group of citizens appointed by the Governor. The Division of Coastal Management (DCM), under authority from the Coastal Resources Commission (CRC), is responsible for implementing the North Carolina Coastal Management Program for the protection, preservation, orderly development and management of the state's twenty coastal counties. DCM is part of the Department of Environment, Health and Natural Resources. Present activities of DCM include: Permitting and enforcing regulations in Areas of Environmental Concern; Reviewing consistency of government and larger private activities in the coastal zone for compliance with the Coastal Area Management Act; Planning for the Ocean Resources in North Carolina's jurisdictional waters; Providing for effective disposal of boat sewage; Identifying high priority watersheds; Developing strategies for managing secondary and cumulative impacts; Transferring technology and information to local governments; Identifying wetlands in the coastal area; Assessing the relative significance of wetlands on the landscape; and Identifying and prioritizing wetland restoration sites.

5.6.2 South Carolina

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

5.6.3 Georgia

On April 22, 1997, Governor Miller signed the Georgia Coastal Management Act into law which established the Department of Natural Resources Coastal Resource Division as the authority to create the program, receive and dispense funds, and to coordinate with federal and state agencies regarding Coastal Management issues. On January 26, 1998 the Georgia Coastal Management Program received official approval. This approval marks the end of a six year combined effort by state and local government in partnership with private citizens to develop an integrated, networked program. The program uses existing State laws to manage Georgia's critical coastal resources. With the approval of the Georgia Coastal Management Program comes over $1 million in federal funds annually. Most of the funds will be allocated to local communities and organizations through the "Coastal Incentive Grant" program. The Coastal Resources Division has completed and submitted the first grant award request and expects to began dispersing the Coastal Incentive Grants in the eleven county service area April 1, 1998. Incentive grants will be presented to local governments and universities to address critical local issues in coastal Georgia such as water management, local government planning and small scale construction projects.

5.6.4 Florida

The Florida Legislature adopted the Florida Coastal Management Act in 1978. This act authorized the development of a coastal management program and its submittal to the appropriate federal agency. In 1981, the Florida Coastal Management Program (FCMP) was approved by the Secretary of the United States Department of Commerce. Florida's goal in creating the FCMP was not to create a new agency or new statutes concerned with coastal issues, but instead to use existing agencies and laws to address Florida's coastal needs. Florida's rules and laws adequately protected the coast, but were not always effectively implemented because of breakdowns in communication between agencies and administrative shortcomings. The FCMP was created to bridge these gaps and to open the lines of communication among the agencies so that their actions could be coordinated.

The FCMP, as it exists today, is a network of ten state agencies and five water management districts using 23 statutes to protect Florida's coastal interests. The agencies most directly involved in issues that affect Essential Fish Habitat are listed below.

The Department of Community Affairs (DCA) is the lead agency for the FCMP, serving as coordinator of coastal issues and as the liaison between the state agencies and the federal government. DCA also houses the State Clearinghouse and serves as the state's land planning agency and emergency management agency.

The Department of Environmental Protection(DEP), formed by the merger of the former Department of Environmental Regulation and the former Department of Natural Resources, serves as the state's chief environmental regulatory agency and the manager and steward of many of its natural resources. Among the natural resources over which the DEP has jurisdiction are submerged lands within state estuarine and marine waters. The Department of Health regulates on-site sewage disposal. The Marine Fisheries Commission exercises jurisdiction over saltwater fisheries and marine mammals. The five water management districts, organized along watershed lines, act in partnership with DEP in regulating activities in wetlands and waters of the state and the use of water resources.

5.7 Threatened and Endangered Species

The Sustainable Fisheries Act of 1996 established certain requirements and standards the Councils and the Secretary must meet in managing fisheries under the Magnuson-Stevens Act. Implementing the provisions in the SFA will not have any negative impacts on the listed and protected species under the Endangered Species Act (ESA) and Marine Mammals Protection Act (MMPA) including:

	Whales:	Date Listed
(1)	Northern right whale- *Eubalaena glacialis* (ENDANGERED)	12/2/70
(2)	Humpback whale- *Magaptera novaeangliae* (ENDANGERED)	12/2/70
(3)	Fin whale- *Balaenoptera physalus* (ENDANGERED)	12/2/70
(4)	Sei whale- *Balaenoptera borealis* (ENDANGERED)	12/2/70
(5)	Sperm whale- *Physeter macrocephalus* (ENDANGERED)	12/2/70
(6)	Blue whale- *Balaenoptera musculus* (ENDANGERED)	

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

	Other Species Under U.S. Fish and Wildlife Service Jurisdiction:	Date Listed
(1)	West Indian manatee- *Trichechus manatus* (ENDANGERED)	3/67
	(Critical Habitat Designated)	1976
(2)	American crocodile - *Crocodulus acutus* (ENDANGERED)	9/75
	(Critical Habitat Designated)	12/79

Recent research efforts identifying use of *Sargassum* habitat by juvenile sea turtles is summarized in Appendix R of the Habitat Plan (SAFMC 1998a).

7.0 ESSENTIAL FISH HABITAT RESEARCH NEEDS

See Section 6.0 of the Habitat Plan. Portions have been extracted directly from the plan and are shown below (Note: References are contained in the Habitat Plan.):

"6.0 ESSENTIAL FISH HABITAT RESEARCH NEEDS

6.1 Essential Fish Habitat Research and Monitoring Program

The following constitutes the basic structure of the Council's essential fish habitat (EFH) research and monitoring program. This general structure provides recommendations, for research the Council, the National Marine Fisheries Service (NMFS) and other habitat partners in the South Atlantic region view as necessary for carrying out the EFH management mandate. This Section will be refined after public hearing to better identify and support South Atlantic habitat partners research efforts to describe, map, and document use of EFH by managed species. In addition, subsequent drafts of this document will better efforts of habitat partners to define non-fishing and fishing threats and their impacts on EFH.

The Council has determined that the NMFS, in cooperation with other Federal, State and regional habitat partners in the South Atlantic region, will develop the necessary understanding, using basic and applied research and literature syntheses, to help conserve, protect, and restore EFH of living marine resources managed by the Council. Statutes and international conventions and treaties which authorize the NMFS to conserve and restore marine habitat include but are not limited to the Magnuson Fishery Conservation and Management Act, the Endangered Species Act, the Fish and Wildlife Coordination Act, the National Marine Sanctuaries Act, the Clean Water Act, the Comprehensive Environmental Response, Compensation, and Liability Act ("Superfund"), and Oil Pollution Act (OPA).

Additional research is necessary to insure sufficient information is collected to support a higher level of description and identification of EFH (see Appendices O and P). In addition, research is needed to identify and evaluate existing and potential adverse effect on EFH, including but not limited to, direct physical alteration; impaired habitat quality or function; cumulative impacts from fishing; or indirect adverse effects such as sea level rise, global warming and climate shifts; and non-gear related fishery impacts.

The Council recommends NMFS apply their adopted Habitat Research Plan to direct and conduct research and transfer results to management components within NMFS. The Council coordinates with NMFS management components to provide information on permit and policy activities, fishery and EFH information for fishery management plans. The NMFS plan is designed to develop the necessary expertise to accomplish or oversee the restoration, creation, or acquisition of habitat to benefit living marine resources. The plan provides guidance in four areas: ecosystem structure and function, effects of alterations, on habitat development of habitat restoration methods, and development of indicators of impact and recovery of habitat. A fifth area is the need for synthesis and timely transfer of scientific information to managers.

The Habitat Research Plan of the NMFS (Thayer et al., 1996) serves as a base from which this Section will be revised. After public hearing this Section using this base structure will be revised to further define needs by individual EFH type or EFH-HAPC, as well as by species or species complex. The Council will work with NMFS and other NOAA programs, including the Office of Ocean and Coastal Resource Management, Coastal Ocean Program, Coastal Services Center (Charleston, SC), and National Sea Grant Program, to meet the goals of NOAA. NMFS will work closely with other federal agencies to increase cooperation and partnerships, maximize research information, and reduce potential duplication of research efforts. The Council has adopted the same general structure for the research and monitoring

program. In addition, the following draft lists of research needs for habitat or managed species are included for comment.

6.1.1 Ecosystem Structure and Function

Understanding the structure and function of natural ecosystems, their linkages to one another, and the role they play in supporting and sustaining living marine resources, their abundance, distribution, and health -- is critical. Knowing when and how systems are affected, assessing the cause and degree of impact, and providing the basis for restoring and maintaining these systems are integral to this research area, and must be evaluated in terms of landscape ecology. Research on ecosystem structure and function will provide the necessary foundation for linking all areas to provide the basis for making fundamentally sound management decisions. Thus, assessment of habitat impacts, development of restoration methods and evaluation of restoration effectiveness, development of indicators of impact and recovery, and synthesis and transfer of information for the development of management policy and regulations all are dependent on a comprehensive understanding of ecosystem structure and functioning.

Research in this area will include studies on the relationship between habitat and yield of living marine resources including seasonality and annual variabilities and the influence of chemical and physical fluxes on these relationships. These research efforts will be dependent upon knowledge of basic life histories, habitat structural integrity and limiting factors, and must be evaluated within the context of habitat mosaics or habitat heterogeneity. Therefore, data on habitat location are integral to this research area. Information on essential fish habitat, variability in yield of fishery resources as a function of material fluxes, habitat type, location and scale should be generated. This research area provides the foundation for understanding cause and effect relationships and development and evaluation of protection and restoration strategies.

6.1.2 Effect of Habitat Alterations

Knowledge of the causes of damage to ecosystems is critical to restoring past losses and preventing future degradation and loss of habitats essential for maintaining and enhancing living marine resources. Therefore, quantification of the response of habitats and living marine resources to natural and anthropogenic alterations is not only a prerequisite to determining the degree of impact, predicting the rate of recovery, and recommending the most effective restoration procedures, but it also is a requisite to establishing effective protective measures.

The basis for determining cause and effect relationships depends on an understanding of the natural structure and function of an ecosystem. Individual living marine resource requirements and population characteristics. The Council is interested in both maintaining sustainable living marine resource populations and protecting the essential fish habitat they depend upon. Habitat partners should conduct research to relate non-fishing impacts observed at the individual level to effects at the population level which would link habitat impacts ultimately to living marine resource populations.

Studies should include cause and effect research designed to evaluate responses of living marine resource and habitats to physical and chemical modifications of coastal and estuarine systems. Research is encouraged that considers downstream responses to upland modification, the role of buffers zones, as well as living marine resource and habitat responses to physical and waterflow alterations and water quality modifications. Information should be generated on responses to both individual and cumulative impacts so as to provide the basis for policy statements, guidelines, and regulations to protect habitats. These cause and effect databases will

furnish information pertinent not only to permit-related activities and other consultations, but also to NMFS mandated responsibilities in restoration planning and implementation.

6.1.3 Habitat Restoration Methods

While methods for restoring certain habitats (e.g., salt marshes and seagrass meadows) exist, most have not been rigorously tested under experimental conditions throughout wide geographic areas and at different scales. Additionally, for other habitats (e.g., coral reefs, intertidal and subtidal substrates, riparian habitat) only limited methodology exists and little emphasis has been placed on rapidly restoring biodiversity and monitoring for success and persistence. (As a consequence, a significant proportion of restoration actions has been viewed with skepticism relative to their success and concerns for rates of habitat recovery or development.) Current methods to cleanup, restore or create productive living marine resource habitats must be improved, and new, innovative techniques must be developed and evaluated using statistically rigorous approaches.

Research topics and areas of concern include analyses of the success of contaminant sequestration; assessment of bioremediation techniques; development and evaluation of new habitat restoration techniques; experiments on transplant species culture techniques; and evaluation of the role and size of buffers and the importance of habitat heterogeneity in the restoration process. Research on restoration will lead to scientific information on trajectories of recovery and stability of created and restored systems including physical, chemical and biological components and processes. Assessments of new techniques and evaluation of current techniques over geographic regions and scales will provide bases for success evaluation. Most importantly, guidelines for improved best management practices and improved restoration planning will be generated.

6.1.4 Indicators of Habitat and Living Marine Resources Impacts and Recovery

Increasing and extensive exploitation of coastal resources demands that indicators be used to simplify the process of determining whether an ecosystem, habitat, or living marine resource is healthy, degraded, or is recovering. The development of indicators of habitat/living marine resource impacts and recovery is critical for managers judging the status of essential fish habitat or fishery resources, and determining the need for corrective actions.

The development of habitat or resource indicators must be based on information derived from comparative research on the structure and function of disturbed, natural, and/or restored habitats of different ages and geographical locations for a suite of biological, chemical, and physical parameters; time-dependent biotic population analyses; and contaminant level follow-up evaluations for sediment, biota, and water. This type of research will help managers identify essential fish habitat status; standardize indicators for specific habitats through comparisons across geographic gradients and scales; and develop recommendations on chemical "cleanup" techniques and most appropriate measures to assess success. The Council encourages NMFS, in cooperation with the other habitat partners in the Southeast, to utilize such guideposts to develop and improve best management practice approaches.

6.1.5 Synthesis and Information Transfer

The synthesis and timely transfer of information derived from research findings and the existing literature is a key element of the essential fish habitat research and monitoring program. Decisions on permitting, regulation, enforcement, redirection of research efforts, and development and implementation of restoration plans must be made with the best available

information. Scientists must step back from their research long enough to provide timely information syntheses to habitat managers. Likewise, it is imperative that State and Federal habitat managers recognize that generic information generated by the scientific community does have powerful application to their site-specific problems.

Technology and information transfer will be expedited through the use of all available information sources and the application of "user-friendly" information bases. Geographical Information Systems provide the opportunity to amass and array large quantities of complex data, thereby, providing potential for relational observations by decision-makers; such use is strongly encouraged. Many areas of synthesis and transfer have been indicated in the earlier four research areas and will not be repeated here. Additional examples include information syntheses on essential fish habitat and essential fish habitat-habitat areas of particular concern and modes of protection and restoration, and synthesis of available information on landscape approaches to basinwide management including permitting and restoration. Such collations of current and evolving information bases are important to the Council and those charged with the conservation and management of fishery resources as well as to State and Federal habitat managers concerned about developing and implementing policy. These syntheses could be done within NMFS, through partnerships with other agencies, and by contract. It is important, however, that syntheses be provided in a useable format and even published in outlets available to both scientific and management communities. The scientific community must participate in the synthesis and transfer process.

6.1.6 Implementation

The five interlinked areas provide a framework for the type of research and continuity needed to effectively manage EFH. In some instances this linkage between research areas may be hierarchical. Research on ecosystem structure and function provides the foundation for linking all areas. For example, knowledge of the structure and function of the ecosystem must be known before one can actually determine the effects of habitat alterations, develop restoration methods, or develop indicators of impact and recovery. Continuity of information from each research area is required to develop a comprehensive data base for making important resource decisions. Research founded on this approach will provide State and Federal habitat managers with a broad information base that is scientifically and ecologically credible, and responsive to management needs. The Council will coordinate with and support NMFS Southeast Regional Office and Fisheries Science Centers in their effort to determine habitat research and management priorities. Research conducted to address the EFH mandate in the southeast region should: address regional management and research needs pertinent to the Council, NMFS or other habitat partner responsible for conservation or management of EFH or species which depend on EFH; be consistent with the Council's, NMFS's and other habitat partner's long-term goals or habitat policies; and provide information about the benefit of protecting EFH or living marine resources.

Cooperative efforts between NMFS research and management staffs and with other federal/state agencies, industry, and academia are encouraged. This approach will create greater and improved partnerships, which will be required if we are to meet the Council's, NOAA's, and NMFS's goal to protect, conserve, and restore essential fish habitat through sound habitat research and management. In addition, the Council will support programmatic EFH research proposals when requested from and developed by NMFS SEFSC.

6.2 Research Needs Identified in Fishery Management Plans

6.2.1 Research Needs Identified in SAFMC Fishery Management Plans

Habitat and species specific research needs identified in Council fishery management plans are presented below for the following species or species complexes - penaeid and deepwater shrimp, red drum, spiny lobster, coastal migratory pelagics, coral, coral reefs and live hard bottom habitat, golden crab, the snapper grouper complex, calico scallops and pelagic *Sargassum* habitat.

Shrimp Research Needs:

Rock Shrimp

The following research needs are listed in no particular priority order:

1. Recruitment processes and life history strategy.
2. What are the settlement patterns of juveniles with respect to depth? What are the subsequent development and mortality rates, and how do they vary across depths?
3. Growth rates. Accurate, detailed laboratory experiments to test effects of ecological variables are particularly desirable.
4. Reproductive cycle.
5. Seasonal movements.
6. Habitat preferences. Basic ecological questions concerning physiological ecology, refuges and foraging habits, trophic dynamics, and community relationships remain largely unanswered.
7. Basic physiology of rock shrimp, biogeography, and systematics.

Additional fishery management related items include:

8. Estimate potential yield.
9. Document economic and social information of fishermen and dealers.
10. Identification of the extent of existing bottom habitat suitable for rock shrimp in the South Atlantic Council's area.
11. Bycatch characterization of the rock shrimp fishery.

Shrimp Bycatch Research Needs:

The research needs listed below are specified to bycatch.

1. Characterization of bycatch in the rock and royal red shrimp fisheries.
2. Determine the impact of shrimp trawl bycatch on the habitat and all non-target species of fish and invertebrates (i.e., include impacts on habitat and all incidental species, not just the impact on other "fishery resources").

The following research needs are summarized from recommendations presented in the bycatch characterization report for the South Atlantic region (SEAMAP 1996):

1. Shrimp effort data needs to be collected to provide estimates based on time fished (or number of tows), rather than at the trip level. Future sampling needs to be improved with respect to collection of both shrimp effort and bycatch characterization data.
2. Future characterization effort should be expanded to include important strata for which no observer data is available and strata which have low sample sizes.

3. Bycatch monitoring should be conducted regularly if data are to be used in stock assessments. Conduct characterization for 5 years after implementation of state and federal bycatch reduction regulations to determine the effectiveness of the gears used, and to establish new baseline bycatch estimates for stock assessments.
4. Long-term characterization data sets should be funded.

Red Drum Research Needs:

Research priorities include the following list from the stock assessment for Atlantic coast red drum:

1. Direct the improvement in catch, effort and length frequency statistics from the recreational and commercial fisheries.
2. Direct additional effort in intercepting recreational fishermen through the MRFSS who fish nighttime hours.
3. Increased tagging efforts on age 3-5 year old red drum, with directed effort to recapture subadult and adult red drum to determine if disappearance is due in part to offshore emigration.
4. Standardize sampling of the Atlantic coast subadult red drum population to develop a long-term index of recruitment.
5. Develop a more reliable maturity schedule for population level analyses.
6. Determine relationships between annual egg production and female length or weight for Atlantic coast red drum.
7. Develop a more reliable estimate of natural mortality through directed sampling of the adult population.

Other research needs identified in Section 5.7 of the Source Document for the Atlantic coast red drum fishery management plan include:

1. Determine escapement levels of juvenile red drum to the spawning stock by state.
2. Determine natural and fishing mortality rates.
3. Determine stock structure.
4. Determine survival rate of released red drum.
5. Develop a fishery independent index of relative abundance.
6. Determine inshore/offshore, as well as coastwide, migration patterns through enhanced mark-recapture studies, aerial surveys and sonic tagging efforts.
7. Determine spawning areas.
8. Determine the economic value of the Atlantic coast recreational red drum fishery.
9. Assess and modify, as needed, MRFSS procedures to more accurately survey red drum. recreational catch and effort.
10. Document and characterize schooling behavior for Atlantic coast red drum.
11. Encourage current efforts to continue collection of socioeconomic data in the MRFSS and to collect socioeconomic data in the commercial fishery, where available.

Red Drum Habitat Research Needs:

1. Identify optimum red drum habitat and environmental conditions.
2. Quantify relationships between red drum production and habitat.
3. Identify the effects of water quality degradation on red drum production.
4. Identify areas of particular concern for red drum.
5. Determine habitat conditions that limit red drum production.

6. Determine methods for restoring red drum habitat and/or improving existing environmental conditions that adversely affect red drum production.
7. Encourage research in developing bio- or photo-degradable plastic products to reduce impact of refuse on the inshore, nearshore, offshore marine environments utilized by red drum at various stages of development.
8. Quantify impacts of acid rain on estuarine systems vital to red drum production.
9. Determine research that could be incorporated into a biological and socioeconomic impact assessment quantifying the effects of oil, gas and mineral exploration, development or transportation on red drum, their essential offshore, nearshore and estuarine habitat and the Atlantic coast red drum fishery.
10. Determine the impacts of dredging nearshore and offshore sand bars for beach renourishment on red drum spawning activity. In addition, the impacts of any type of dredging activity on all life history stages of red drum.

Snapper Grouper Research Needs:

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

1. Identify optimum snapper grouper habitat and environmental and habitat conditions that limit snapper grouper production (e.g., what are the critical fisheries habitats for food, cover, spawning, nursery areas, and migration?);
2. Determine the relationship between juvenile snapper grouper and estuarine habitat. If an obligatory relationship is found, determine the distributions, rates of change, and documented causes of loss for estuarine habitat types;
3. Quantify the relationships between snapper grouper production and habitat (e.g., what are the key trophic pathways in the ecosystem, and how does the flux of essential nutrients, carbon compounds, and energy through these systems influence fisheries productivity?);
4. Determine the relative effects of fishing, pollution, and natural mortality on fishery population dynamics. Also determine the effects of cumulative habitat loss on fisheries productivity and economic value;
5. Determine methods for restoring snapper grouper habitat and/or improving existing environmental conditions that adversely affect snapper grouper production. The 29 recommendations for future studies in Bohnsack and Sutherland (1985) are supported here; and
6. Identify essential fish habitat - habitat areas of particular concern for snapper grouper.

King Mackerel Research Needs:

1. Continued refinement of estimates of sustainable yield, condition of the stock, and stock structure. This requires improved estimates of age composition of catches, recruitment, natural mortality, total catch, growth rate, and standing stock.
2. Develop fishery independent methods of assessing stock abundance.
3. Develop and refine estimates of economic value of the recreational and commercial fisheries on the mackerel resources, including effects of regulations on these values.
4. Determine impact of bag limits on the total catch and consider release mortality.

5. Compile king and Spanish mackerel price data by gear type.

Spanish Mackerel Research Needs:

1. Continuing refinement of estimates of sustainable yield, refinement of subgroups, and condition of stock. This requires improved estimates of age composition of catches, recruitment mortality rates, total catch, growth rate, and standing stock.
2. Develop fishery independent methods of assessing stock abundance.
3. Develop and refine estimates of the economic values of the recreational and commercial fisheries on the Spanish mackerel resource, including effects of regulations on these values.
4. Determine impact of bag limits on the total catch and consider release mortality.

Cobia and Dolphin Research Needs:

1. Increase general life history information.
2. Determine status of stocks.

Spiny Lobster Research Needs:

Biological

1. Determine whether a relationship between the magnitude of postlarval recruitment and subsequent fishery yield exists and, if so, monitor long-term for establishing optimal harvesting strategies.
2. The eggs per recruit ratio in relation to overfishing definition should be defined and monitored.
3. Estimates of growth, mortality (M and F), and better indices of effort.
4. Determination of the relationship between the reproductive cycle characteristics in Florida and in the Caribbean, with postlarval recruitment in Florida.
5. Determination whether a relationship between juvenile habitat quality and abundance and magnitude of harvest exists on fishery-wide scale.
6. Estimate the impact that loss of nursery habitat may have on recruitment to the fishery.

Economic

7. Economic assessment of status of commercial and recreational fisheries including production (cost) and demand considerations.
8. Evaluation of the economic and social impacts of efforts limitation systems for traps.
9. Quantification annually of Florida recreational landings, effort, and CPUE.

Data

10. An evaluation of available catch and effort by geographic area, distance from shore, and number of traps fished per craft is needed.
11. Spanish lobster landings need to be sampled for size frequency and sex ratios.

Golden Crab Research Needs:

The following research needs (Items 1-8 taken from Lindberg and Wenner, 1990) are listed in no particular priority order:

1. Recruitment processes and life history strategy.
2. What are the settlement patterns of juveniles with respect to depth? What are the subsequent development and mortality rates, and how do they vary across depths?

3. Growth rates. Accurate, detailed molt staging should be incorporated into future sampling regimes, while controlled laboratory experiments to test effects of ecological variables are particularly desirable.
4. Reproductive cycle. Age at first reproduction is poorly known. Comparative studies and experimentation are needed to resolve questions of this basic life history trait.
5. Seasonal movements, encounter rates among potential mates and competitors, movement by mated pairs, and takeover attempts all need to be documented to test golden crab mating strategies.
6. Habitat preferences. Basic ecological questions concerning physiological ecology, refuges and foraging habits, trophic dynamics and community relationships remain largely unanswered.
7. Home ranging versus nomadism needs to be examined.
8. Questions of basis physiology of deep-dwelling organisms, biogeography and systematics, or parasitology and symbiosis.

Additional fishery management related items include:

9. Estimate potential yield.
10. Document economic and social information of fishermen and dealers.
11. Document information on market structure, development, and consumer acceptance of product.
12. Determine whether there is any substitutability with other crustaceans.
13. Identification of existing bottom habitat suitable for golden crabs in the South Atlantic Council's area would be useful.
14. Biodegradable panel research - determine the rate at which specified material degrades and evaluate materials/methods to meet objective of degrading within 14-30 days.
15. Bioprofile sampling - data on size, molt and reproductive status, etc.
16. Gear impacts and refugia.

Pelagic Sargassum Habitat Research Needs:

Additional research is necessary to insure sufficient information is collected to support a higher level of description and identification of pelagic *Sargassum* habitat. In addition, research is needed to identify and evaluate existing and potential adverse effect on pelagic *Sargassum* habitat, including but not limited to, direct physical loss or alteration; impaired habitat quality or function; cumulative impacts from fishing; and non-gear related fishery impacts.

1. What is the areal abundance of pelagic *Sargassum* off the southeast U.S.?
2. Does the abundance change seasonally?
3. Can pelagic *Sargassum* be assessed remotely using aerial or satellite technologies (e.g., Synthetic Aperture Radar)?
4. What is the relative importance of pelagic *Sargassum* weedlines and oceanic fronts for early life stages of managed species?
5. Are there differences in abundance, growth rate, and mortality?
6. What is the age structure of reef fishes (e.g., red porgy, gray triggerfish, and amberjacks) that utilize pelagic *Sargassum* habitat as a nursery and how does it compare to the age structure of recruits to benthic habitats?
7. Is pelagic *Sargassum* mariculture feasible?

8. What is the species composition and age structure of species associated with pelagic *Sargassum* when it occurs deeper in the water column?
9. Additional research on the dependencies of pelagic *Sargassum* productivity on the marine species using it as habitat.

Calico Scallop Research Needs:

1. Growth and mortality factors need further quantification to refine the critical size estimates.
2. The size frequency of individual calico scallop beds as they are fished, mature, and die is needed to further refine the minimum size specified.
3. There is a lack of information concerning the percentage of calico scallops that can be opened during an at-sea processing operation. The Council supports this research need because it addresses one of the issues and can be completed in a relatively short period of time and at low cost.
4. Survival rate of released calico scallops is required to further evaluate at-sea processing. There is at present only one boat processing at-sea but this could increase in the future. This research need addresses one of the issues and should be undertaken in the very near future given the low cost and short time frame required.
5. Information is needed to address the following areas concerning parasitic nematodes: (1) occurrence of the nematode; (2) survival of the nematode; (3) effect of processing, food handling, reconditioning and associated problems; and (4) consumer perception. Research on the parasitic nematode is aimed at addressing one of the issues and should be supported. Florida Sea Grant and the calico scallop fishing industry have expended some effort in this area.
6. The effect of ocean disposal of at-sea processing waste on the scallop beds should be investigated. Concern has been expressed that this could increase calico scallop losses due to predators. This addresses Issue Number 4 and given the potential increase in at-sea processing more information is needed by the Councils to properly evaluate the situation.
7. The effect of the removal of such a large quantity of hard substrate (shells) that could provide attachment sites for spat settlement should be investigated. This addresses one of the issues and it is recognized that this is a long-term research effort.

6.2.2 Interjurisdictional Prioritized Research Needs

The following habitat and select species specific research needs were identified in Special Report No. 62 published by the Atlantic States Marine Fisheries Commission "Prioritized Research Needs in Support of Interjurisdictional Fisheries Management" (ASMFC 1997).

American Shad and River Herring:

- Review studies dealing with the effects of acid deposition on anadromous alosids.
- Conduct turbine mortality studies and downstream passage studies.
- Determine the effects of pollution, passage impediments, and other anthropogenic impacts on all other life history stages of shad and river herring.
- Conduct and evaluate historical characterization of socio-economic development (potential pollutant sources and habitat modification) of selected shad rivers along the east coast.
- Identify and quantify potential American shad spawning and rearing habitat not presently utilized and conduct an analysis of the cost of recovery.

Atlantic Menhaden:

- Monitor fish kills along the Atlantic coast and use the NMFS Beaufort Laboratory as a repository for these reports.
- Study the ecological role of menhaden (predator/prey relationship, nutrient enrichment, oxygen depletion, etc.) in major Atlantic coast embayments and estuaries.
- Determine how loss / degradation of critical estuarine and nearshore habitat affects growth, survival and abundance of juvenile Atlantic menhaden.

Atlantic Sea Herring:

- Establish critical spawning habitat areas or special management zones to protect spawning aggregations of herring and/or demersal egg masses.

Atlantic Sturgeon:

- Standardize and obtain baseline data on habitat for important sturgeon rivers. Data should include assessment of spawning and nursery habitat.
- Establish environmental tolerance levels (D.O., pH, temperature, etc.) for different life stages.
- Determine the effects of contaminants on early life stages.

Red Drum:

- Determine habitat preferences, growth rates, and food habits of larval and juvenile red drum.
- Quantify relationships between red drum production and habitat.
- Identify the effects of water quality degradation on red drum production,
- Determine the methods for restoring red drum habitat and/or improving existing environmental conditions that adversely affect red drum production.
- Determine the impacts dredging nearshore and offshore sand bars for beach renourishment on red drum spawning activity. In addition, the impacts of any type of dredging activity on all life history stages of red drum.

Spanish Mackerel:

- Conduct migration studies to determine normal Spanish mackerel migration routes and changes therein, and the climatic or other factors responsible for the changes in the environmental and habitat conditions which may effect the habitat and availability of stocks.

Spotted Seatrout:

- Identify essential habitat requirements.

Red Drum:

1. Conduct standardized fishery independent sampling of subadult red drum on an interstate basis to develop a long term index of recruitment.
   Improve catch, effort and length frequency statistics from the recreational and commercial fisheries.
2. Conduct tagging studies to estimate fishing and total mortality, and to determine inshore/offshore migration patterns.
   Research efforts on adult red drum should focus on the definition of unit stock for red drum in the South Atlantic using methods such as mark-recapture and genetic discrimination.

Determine escapement levels of juvenile red drum to the spawning stock by state.

3. Develop a more reliable estimate of natural and fishing mortality and minimum size in managing fisheries.
4. Examine the effectiveness of controlling fishing mortality and minimum size in managing fisheries.
5. Quantify relationships between red drum production and habitat.
6. Increase intercepts of recreational fishermen through the MRFSS who fish nighttime hours.
7. Maintain annual length age keys.
   Determine the survival rate of released red drum.
8. Research on stock assessment should focus on genetic implications and cost benefits. The introduction of unmarked fish should be discouraged until present efficacy of such an approach is validated.
   - Determine Habitat preferences, environmental conditions, growth rates and food habits of larval and juvenile red drum.

   Identify the effects of water quality degradation on red drum production.
   - Determine the methods for restoring red drum and/or improving existing environmental conditions that adversely affect red drum production.
9. States with significant fisheries should be encouraged to collect socio-economic data on red drum fisheries through ad-ons to the MRFSS or by other means so as to determine the economic value of the Atlantic coast recreational red drum fishery.
10. Assess the effects of environmental factors on stock densities.
11. Document and characterize schooling behavior for Atlantic coast red drum.
    - Determine the impacts of dredging nearshore and offshore sand bars for beach renourishment for red drum spawning activity. In addition, the impacts of any type of dredging activity on all life history stages of red drum.
12. Conduct yield modeling on red drum.
    Refine maturity schedules between sampling programs, determine relationships between annual egg production and female length/weight. And determine spawning areas in order to increase accuracy and precision of SSBR estimates.

Prioritized Research Needs for Spanish Mackerel
High Priority:

- Length, sex, age and CPUE data are needed to improve the stock assessment accuracy. Simulations on CPUE trends should be explored and impacts on VPA and assessment results determined. Data collection is needed for all states, particularly those north of North Carolina.
- Weight and especially length at age for Spanish mackerel needs to be evaluated.
- Develop fishery independent methods of monitoring stock size of Atlantic Spanish mackerel (consider aerial surveys used in south Florida waters).
- More timely reporting of mid-Atlantic catches is needed for quota monitoring.
- Provide better estimates of recruitment , natural mortality rates, fishing mortality rates, and standing stock. Specific information should include an estimate of total amount caught and distribution of catch by area , season and type of gear.
- Methodology for predicting year class strength should be developed, and the relationship between larva abundance and subsequent year class strength should be examined and defined.

Medium Priority:

- Yield per recruit analyses need to be conducted relative to alternative selective fishing patterns.
- Determine the bycatch of Spanish mackerel in the directed shrimp fishery in the Atlantic coastal waters.
- Evaluate the potential bias of the lack of appropriate stratification of the data used to generate age-length keys for Atlantic and Gulf Spanish mackerel.
- Evaluation of CPUE indices related to standardization methods and management history, with emphasis on greater temporal and spatial resolution in estimates of CPUE.
- Encourage the considerations of MRFSS ad-ons or other mechanisms for the collection of socioeconomic data for recreational and commercial fisheries.
- Conduct migration studies to determine normal Spanish mackerel migration routes and changes therein, and the climactic or other changes responsible for changes in the environmental and habitat conditions which may effect the habitat or availability of the stocks.
- Determine if any the migration of prey species (i.e., the engraulids, clupieds, carangids), and the migration patterns of the Spanish mackerel stock.

Low Priority:

- Identification of Spanish mackerel stocks through multiple research techniques needs to be compiled.
- Research needs to be completed on the application of assessment and management models relative to dynamic species such as Spanish mackerel.
- Temporal and spatial sampling to delineate spawning areas and areas of larval abundance should be initiated.

6.2.3 Research on the Effects of Fishing Activities

The effects of fishing are the subject of numerous, mostly site specific and fishery specific, investigations that focus largely on economic and social factors. Most early fisheries management efforts deal with increased yields, gear, and identifying and locating new target species and markets. With the world wide decline of many fish stocks emphasis has shifted, in recent years, to stock management and recovery. This change in management emphasis has gradually led to realization that reductions in the size and quality of fishery habitats have reached critical levels. It has also furthered the view that, in certain situations, fishing itself may be profoundly changing the physical and biological character of fish harvest and life requisite areas.

Trawling and other fishing activities that involve direct contact between fishing gear and the aquatic environment can alter the structural character of fish habitats. When the change is sufficient enough to preclude or limit use by fishery directed or target species, declines in catch abundance and individual fish size may occur. Although a clear cause and effect relationship is evident, determination of the level of effect inducted by physical change may be complex. Relevant factors, in addition to the magnitude of the direct physical change, may include disturbance frequency and duration, seasonality, and other environmental, ecological, and physiological processes that control recovery and recruitment of requisite species of the community. As noted by Auster and Langton (1998) "... mobile fishing gear reduced habitat complexity by (1) directly removing epifauna or damaging epifauna leading to mortality, (2) smoothing sedimentary bedforms and reducing bottom roughness, and (3) removing taxa which produce structure (i.e., taxa which produce burrows and pits)."

Primary information is lacking for us to strategically manage fishing impacts on Essential Fish Habitat without invoking precautionary measures. Priority studies should include a number of areas where primary data are lacking, which would allow better monitoring and improved experimentation, ultimately leading to predictive capabilities including:

- The spatial extent of fishing induced disturbance. While many observer programs collect data at the scale of single tows or sets, the fisheries reporting systems often lack this level of spatial resolution. The available data makes it difficult to make observations, along a gradient of fishing effort, in order to assess the effects of fishing effort on habitat, community, and ecosystem processes.

- The effects of specific gear types, along with a gradient of effort on specific habitat types. These data are the first order needs to allow an assessment of how much effort produces a measurable level of change in structural habitat components and the associated communities.

8.0 LIST OF PREPARERS

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

The following individuals assisted by reviewing drafts of this document:
Robert K. Mahood, Executive Director, South Atlantic Fishery Management Council
Kerry O'Malley, Technical Assistant, South Atlantic Fishery Management Council

Essential Fish Habitat Writing Team Members:

Estuarine Emergent Marsh
Carolyn Currin, NMFS, SEFSC Beaufort Laboratory (Team Leader)
Rob Dunlap, S.C. Marine Resources Center
Bill Hettler, NMFS, SEFSC Beaufort Laboratory
Dave Meyer , NMFS, SEFSC Beaufort Laboratory
Liz Noble, NCDMF DMF
Susan Stedman, NMFS Headquarters

Estuarine Shrub/Scrub Mangrove Habitat
Dr. Gordon Thayer, NMFS SEFSC (Team Leader)
~~Rob Dunlap, SCDNR, S.C. Marine Resources Center~~

Seagrass Habitat
Dr. W. Judson Kenworthy, NMFS SEFSC (Team Leader)
Dr. Randolph L. Ferguson, NMFS, SEFSC Beaufort Laboratory
Dr. Mark S. Fonseca, NMFS, SEFSC Beaufort Laboratory
Dr. Wilson Laney , USFWS
Dr. Gordon W. Thayer, NMFS, SEFSC Beaufort Laboratory

Oyster/Shell Habitat
Liz Noble, NCDMF DMF (Team Leader)
Dr. Bill Anderson, S.C. Marine Resources Center

Intertidal Flats
John Burke, NMFS, SEFSC Beaufort Laboratory (Team Leader)
Carolyn Currin, NMFS, SEFSC Beaufort Laboratory
Dave Peters, NMFS, SEFSC Beaufort Laboratory

Palustrine (Freshmarsh)
Dr. Wilson Laney, USFWS (Team Leader)
Dr. Randolph Ferguson, NMFS, SEFSC Beaufort Laboratory

Aquatic Beds
Dr. Wilson Laney, USFWS (Team Leader)
Dr. Randolph L. Ferguson, NMFS, SEFSC Beaufort Laboratory

Estuarine Water Column
Bill Hettler, NMFS, SEFSC Beaufort Laboratory

Coral and Coral Reefs
Jennifer Wheaton, FDEP FMRI (Team Leader)
Dr. Walter Jaap, FDEP FMRI
Dr. Ken Lindeman, RSMAS (SAFMC Visiting Scientist)

Live/Hard Bottom Habitat
Dr. Chuck Manooch, NMFS SEFSC Beaufort Laboratory
Mike Burton, NMFS SEFSC NMFS, Beaufort Laboratory
Dr. Ken Lindeman, RSMAS (SAFMC Visiting Scientist)
Dr. Pete Parker, NMFS SEFSC Beaufort Laboratory
Dr. Robert Van Dolah, SCDNR

Artificial Reef Habitat
Melvin Bell SCDNR, S.C. Marine Resources Center (Team Leader)
Henry Ansley, GDNR, Ecological Services Section
Richard Christian, Atlantic States Marine Fisheries Commission
John Dodrill, FDEP, Office of Fisheries Mgmt. & Asst. Services
Kurtis Gregg, NCDEHNR, Div. of Marine Fisheries

Pelagic Habitat (Water Column & Sargassum)
Larry Settle, NMFS SEFSC Beaufort Laboratory (Team Leader)
John Hare, NMFS SEFSC Beaufort Laboratory
John Govoni, NMFS SEFSC Beaufort Laboratory
Dr. Brian LaPointe, Harbor Branch Inst.

Threats to Habitat
David Rackley, NMFS SEFSC Beaufort Laboratory (Team Leader)
Bo Crum, Environmental Protection Agency
Dr. Aleta A. Hohn, NMFS, SEFSC Beaufort Laboratory
Dr. Ken Lindeman, RSMAS (SAFMC Visiting Scientist)
Andy Mager, NMFS SEFSC Beaufort Laboratory
Doug Rader, NC Environmental Defense Fund
Dr. Geoffrey I. Scott, NMFS, SEFSC, Charleston Laboratory
Dr. David W. Engel, NMFS, SEFSC Beaufort Laboratory

Essential Fish Habitat Workshop Participants who initated the development of this document and compilation of available habitat information.

SAFMC Essential Fish Habitat Distribution (GIS) Sub-Group Workshop: Essential Fish Habitat Workshop #1 July 29-30, 1997

Dr. Ford "Bud" Cross	NMFS, SEFSC Beaufort Laboratory
Dr. Randolph L. Ferguson	NMFS, SEFSC Beaufort Laboratory
Maggie Kelly	NMFS, SEFSC Beaufort Laboratory
Dr. L. Dorsey Worthy	Coastal Services Center NOAA
Katy West	NCDEHNR, Div. of Marine Fisheries
Mark Voss	NCDEHNR, Div. of Marine Fisheries
Harry Norris	FDEP, FL. Marine Research Inst.
Bruce Richardson	U. S. Fish and Wildlife Service
Janet Evans	Georgia Department of Natural Resources
Brad Digre	SCDNR Marine Resources Division
Dr. Mark Monaco	SEA Division/ ORCA/ NOAA
Dr. Elizabeth Wenner	SCDNR Marine Resources Division
Roger Pugliese	SAFMC

SAFMC GIS Species Distribution and Habitat Utilization Sub-Group Workshop: Essential Fish Habitat Workshop #2 July 30-31, 1997

Dr. Ford "Bud" Cross	NMFS, SEFSC Beaufort Laboratory
Dr. Randolph L. Ferguson	NMFS, SEFSC Beaufort Laboratory
Maggie Kelly	NMFS, SEFSC Beaufort Laboratory
Katy West	NCDEHNR, Div. of Marine Fisheries
Mark Voss	NCDEHNR, Div. of Marine Fisheries
Dr. Steve Ross	Center for Marine Science Research NC NERR
Robert H. Dunlap Jr.	SCDNR, Marine Resources Division
Janet Evans	GDNR, Ecological Services Section
Harry Norris	FDEP, FL. Marine Research Inst.
Dr. Mark Monaco	NOAA SEA Division, ORCA
Dr. Charles Barans	SCDNR, Marine Resources Division
Dr. Mark Collins	SCDNR, Marine Resources Division
Dr. Elizabeth Wenner	SCDNR, Marine Resources Division
Dr. Charles Wenner	SCDNR, Marine Resources Division
David Whitaker	SCDNR, Marine Resources Division
Roger Pugliese	SAFMC

SAFMC Wetland Habitat Sub-Group Workshop:
Essential Fish Habitat Workshop #3 August 11-12, 1997

David L. Meyer	NMFS, SEFSC Beaufort Laboratory
Dr. William F. Hettler Jr.	NMFS, SEFSC Beaufort Laboratory
David Rackley	NMFS, SERO
Susan-Marie Stedman	NMFS Office of Habitat Protection
Elizabeth E. Noble	NCDEHNR, Div. of Marine Fisheries
J. Heyward Robinson	SCDHEC, Office of Ocean & Coastal Management
Robert H. Dunlap Jr.	SCDNR, Marine Resources Center
Dr. Stuart Stevens	GDNR, Ecological Services Section
Mitch King	USFWS, Service Ecological Services Office
Dr. Peter Rubec	FDEP, Florida Marine Research Inst.
Dr. Wilson Laney	U. S. Fish Wildlife Service, Raleigh
Steve Gilbert	U. S. Fish Wildlife Service, Charleston Field Office
Wesley B. Crum	Chief of Coastal Programs, USEPA Region IV
Roger Pugliese	SAFMC

SAFMC Seagrass Habitat Sub-Group Workshop:
Essential Fish Habitat Workshop #4 August 12, 1997

David L. Meyer	NMFS, SEFSC Beaufort Laboratory
Elizabeth E. Noble	NCDEHNR, Div. of Marine Fisheries
Robert H. Dunlap Jr.	SCDNR,.Marine Resources Center
Dr. Peter Rubec	FDEP, Florida Marine Research Inst.
Dr. Wilson Laney	U. S. Fish Wildlife Service
Dr. Paul Carlson	FDEP, Florida Marine Research Institute
Wesley B. Crum	USEPA Region IV
Roger Pugliese	SAFMC

SAFMC Oyster / Shell Habitat Sub-Group Workshop:
Essential Fish Habitat Workshop #5 August 13, 1997

Elizabeth E. Noble	NCDEHNR, Div. of Marine Fisheries
David L. Meyer	NMFS, SEFSC Beaufort Laboratory
Robert H. Dunlap Jr.	SCDNR, S.C.Marine Resources Division
Bill Anderson	SCDNR, S.C.Marine Resources Division
J. Heyward Robinson	DHEC, Office of Ocean and Coastal Management
Dr. Stuart Stevens	GDNR, Ecological Services Section
Dr. Peter Rubec	FDEP, Florida Marine Research Institute
David Rackley	NMFS, SERO
Roger Pugliese	SAFMC

SAFMC Water Issues Habitat Sub-Group Workshop:
Essential Fish Habitat Workshop #6 August 13, 1997

David L. Meyer	NMFS, SEFSC, Beaufort Laboratory
Dr. Geoffrey I. Scott	NMFS, SEFSC, Charleston Laboratory
David Rackley	NMFS, SERO
Robert H. Dunlap Jr.	SCDNR, S.C.Marine Resources Center
Dr. Stuart Stevens	GDNR, Ecological Services Section
Dr. Wilson Laney	U. S. Fish Wildlife Service
Dr. Paul Carlson	FDEP, Florida Marine Research Institute
Doug Rader	NC Environmental Defense Fund
J. Heyward Robinson	DHEC, Office of Ocean and Coastal Management
James Holland	GA Commercial Fisherman
Rebecca Shortland	The Georgia Conservancy
Roger Pugliese	SAFMC

SAFMC Coral, Coral Reefs, and Live Hard Bottom Sub-Group Workshop:
Workshop #7 September 16-17, 1997

Jennifer Wheaton	FDEP, Florida Marine Research Institute
Professor Pamella Hallock Muller	Dept. Marine Science, University of South Florida
Kurtis Gregg	NCDEHNR, Div. of Marine Fisheries
Dr. Robert Van Dolah	SCDNR, S.C. Marine Resources Center
Robert H. Dunlap Jr.	SCDNR, S.C.Marine Resources Division
Henry Ansley	GDNR Ecological Services Section
Dave Score	Grays Reef National Marine Sanctuary
Dr. Paul Carlson	FDEP, Florida Marine Research Institute
Henry Norris	FDEP, FL. Marine Research Inst.
Dawn Whitehead	U. S. Fish Wildlife Service
Andy Mager	NMFS SERO Habitat Conservation Div.
Georgia Cranmore	NMFS SERO Fishery Operations Div.
Richard Parker	NMFS, SEFSC Beaufort Laboratory
Dr. Charles Manooch III	NMFS, SEFSC Beaufort Laboratory
Michael L. Burton	NMFS, SEFSC Beaufort Laboratory
Ken Lindeman	RSMAS Div. Marine Biology and Fisheries
Roger Pugliese	SAFMC

SAFMC Habitat Sub-Group Workshop (Artificial Reefs): Workshop #8 September 18, 1997

Melvin BellSCDNR	S.C. Marine Resources Center
Richard Christian	Atlantic States Marine Fisheries Commission
Kurtis Gregg	NCDEHNR, Div. of Marine Fisheries
Dr. Robert Van Dolah	SCDNR, S.C. Marine Resources Center
Robert H. Dunlap Jr.	SCDNR, S.C.Marine Resources Division
Henry Ansley	GDNR, Ecological Services Section
Andy Mager	NMFS SERO, Habitat Conservation Division
John Dodrill	FDEP, Office of Fisheries Mgmt. & Asst. Services
Richard Parker	NMFS, SEFSC Beaufort Laboratory
Michael L. Burton	NMFS, SEFSC Beaufort Laboratory
Dr. Charles Manooch III	NMFS, SEFSC Beaufort Laboratory
Henry Norris	FDEP, FL. Marine Research Inst.
David Score	Grays Reef National Marine Sanctuary
Dr. Ken Lindeman	RSMAS, Division of Marine Biology and Fisheries
Roger Pugliese	SAFMC

SAFMC Habitat Sub-Group Workshop (Pelagic Habitat - Sargassum and Water Column): Workshop #9 October 7-8, 1997

Dr. Ford "Bud" Cross	NMFS, SEFSC Beaufort Laboratory
Lawrence R. Settle	NMFS, SEFSC Beaufort Laboratory
Dr. Donald E. Hoss	NMFS, SEFSC Beaufort Laboratory
Sherry E. Eperly	NMFS, SEFSC Beaufort Laboratory
Dr. Jeff J. Govoni	NMFS, SEFSC Beaufort Laboratory
Dr. Charles Manooch III	NMFS, SEFSC Beaufort Laboratory
Dr. John V. Merriner	NMFS, SEFSC Beaufort Laboratory
Dr. Dave S. Peters	NMFS, SEFSC Beaufort Laboratory
Dr. Aleta A. Hohn	NMFS, SEFSC Beaufort Laboratory
Dr. Brian LaPointe	Harbor Branch Institute
Mary Moser	Center for Marine Science Research NC NERR
Susan-Marie Stedman	Office of Habitat Protection NOAA NMFS
Fritz Rohde	NCDEHNR, Div. of Marine Fisheries
Robert H. Dunlap Jr.	SCDNR, Marine Resources Div.
Dr. L. Dorsey Worthy	Coastal Services Center, NOAA
David Rackley	NMFS, SERO
Peter Bell	Univ. Queensland, Chem. and Environ. Engineering,
Roger Pugliese	SAFMC

SAFMC Habitat Research and Monitoring Sub-Group:
Workshop #10 November 17, 1997

Dr. Ford "Bud" Cross	NMFS, SEFSC Beaufort Laboratory
Dr. Aleta A. Hohn	NMFS, SEFSC Beaufort Laboratory
Dr. John V. Merriner	NMFS, SEFSC Beaufort Laboratory
Dr. David S. Peters	NMFS, SEFSC Beaufort Laboratory
Dr. Mark S. Fonseca	NMFS, SEFSC Beaufort Laboratory
Dr. Jeff Govoni,	NMFS SEFSC Beaufort Laboratory
Dr. Judson Kenworthy	NMFS, SEFSC Beaufort Laboratory
Dr. Randolph Ferguson,	NMFS, SEFSC Beaufort Laboratory
Lawrence Settle	NMFS, SEFSC Beaufort Laboratory
Dr. Patricia A. Tester	NMFS, SEFSC Beaufort Laboratory
Andy Mager	NMFS SERO
Susan-Marie Stedman	Office of Habitat Protection NOAA NMFS
Fred Holland	SCDNR, Div. of Marine Fisheries
Robert H. Dunlap Jr.	SCDNR, Div. of Marine Fisheries
Mel Bell	SCDNR, Div. of Marine Fisheries
Dianne Stephan	ASMFC
Dr. Robert Goldstein	
J. Heyward Robinson	SCDHEC, Office of Ocean and Coastal Man.
Dr. Peter Rubec	FDEP, Florida Marine Research Institute
Dr. Wilson Laney	U. S. Fish Wildlife Service
Wesley B. Crum	Chief of Coastal Programs, USEPA Region IV
Katy West	NCDEHNR, Div. of Marine Fisheries
Fritz Rohde	NCDEHNR, Div. of Marine Fisheries
Dr. Brian LaPointe	Harbor Branch Institute
Dr. Mark Monaco	NOAA SEA Division, ORCA
John Christensen	NOAA SEA Division, ORCA
Dr. L. Dorsey Worthy	Coastal Services Center, NOAA
Don Field	Coastal Services Center, NOAA
Roger Pugliese	SAFMC

Illustrations

Snapper grouper species illustrations presented in the Habitat Plan are by Duane Raver in Manooch,III, C.S. and D. Raver, Jr. 1984. "Fisherman's guide: fishes of the southeastern United States."

Live/Hard Bottom photograph presented on the Habitat Plan cover was provided by Bill Mansfield (Spiny Lobster Advisory Panel Member).

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

SAFMC Coral Advisory Panel

Jennifer Wheaton, Chairman, FDEP
Dr. Walter Goldberg, Vice Chairman
Stephan Blair, Dade Co. DERM
Captain Ed Davidson
Dr. Richard Dodge, NOVA University
Dr. Henry Feddern
Michael McMaster
Ken Nedimyer
Christopher Parisi
Alexander Stone, Project Reefkeeper
Dr. Robert Van Dolah, SCDNR

SAFMC Habitat Advisory Panel

Robert H. Dunlap Jr., AP Chairman, SCDNR

North Carolina Sub-Panel:

Dr. Robert Goldstein, Chairman
Katy West, NCDEHNR
Wilson Laney, USFWS
Doug Rader
Terry Pratt
David Moye, NCDENR/DCM

South Carolina Sub-Panel:

Robert H. Dunlap Jr., Chairman, SCDNR
Roger L. Banks, USFWS/SC
James B. "Chip" Berry III
Donna F. Jacobs
Dr. Donald Millus
J. Heyward Robinson, SCDHEC/OCRM

Georgia Sub-Panel:

Paul Glenn
James Holland
Rebecca Shortland, The GA Conservancy
Dr. Stuart Stevens, GDNR
Mitch King, USFWS/GA

Florida Sub-Panel:

James Farr, FCMA, Chairman
Tina Brown
Dr. Paul Carlson, FMRI
James Harvey
Janie Thomas
Dawn Whitehead, USFWS

Members At-Large

Dr. Ford "Bud" Cross NMFS, Lab Director, SEFSC Beaufort Laboratory
Wesley B. "Bo" Crum, EPA RegionIV
Andy Mager, NMFS SERO, Habitat Conservation Division
Dianne Stephan, ASMFC, Habitat Coordinator
Susan Stedman, NMFS, Habitat Conservation Division, Headquarters

The following individuals provided data, guidance or direct support for geographical information, species profiles, or life history tables presented in this public hearing document:

Dr. Mark Monaco, NOAA SEA Division	ELMR Images and Table Coverages
Dr. John Christensen, NOAA SEA Division	ELMR Image and Table Coverages
Jack McGovern, SCDNR, Marine Resources Division	MARMAP Data,
Dr. George Sedberry, SCDNR, Marine Resources Division	MARMAP Data, Charleston Bump
Pete Parker, NMFS, SEFSC Beaufort Laboratory	Deepwater Snapper Grouper Species & Habitat
Matt Kendall, NOAA SEA Division	MARMAP Data /ArcView Files
David Morris Nelson, NOAA SEA Division	Life History Tables
Dr. Randolph Ferguson, NMFS, SEFSC Beaufort Lab	Seagrass Distribution Coverages
Douglas T. Wilder, FDEP, FL. Marine Research Inst.	SEAMAP Bottom Mapping ArcView Files
Bill Roth, FDEP, FL. Marine Research Inst.	SEAMAP Bottom Mapping Project CD
Dave Capaz, FDEP, FL. Marine Research Inst.	FL GIS
Rhoda Millard, NCDEHNR, Div. of Marine Fisheries	ArcView Coverage (Oyster/Shell)
Maggie Kelly, NMFS, SEFSC Beaufort Laboratory	
Dr. L. Dorsey Worthy, Coastal Services Center NOAA	C-CAP
Mark Voss, NCDEHNR, Div. of Marine Fisheries	NC GIS Data
Harry Norris, FDEP, FL. Marine Research Inst.	FL GIS (SORI/SEAMAP Hard Bottom)
Dr. Peter Rubec, FDEP, FL. Marine Research Inst.	FLELMR /FL GIS Data
Janet Evans, Georgia Department of Natural Resources	
Brad Digre, SCDNR Marine Resources Division	SC GIS
Jeff Trudnak, SCDNR Marine Resources Division	SC GIS- Shellfish Resource Maps
Dr. Ken Lindeman, SAFMC Visiting Scientist	Life History Tables, Snapper Grouper Species Profiles
Dr. Grant Gilmore, NMFS SEFSC	Snapper Grouper Species Profiles

9.0 LIST OF AGENCIES AND ORGANIZATIONS

Responsible Agency

South Atlantic Fishery Management Council
1 Southpark Circle
Southpark Building, Suite 306
Charleston, South Carolina 29407-4699
(843) 571-4366
(843) 769-4520 (FAX)
safmc@noaa.gov (email)

List of Agencies, Organizations, and Persons Consulted

SAFMC Law Enforcement Advisory Panel
SAFMC Habitat Advisory Panel
SAFMC Coral Advisory Panel
SAFMC Scientific and Statistical Committee
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Georgia Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida Department of Environmental Protection
Florida Marine Fisheries Commission
Georgia Department of Natural Resources
South Carolina Department of Natural Resources
North Carolina Department of Environment, Health, and Natural Resources
South Carolina Department of Health and Environmental Control
Gulf and South Atlantic Fisheries Development Foundation
GMFMC, CFMC, MAFMC & NEFMC
National Marine Fisheries Service
- Washington Office
- Office of Ecology and Conservation
- Southeast Region
- Beaufort Lab
- Charleston Lab
- Southeast Fisheries Science Center

National Oceanic and Atmospheric Administration
- General Counsel
- SEA Division/ORCA
- Coastal Services Center

United States Fish and Wildlife Service
United States Coast Guard
United States Environmental Protection Agency, Region IV
Center for Marine Conservation
National Fisheries Institute
Florida Sea Grant
Atlantic Coast Conservation Association
Atlantic States Marine Fisheries Commission
North Carolina Fisheries Association
Organized Fishermen of Florida
Southeastern Fisheries Association
The Georgia Conservancy
Project Reefkeeper
Harbor Branch Institute
Monroe County Commercial Fishermen, Inc.

10.0 OTHER APPLICABLE LAW

10.1 Vessel Safety

PL. 99-659 amended the Magnuson Act to require that a fishery management plan or amendment must consider, and may provide for, temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting the safety of the vessels.

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

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

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

10.2 Coastal Zone Consistency

Section 307(c)(1) of the federal Coastal Zone Management Act of 1972 requires that all federal activities which directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. While it is the goal of the Council to have complementary management measures with those of the states, federal and state administrative procedures vary and regulatory changes are unlikely to be fully instituted at the same time. Based upon the assessment of this amendment's impacts in previous sections, the Council has concluded this amendment is an improvement to the federal management measures for EFH and the species that depend on such EFH.

This amendment is consistent with the Coastal Zone Management Plan of Florida, Georgia, South Carolina, and North Carolina to the maximum extent practicable.

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

10.3 Endangered Species and Marine Mammal Acts

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

to depths greater than 50 fathoms and to areas north of St. Lucie Inlet, Florida; established special management zones where all gear other than hook-and-line and diving are prohibited; and prohibited fishing for bottom species in the Oculina Bank HAPC. Consultations on these actions concluded on April 28, 1989; July 6, 1990; March 7, 1991; May 3, 1991; September 19, 1991; December 30, 1992; September 21, 1993; and March 18, 1994. The latest consultation was for Amendment 8 on May 16, 1997. All consultations concluded that neither the proposed management measures nor the fishery would adversely affect the recovery of endangered or threatened species, or their critical habitat. A description of the need for management and fishing practices is given in Section 1 and Section 3.3.

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

Amendment 10 further restricted use of allowable gear and reduced fishing pressure. Therefore, the Council has concluded that neither the proposed management measures in the Comprehensive Habitat Amendment nor the fishery will adversely affect the recovery of endangered or threatened species, or their critical habitat.

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

	Whales:	Date Listed
(1)	Northern right whale- *Eubalaena glacialis* (ENDANGERED)	12/2/70
(2)	Humpback whale- *Magaptera novaeangliae* (ENDANGERED)	12/2/70
(3)	Fin whale- *Balaenoptera physalus* (ENDANGERED)	12/2/70
(4)	Sei whale- *Balaenoptera borealis* (ENDANGERED)	12/2/70
(5)	Sperm whale- *Physeter macrocephalus* (ENDANGERED)	12/2/70
(6)	Blue whale- *Balaenoptera musculus* (ENDANGERED)	

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

	Other Species Under U.S. Fish and Wildlife Service Jurisdiction:	Date Listed
(1)	West Indian manatee- *Trichechus manatus* (ENDANGERED)	3/67
	(Critical Habitat Designated)	1976
(2)	American crocodile - *Crocodulus acutus* (ENDANGERED)	9/75
	(Critical Habitat Designated)	12/79

10.4 Paperwork Reduction Act

The purpose of the Paperwork Reduction Act is to control paperwork requirements imposed on the public by the federal government. The authority to manage information collection and record keeping requirements is vested with the Director of the Office of Management and Budget. This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications.

The Council is not proposing measures under this amendment that will involve increased paperwork and consideration under this Act.

10.5 Federalism

No federalism issues have been identified relative to the actions proposed in this amendment and associated regulations. The affected states have been closely involved in developing the proposed management measures and the principal state officials responsible for fisheries management in their respective states have not expressed federalism related opposition to adoption of this amendment.

10.6 National Environmental Policy Act

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

The proposed amendment is a major action having a significant positive impact on the quality of the marine and human environment of the South Atlantic. The proposed action will have a significant positive impact by reducing fishing gear-related habitat impacts.

A formal Environmental Impact Statement (EIS) was prepared for the shrimp fishery for the original fishery management plan (SAFMC, 1983). A SEIS was prepared for Amendment 1 (SAFMC 1996) and Amendment 2 (SAFMC 1997).

A formal Environmental Impact Statement (EIS) was prepared for the red drum fishery for the original fishery management plan (SAFMC, 1983).

A formal Environmental Impact Statement (EIS) was prepared for the snapper grouper fishery for the original fishery management plan (SAFMC, 1983). A SEIS was prepared for Amendment 8 (SAFMC 1997) and Amendment 9 (SAFMC 1997).

A formal Environmental Impact Statement (EIS) was prepared for the coastal migratory pelagics fishery for the original fishery management plan (SAFMC, 1983). A SEIS was prepared for Amendment 8 (SAFMC 1996).

An Environmental Assessment (EA) was prepared for the golden crab fishery for the original fishery management plan (SAFMC, 1983).

A formal Environmental Impact Statement (EIS) was prepared for the spiny lobster fishery for the original fishery management plan (SAFMC, 1982).

A formal Environmental Impact Statement (EIS) was prepared for the coral, coral reefs, and live/hard bottom habitat fishery for the original fishery management plan (SAFMC, 1983). A SEIS was prepared for Amendment 1 (SAFMC 1996), Amendment 2 (SAFMC 1994), and Amendment 3 (SAFMC 1995).

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.

Overall, the benefits to the nation resulting from implementation of this amendment are greater than management costs.

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

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

Beneficial and Adverse Impacts

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

Summary of Adverse Impacts: For a detailed discussion of the biological, social, and economic adverse impacts of the proposed measures refer to the biological, social, and economic impact discussions under each Action in Section 4.2.

Summary of Beneficial Impacts: For a detailed discussion of the biological, social, and economic beneficial impacts of the proposed measures refer to the biological, social, and economic impact discussions under each Action in Section 4.2.

Public Health or Safety

The proposed actions, and their alternatives, are not expected to have any substantial adverse impact on public health or safety. The proposed measure requiring the use of transponders will decrease hazards for vessels and crew safety.

Unique Characteristics

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

Prior amendments (see snapper grouper, shrimp, and coral amendments) established an experimental closed area in the Oculina Habitat Area of Particular Concern (see Section). This area is being studied to evaluate the effectiveness of closed areas for protecting long-lived species such as snapper and groupers. Such areas are useful in preserving the genetic diversity present in such species. In addition, special management zones have been established around artificial reefs to preserve the original intent of such areas.

Controversial Effects

The proposed actions are not expected to have significant controversial effects. The Council provided extensive opportunity for input by holding public hearings, and by providing the opportunity for interested persons to provide written comments. During development of this amendment, the Council has incorporated suggestions from the public. Additionally, states incorporate public input into their management measures which track the federal measures.

Uncertainty or Unique/Unknown Risks

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

Precedent/Principle Setting

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

Relationship/Cumulative Impact

The proposed actions are not expected to have any significant cumulative negative impacts that could have a substantial effect on resources or any related stocks, including sea turtles.

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. Prohibition of all fishing in the experimental closed area established under Snapper Grouper Amendment 6 (SAFMC 1995) provides a unique opportunity to study the impacts of no fishing on the ecosystem and genetic diversity of snapper grouper species. Ongoing studies are expected to yield positive results over the next four to six years.

Endangered/Threatened Species Impacts

The proposed actions are not expected to have any negative effects on any endangered or threatened species or marine mammal population. In fact, the proposed actions to protect Sargassum and other essential fish habitat used by threatened or endangered species will have a positive effect. Critical habitats, established under ESA, have been designated in the South Atlantic for the Northern Right Whale and Johnson's Seagrass.

Therefore, the Council has concluded that neither the proposed management measures in the Comprehensive Essential Fish Habitat Amendment nor the fisheries managed by the Council will adversely affect the recovery of endangered or threatened species, or their critical habitat.

Interaction With Existing Laws for Habitat Protection

The proposed actions are expected to have a positive interaction with existing Federal requirements imposed for the protection of the environment. The proposed actions will enhance existing federal regulations protecting fisheries under the jurisdiction of the South Atlantic Council and coordinate with State, Federal, and regional efforts to protect inshore/estuarine habitat.

Effects of the Fishery on the Environment

Section 4.2 of the Habitat Plan discuss threats to essential habitat from fishing activities. The Council evaluated the effects of fisheries under their jurisdiction on the environment and concluded that the fisheries, as prosecuted, do impact essential fish habitat. Implementation of the management measures proposed under this comprehensive amendment will reduce to the maximum extent practicable the impact of South Atlantic fisheries on essential fish habitat.

Bycatch

The Comprehensive Amendment addressing Sustainable Fishery Act requirements addresses bycatch. Please refer to that amendment for actions addressing bycatch.

Effort Directed at or From Other Fisheries

Measures proposed in this comprehensive amendment should not result in effort shifts into other fisheries.

11.0 REFERENCES

Acheson, J. M. 1981. The anthropology of fishing. Annual Review Of Anthropology: 10:275-316 Palo Alto, CA. Annual Reviews, Inc.

Auster, P.J. and R.W. Langton. 1998. The indirect effects of fishing -- draft 2. Draft report for the National Marine Fisheries Service. 52 pp.

CEQ. 1986. U.S. Council on Environmental Quality. Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1500-1508). Washington. Government Printing Office, Washington, DC. 20402.

Easley, J.E., Jr. and J. Prochaska. 1985. Price Analyses for Florida and North Carolina Bay Scallops and Southeast Calico Scallops. August 1995. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

Gatewood, J. B. and B.J. McCay. 1988. Job satisfaction and the culture of fishing: A comparison of six New Jersey fisheries. Maritime Anthropological Studies (MAST) 1(2): 103-128

GMFMC & SAFMC. 1982. Fishery Management Plan and Final Environmental Impact Statement for Coral and Coral Reefs. Gulf of Mexico & South Atlantic Fishery Management Councils. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

McKinney, D.A. 1997. Hawaii Fishing Vessel Monitoring System - Report of the Pilot Project. NMFS/NOAA. 37 pp.

Poggie, J. J., Jr., and C. Gersuny. 1974. Fishermen of Galilee Kingston, RI: University of Rhode Island, Sea Grant College Program (Marine Bulletin Series, No. 17)

SAFMC. 1998. Habitat Plan for the South Atlantic Region: Essential Fish Habitat Requirements for Fishery Management Plans of the South Atlantic Fishery Management Council. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC. 1998. Amendment Number 9 to the Snapper Grouper Fishery of the South Atlantic Region, including a Final Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC. 1997. Amendment Number 8 to the Snapper Grouper Fishery of the South Atlantic Region, including a Final Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC. 1996. Amendment 1 to the Fishery Management Plan for the Shrimp Fishery of the South Atlantic Region (Rock Shrimp). South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699, 196 pp.

SAFMC. 1995. Amendment 3 to the fishery management plan for coral, coral reefs and live /hard bottom habitats of the South Atlantic region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 237 pp.

SAFMC. 1995. Fishery Management Plan including Regulatory Impact Review, Environmental Assessment, and Social Impact Assessment for the Golden Crab Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699.

SAFMC. 1994a. Amendment Number 7, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 282 pp.

SAFMC. 1994b. Regulatory Amendment Number 6, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 300 pp.

SAFMC. 1993a. Fishery Management Plan for Shrimp Fishery of the South Atlantic Region Including a Final Environmental Impact Statement and Regulatory Impact Review. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 300 pp.

SAFMC. 1993b. Amendment Number 6, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 155 pp.

SAFMC. 1991a. Amendment Number 5, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 111 pp.

SAFMC. 1991b. Amendment Number 4, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 200 pp.

SAFMC. 1991c. Draft Source Document for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Circle, Suite 306, Charleston, South Carolina, 29407-4699.

SAFMC. 1990a. Amendment Number 3, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 65 pp.

SAFMC. 1990b. Amendment Number 2, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 42 pp.

SAFMC. 1988. Amendment Number 1 and Environmental Assessment and Regulatory Impact Review to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 63 pp.

SAFMC. 1981. Profile of the Penaeid Shrimp Fishery in the South Atlantic. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 63 pp.

SAFMC. 1983. Fishery Management Plan, Regulatory Impact Review and Final Environmental Impact Statement for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Circle, Suite 306, Charleston, South Carolina, 29407-4699.

SAFMC and GMFMC. 1994. Amendment 2 to the Fishery Management Plan for Coral and Coral Reefs, (Including Supplemental Environmental Impact Statement, Regulatory Impact Review, and Initial Regulatory Flexibility Analysis). South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 140 pp.

SEAMAP. 1996. Southeast Area Monitoring and Assessment Program (SEAMAP), SEAMAP-South Atlantic Committee, Shrimp Bycatch Work Group, Final Report, Estimates of Finfish Bycatch in the South Atlantic Schrimp Fishery, edited by Robin Peuser, ASMFC, 1444 Eye St., NW, Sixth Floor, Washington, DC 20005, April 1996.

Vondruska, J. 1998. Commercial Landings of Coastal Migratory Pelagic Fish, East and Gulf Coast, 1962-1997. National Marine Fisheries Service, Fisheries Economics Office. March 20, 1998. SERO-ECON-98-16.

Wenner, E.L., G.F. Ulrich, and J.B. Wise. 1987. Exploration for golden crab, *Geryon fenneri*, in the South Atlantic Bight: Distribution, population structure, and gear assessment. Fishery Bulletin, United States 85: 547-560.

12.0 PUBLIC HEARING LOCATIONS AND DATES.

All public hearings begin at 6:00 p.m. at the following locations:

June 15-16, 1998
Ponce de Leon
4000 U.S. Hwy. 1 North
St. Augustine, Florida 32095

June 22, 1998
Town & Country Inn
2008 Savannah Highway
Charleston, South Carolina

June 23, 1998
Carteret Community College
3505 Arendell Street
Morehead City, North Carolina 28557

June 24, 1998
Holiday Inn Savannah
Highway 17 South at I-95
Richmond Hill, Georgia

June 25, 1998
Holiday Inn Express
7151 Okeechobee Road
Ft. Pierce, Florida 34945

June 26, 1998
Hawk's Cay Resort
Mile Marker 61
Marathon, Florida

13.0 APPENDICES

Appendix A. SAFMC Proposed Process for Reviewing/Commenting on Projects Affecting Essential Fish Habitat.

SAFMC Responsibilities For Essential Fish Habitat and Environmental Protection

On January 20, 1998, the Guidelines for implementing the essential fish habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) became effective [50 CFR Part 600 (Docket No. 961030300-7238-04; I.D. 120996A)RIN 0648-AJ30]. The guidelines are intended to assist Fishery Management Councils (Councils) and the Secretary of Commerce (Secretary) in describing and identifying EFH in fishery management plans (FMPs), including identification of adverse impacts from both fishing and non-fishing activities on EFH, and identification of actions required to conserve and enhance EFH. The guidelines also detail procedures that the Secretary (acting through the NMFS), other Federal agencies, state agencies, and the Councils will use to coordinate, consult, or provide recommendations on Federal and state activities that may adversely affect EFH.

Established policies and procedures of the SAFMC provide the framework for coordination with NMFS, and other habitat partners in the south Atlantic region to conserve and enhance essential fish habitat. New and expanded responsibilities contained in the MSFCMA are being met by modifying the Council's established procedures for reviewing Federal or state actions that may adversely affect the EFH of a managed species. The Council actively comments on non-fishing projects or policies that may impact essential fish habitat. In response to an earlier amendment to the Magnuson Act, the Council adopted a habitat policy and procedure document that established a four state Habitat Advisory Panel and adopted a comment and policy development process. Pursuant to §600.930 of the final interim rule implementing the EFH provisions of the MSFCMA, the Council is modifying the existing review process to address the new EFH mandate. The Habitat Policy serves as the foundation of the Council's commitment to conserve, and manage our nations fishery resources and the essential fish habitat they depend upon.

SAFMC Essential Fish Habitat and Environmental Protection Policy

In recognizing that managed species are dependent on the quantity and quality of their essential fish habitats, it is the policy of the SAFMC to protect, restore, and develop essential fish habitat upon which 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: **"essential fish habitat" is defined as those waters and substrate necessary to fish for spawning, breeding, or growth to maturity; "waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; and "necessary" means the habitat required to support a sustainable fishery and a healthy ecosystem.**

The objectives of the SAFMC policy will be accomplished through the recommendation of no net loss or significant environmental degradation of existing essential fish habitat. A long-term objective is to support and promote a net-gain of essential fish habitat through the restoration and rehabilitation of the productive capacity of essential fish habitats that have been degraded, and the creation and development of productive essential fish 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 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.

EFH in Fishery Management Plans:

The Council, pursuant to the MSFCMA Section 303(7)(a) Contents of Fishery Management Plans Required Provisions is mandated to "...describe and identify essential fish habitat based on the guidelines established by the Secretary under Section 305(b)(1)(A), minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat;"

To address this mandate, SAFMC staff, through consultation with a Species Plan Development Team, Species Committee, NMFS SERO Habitat Conservation Division and NMFS SEFSC, will insure that:

1. Essential fish habitat for a species to be managed, where information is readily available, is defined at the earliest possible stage of the fishery management plan development process. This information will be incorporated into the Habitat Plan which serves as a habitat source document for all Fishery Management Plans; and

2. Recommendations to the responsible agencies, are included in the plan which identify habitat improvements or changes in Federal policies, which are desirable to achieve the objectives of the plan (e.g. habitat policy statements for an essential fish habitat type or activity impacting essential fish habitat).

The SAFMC Habitat Plan, presents a detailed description of the southeast ecosystem by habitat type specifying EFH for managed species or species complexes. The Habitat Plan, pursuant to the guidelines, also considers designation of Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) where identified for managed species. The following criteria are considered when determining whether a type, or area of EFH is an essential fish habitat-habitat area of particular concern: (1) the importance of the ecological function provided by the habitat; (2) the extent to which the habitat is sensitive to human-induced environmental degradation; and (3) whether, and to what extent, development activities are, or will be, stressing the habitat type. A coral HAPC process under the coral plan already exists and differs somewhat from the process recommended in the EFH guidelines. The Habitat Plan also includes information on anadromous and catadromous species and the habitat they depend upon to provide the Council with information on which to develop comments on projects impacting that habitat.

In addition to describing EFH, the Habitat Plan also identifies non-fishing related activities that have the potential to adversely affect EFH quantity or quality. The Habitat Plan presents available information describing the ecosystem and the dependence of managed species on the ecosystem as well as available information on how fishing and non-fishing activities influence habitat function. An assessment of the cumulative and synergistic effects of multiple threats, including the effects of natural stresses (such as storm damage or climate-based environmental shifts), and an assessment of the ecological risks resulting from the impact of those threats on the managed species habitat is included. General conservation and enhancement recommendations are included in the Habitat Plan to be used by the Council, NMFS, and other habitat partners in commenting on actions impacting EFH. These include but are not limited to recommending the enhancement of rivers, streams, and coastal areas, protection of water quality and quantity,

recommendations to local and state organizations to minimize destruction/degradation of wetlands, restore and maintain the ecological health of watersheds, and replace lost or degraded EFH.

Project and Policy Review:

The SAFMC, through its Habitat and Environmental Protection Committee, may review, comment on or make recommendations on those proposed habitat alterations, policy or other human actions which may have an adverse impact on those fisheries addressed in the Council's plans and or under the authority of the MFCMA. The Magnuson-Stevens Fishery Conservation and Management Act, Public Law 104-208 reflects the new Secretary of Commerce and Fishery Management Council authority and responsibilities for the protection of essential fishery habitat. The Act specifies that each Federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat identified under this Act.

Additional provisions specify that the Council: may comment on and make recommendations to the Secretary and any Federal or State agency concerning any activity authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by any Federal or State agency that, in the view of the Council, may affect the habitat, including essential fish habitat, of a fishery resource under its authority; and shall comment on and make recommendations to the Secretary and any Federal or State agency concerning any such activity that, in the view of the Council, is likely to substantially affect the habitat, including essential fish habitat, of an anadromous fishery resource under its authority. Within 30 days after receiving a recommendation, a Federal agency shall provide a detailed response in writing to the Council and the Secretary regarding the matter. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on such habitat. In the case of a response that is inconsistent with the recommendations of the Secretary, the Federal agency shall explain its reasons for not following the recommendations.

Additional terms in the Act specify provisions for commenting on activities impacting essential fish habitat. If the Secretary receives information from the Council or Federal or State agency or determines from other sources that an action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by any State or Federal agency would adversely affect any essential fish habitat identified under this Act, the Secretary shall recommend to such agency measures that can be taken by such agency to conserve such habitat. Within 30 days after receiving a recommendation, a Federal agency shall provide a detailed response in writing to any Council commenting and the Secretary regarding the matter. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on such habitat. In the case of a response that is inconsistent with the recommendations of the Secretary, the Federal agency shall explain its reasons for not following the recommendations.

SAFMC Project Review Process:

The following procedures are supplemented by the Council review procedures diagram which follows:

1. NMFS Habitat Conservation Division field personnel shall forward copies of public notices of permit requests for significant state or federally authorized or federally permitted projects immediately to Council staff followed by special briefings, as appropriate, or by NMFS position statements, as developed.

2. Significant projects may also be selected by the Habitat Committee or Council members, and Council staff or Habitat Advisory Panel members for consideration by the Council.

3. Council staff when deemed appropriate, request state and other federal assessments (position statement) of project impact for these projects as soon as developed and forward to the committee.

4. The SAFMC Habitat and Environmental Protection Advisory Panel shall, when called upon by the Council chairman, review proposed actions and provide expert testimony.

5. The Habitat Committee shall develop a position to be forwarded to the Council for consideration. The Committee, given time constraints, may also take action with concurrence of the Council chairman.

6. The Council shall file comments of concern or recommended project modifications to reduce environmental damage with the federal construction or regulatory agency (COE, FERC, etc.).

a. Committee members, Advisory Panel members and Council staff may testify at public hearings, at the request of the Council Chairman.

b. Request clarification from COE and regulatory agencies, as needed.

7. The Committee shall report on its actions, at Council meetings as needed.

Criteria Used to Define Significant Projects:

1. a. any activity that in the view of the Council may affect the essential fish habitat of a fish (any fishery, any stock of fish, any species of fish and any habitat of fish) under its jurisdiction (jurisdiction- geographical area of authority);

b. any activity that in the view of the Council is likely to substantially affect the essential fish habitat of an anadromous fishery resource under its jurisdiction.

2. Projects that may be precedent setting or in critical or unique habitat areas.

3. Projects that may, in the view of the NMFS SERO Habitat Conservation Division personnel, USFWS or EPA be elevated to Washington (pursuant to the Clean Water Act, National Environmental Policy Act, etc.) and require headquarters action. In addition, projects that may, in the view of the Council should be elevated to Washington and require NMFS, USFWS, or EPA headquarters action.

SAFMC Habitat and Environmental Protection Committee Assessment Guidelines for Proposed Actions:

The following will serve as guidance to the Committee in making its assessment of potential adverse impacts of proposed actions.

1. The extent to which precedent would be set in relation to existing or potential cumulative impacts of similar or other developments in the project area;

2. The extent to which the activity would directly affect the production of the fishery resources (e.g., alteration of hydrologic regimes, etc.);

3. The extent to which the activity would directly affect the production of fishery resources (e.g., alteration of water circulation patterns, salinity regimes, detrital export, etc.);

4. The Council follow mitigation guidelines as defined in the Federal guidance document for the establishment, use and operation of mitigation banks which is consistent with mitigation policies established under the Council on Environmental Quality Implementing Regulations (CEQ regulations) [40 CFR Part 1508.20], and the Section 404(b)(1) Guidelines (Guidelines) [40 CFR Part 230] which indicates the use of credits may only be authorized for purposes of complying with Section 10/404 when adverse impacts are unavoidable.

5. The extent of any adverse impact that can be avoided through project modification or other safeguards (e.g., piers in lieu of channel dredging, bridging in lieu of filling);

6. The existence of alternative sites available to reduce unavoidable project impacts, and;

7. The extent of which the activity is water dependent.

In addition, the Council will cooperatively work with NMFS and other State, Federal and regional habitat partners to apply the activity based conservation recommendations contained in Section 5.3 of the Habitat Plan. These are a generalized set of environmentally sound engineering and management practices that should be employed when an action might significantly and adversely affect EFH.

SAFMC Habitat and Environmental Protection Advisory Panel:

The SAFMC recognizing the importance of and dependence on habitat, by fishery stocks under its jurisdiction will establish a Habitat and Environmental Protection Advisory Panel to aid in the implementation of its habitat policy.

Habitat Advisory Panel Structure and Function:

The SAFMC Advisory Panel will consist of four sub-panels which will be the functional components that will, when requested by the Council Chairman, review proposed actions or policy affecting habitat.

The SAFMC shall establish, at its discretion, a Habitat Advisory Panel to advise the Habitat Committee concerning:

1. Proposed activities which may have adverse effects upon the fishery resources or the essential fish habitat for which the SAFMC has management responsibility; and

2. Habitat issues at the state, regional, or national level which may be of concern to the Council.

Habitat Advisory Panel members serve as the Council's habitat contacts and professionals in the field. The Advisory Panel is structured and functions differently than other panels. The Panel is made up of four state sub-panels each having representatives from the state marine fisheries agency, the U S Fish and Wildlife Service, state coastal zone management agency, conservationist, commercial fisherman, and recreational fishermen. In addition to the state representatives, at large members on the overall panel include representatives from EPA Region IV, NMFS Southeast Fisheries Center, NMFS SERO, Atlantic States Marine Fisheries Commission, and NMFS Habitat Conservation Division Headquarters. This body functions as a whole or as sub-panel depending on the scope of the issue. The Panel serves to provide the Council with both expert recommendations on activities being considered for permitting as well as guidance in development of Habitat policy statements. With guidance from the Panel, the Council, has developed and approved policies on; oil and gas exploration, development and transportation; dredging and dredge material disposal; submerged aquatic vegetation, and ocean dumping. These are included in Section 5 of the Habitat Plan under recommendations to protect EFH.

Coordination with State, Federal and Regional Habitat Partners:

In order to foster cooperation and efficient management of fishery resources and their habitats, the SAFMC will work closely and cooperatively with its member states, the Atlantic States Marine Fisheries Commission, other regional Councils, State fishery agencies, State coastal zone management agencies, USFWS, EPA, and recreational and commercial fisherman in identifying, describing and protecting EFH in the south Atlantic region through the development and application of the recommendations contained in the SAFMC Habitat Plan.

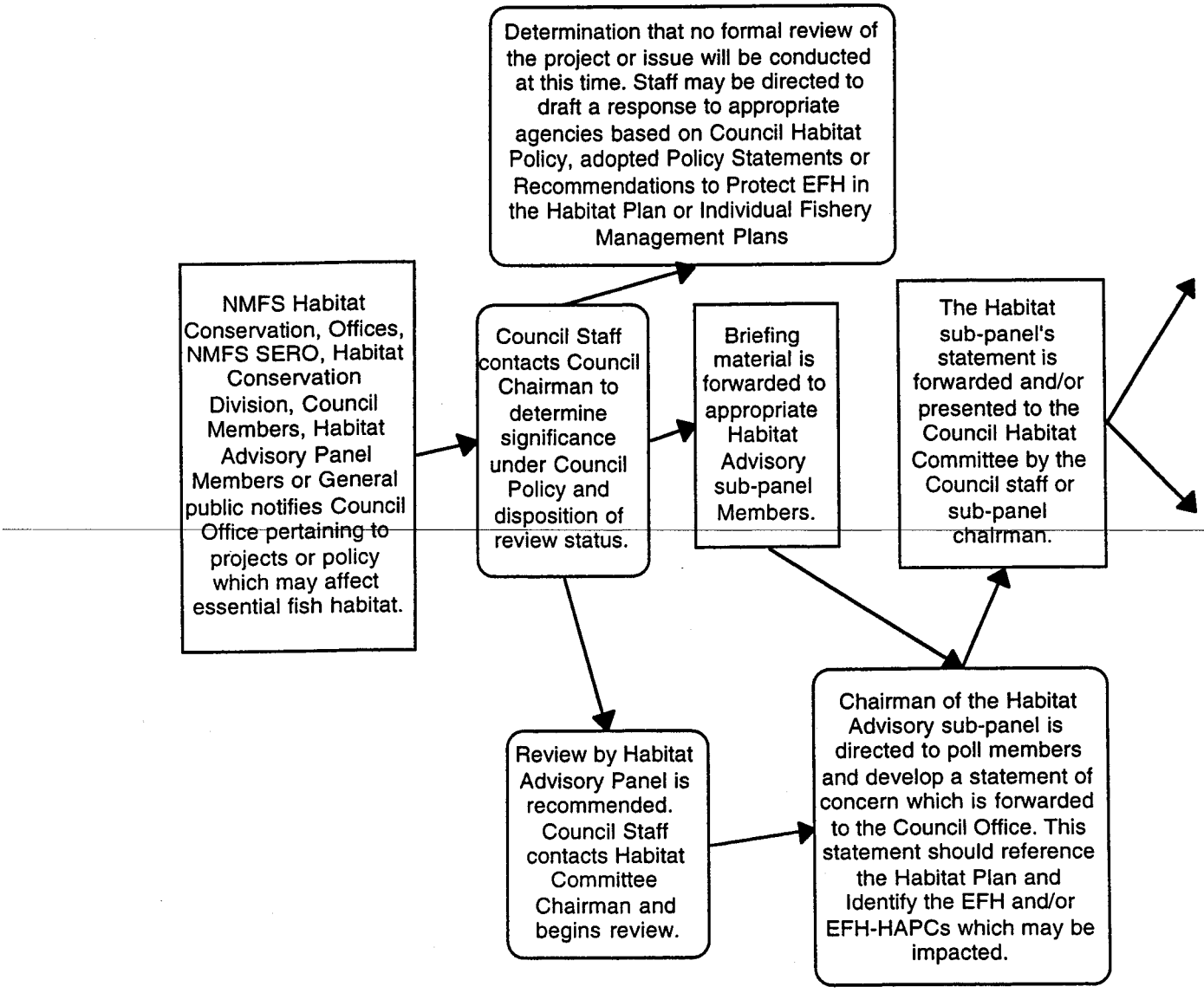
EFH Recommendations and Policy Statements:

The Council's habitat policy statements and recommendations to protect EFH are presented in the Habitat Plan to provide NMFS, State, other Federal and regional habitat partners guidance and additional rationale to conserve and protect EFH in the south Atlantic region. Additionally, as new information and methodologies become available, the Council will revise existing policies and recommendations or develop a new policy statement to address the issue.

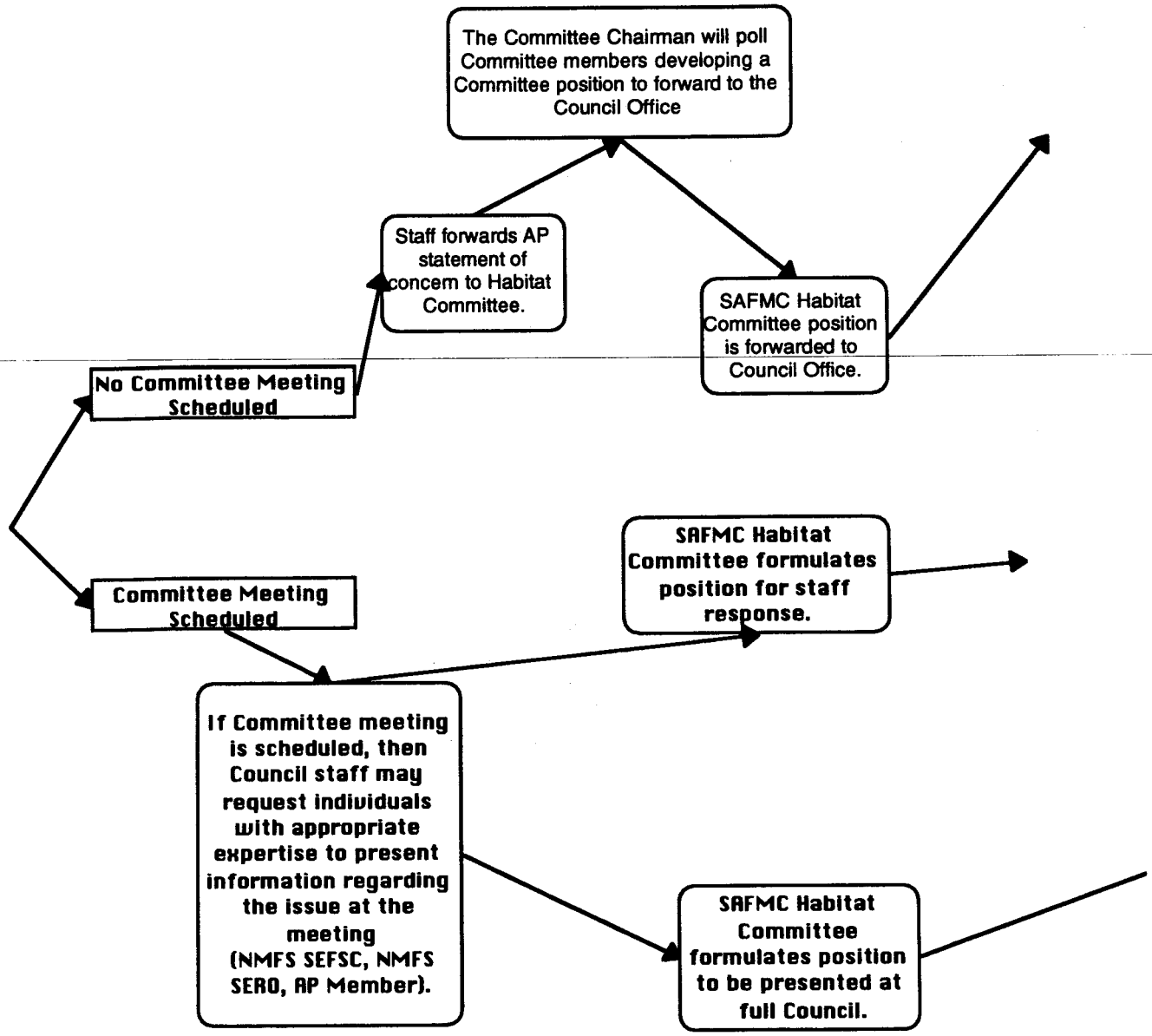
The Council has established a process for the development of habitat policy statements for specific habitats and activities. Given the abbreviated nature of many project comment periods, the Council uses the adopted Council habitat policies to be used when commenting to the permitting agency and a formal review of the project is not possible, or not necessary.

The SAFMC has developed specific guidance in the form of policy statements for activities occurring in submerged aquatic vegetation and for dredging and dredged material disposal (including use of Ocean Dredged Material Disposal Sites, offshore and nearshore underwater berm creation, maintenance dredging and sand mining for beach renourishment, and open water disposal); and oil and gas exploration, transportation, and development. The policies contain detail, including detailed descriptions of the resources involved, a discussion of potential impacts to those resources, and identification of provisions that should be implemented or considered to protect EFH. The Council encourages other parties commenting on projects to cite these recommendations when commenting on permits that impact EFH or EFH-(Habitat Areas of Particular Concern) HAPCs as defined in the Habitat Plan.

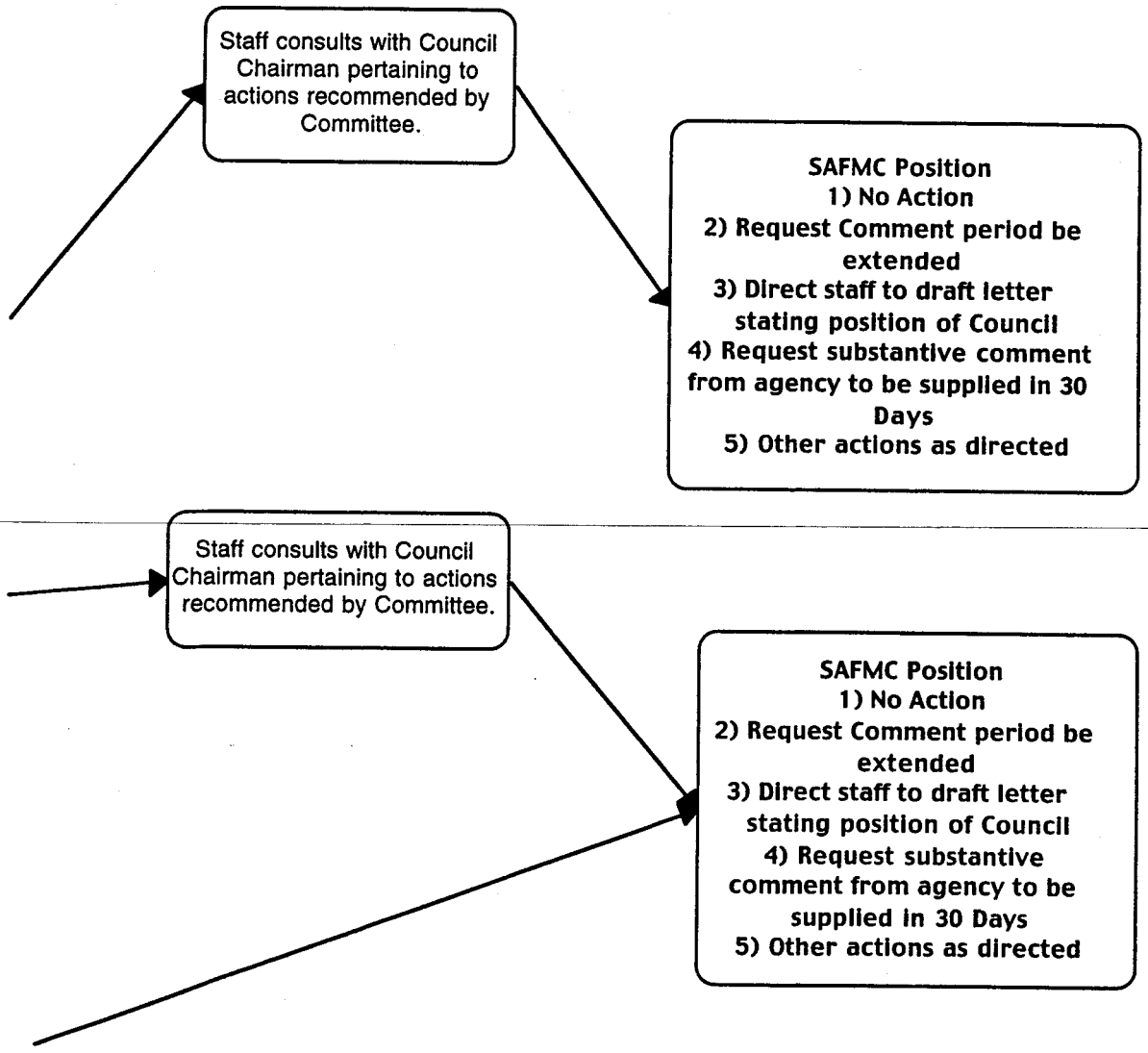
SAFMC Essential Fish Habitat and Environmental Protection:
Project/Review Procedures (Approved 9/98)



SAFMC Essential Fish Habitat and Environmental Protection:
Project/Review Procedures (Approved 9/98)



SAFMC Essential Fish Habitat and Environmental Protection:
Project/Review Procedures (Approved 9/98)



Appendix B. EIS Comment and Response.

Comment

One comment on the Habitat EIS/SEIS was received from Mr. David Hefflebower in a letter dated July 19, 1998 (attached). Mr. Hefflebower points out that the prohibition on all fishing within the experimental closed area would impact his business by $1,600,000 per year based on a rejection of just over 50% in the number of sport fish boats in his marina facility. He questioned the enforcement justification and the research used to justify the proposed action.

Response

Based on recommendations from the Habitat and Coral Advisory Panels and the Habitat Committee, the Council concluded additional regulations on gears other than those in the calico scallop fishery are not necessary to enforce the no fishing provision of the experimental closed area. A voluntary vessel monitoring system will be implemented on a portion of the rock shrimp vessels and 100% of the calico scallop vessels will be required to have a vessel monitoring system. These additional regulations, more public education, and more enforcement effort will adequately prevent fishing within the closed area.

HARBORTOWN MARINA

OLD PARK INVESTMENTS, INC 561-466-730(
1936 HarborTown Drive • Ft. Pierce, Florida 34946 Fax 561-489-267

South Atlantic Fisheries Management Council 7-10-98
One Southpark Circle, Suite 306
Charlston, South Carolina 29407-4699

Ref; Attached Requests for Comments
Attached Letter of Comment
EIS/SEIS Comments
Commonly Known as; Offshore Surface fishing restrictions Ft. Pierce to Sebastion

Gentlemen;

I am providing my letter of comment which was provided Prior to the Locally held meeting and at the Meeting in Ft. Pierce. I have no reason to change our thoughts as a result of the meeting and am providing the letter of comment at this time.

Sincerely;
Harbor Town Marina Ft. Pierce

David Hefflebower Owner

Enclosures; Letter requesting Comments
Dept of Commerce describing arreas affected and and proposed action
Harbor Town Marina letter

OLD PARK INVESTMENTS, INC. 561-466-7300

Andrew J. Kemmerer, Regional Director
National Marina Fisheries Service
9721 Executive Center Dr. North
St. Petersburg, Fla. 33702

5-22-98

Re; Trolling Restrictions 150'--350' Ft. Pierce, Florida area

Sir;

I have been reviewing your plan and stated reasons for the restriction for this Ft. Pierce area.

I come to the conclusion that ' If you can stop all fishing in the area then it will be easier or at least possible to enforce the bottom fishing restrictions' .

This is faulty reasoning when you consider the economic impact with most sport fishing vessels coming to this area from as far away as Tampa, Ocala, Okeechobee and the Palm Beaches plus the local vessel owners. At our marina alone we have nearly 400 Sport vessels and work on hundreds more annually at our Boatyard facility. We have a direct payroll of well over 100 in the Marina.

The Vessel owners with their social activities i.e. friends staying at local motels, eating in the restaurants of the community, purchasing fuel and in other ways utilizing their vessels in a recreational manner. Our business, located in the Port of Ft. Pierce, will be cut by the percentage of the Sport Fish boats in the facility, which at this time is just over 50% and calculates to business reduction of $1,600,000.00 per year when your proposed action could occur.

The fishing area from just South of the Ft. Pierce to just North of Sebastian is the most productive area along the coast.

I question the research that you are relying on to make such a proposal.

As our people fish most areas we always encourage a 'Catch and Release' action which is preserving our own area without your help. Your record of 'improving' an area is not always thought out and is, in our opinion, foisted upon the area for other reasons as alleged in the first paragraph of this letter.

Please send me prior to the public hearing in Ft. Pierce, your studies that indicate definite benefits from such an action. As a further request please answer directly whether or not this is, an action to help enforcement of the bottom fishing ban.

Awaiting your very early response, and request the opportunity to speak at the Public Hearing June 25, 1998 in Ft. Pierce.

Sincerely;
Harbor Town Marina

David Hefflebower

David Hefflebower, President

Appendix C. Oculina/Hard Bottom Distribution & Coral-HAPC Coordinates.

Appendix D. Proposed Rule.

Billing Code: 3510-22-

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 622

[Docket No. ; I.D.]

RIN: 0648-

Fisheries of the Caribbean, Gulf of Mexico, and South Atlantic; Essential Fish Habitat (EFH) for Species in the South Atlantic; Amendment 4 to the Fishery Management Plan for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region (FMP)

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmosphere Administration (NOAA), Commerce.

ACTION: Proposed rule, request for comments.

SUMMARY: We, i.e., NMFS, propose to increase the size of the Oculina Bank Habitat Area of Particular Concern (HAPC) and to establish two satellite HAPCs. Our intent is to protect, conserve, and enhance EFH.

DATES: If you submit written comments on this proposed rule, they must be received on or before [insert date 45 days after date of publication in the FEDERAL REGISTER].

ADDRESSES: You may obtain copies of the Habitat Plan and the EFH Amendment, which includes Amendment 4 to the FMP, a Draft Supplemental Environmental Impact Statement (DSEIS), a Regulatory Impact Review, and a Social Impact Assessment/Fishery Impact Assessment, from the South Atlantic Fishery Management Council,

One Southpark Circle, Suite 306, Charleston, SC 29407-4699; phone: 843-571-4366; fax: 843-769-4520.

You may submit written comments on the proposed rule to the Southeast Regional Office, NMFS, 9721 Executive Center Drive N., St. Petersburg, FL 33702.

FOR FURTHER INFORMATION CONTACT: Peter J. Eldridge, 727-570-5305.

SUPPLEMENTARY INFORMATION: The South Atlantic Fishery Management Council (Council) prepared the FMP under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The FMP and its implementing regulations at 50 CFR 622 manage the fishery for coral, coral reefs, and live/hard bottom habitat of the South Atlantic.

The Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act, requires the Council in its FMPs to describe and identify EFH, including identification of adverse impacts from both fishing and non-fishing activities on EFH and identification of actions required to conserve and enhance EFH. The intent of this requirement is to provide a basis for the Council to protect, conserve, and enhance EFH by amendments to its FMPs, when appropriate, and to coordinate, consult, or provide recommendations on Federal and state activities that may adversely affect EFH.

> 50 CFR 600.10 defines EFH as follows:
> Essential fish habitat (EFH) means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting the definition of essential fish habitat: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary

means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle.

The Council may identify EFH that is judged to be particularly important to the long-term productivity of populations of one or more managed species, or to be particularly vulnerable to degradation, as an HAPC. Such designation helps provide additional focus for conservation efforts. EFH-HAPCs may be identified based on the following criteria: (1) The importance of the ecological function provided by the habitat; (2) the extent to which the habitat is sensitive to human-induced environmental degradation; (3) whether, and to what extent, development activities are, or will be, stressing the habitat type; and (4) the rarity of the habitat type.

The Council prepared and submitted a Habitat Plan, which serves as a source document for habitat data, and a Comprehensive Amendment addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region (EFH Amendment). The EFH Amendment proposes EFH and EFH-HAPCs for species in all of the Council's fishery management plans. It also establishes a procedure to allow for rapid modification to definitions of Essential Fish Habitat (EFH) or establishment of new, or modification of existing, Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) or Coral HAPCs. This adjustment procedure allows the Council to add or modify EFH or coral related measures through a streamlined public review process. As such,

measures that have been identified could be implemented or adjusted at any time during the year.

The EFH Amendment proposes changes in the current regulations only as they apply to the fishery for coral, coral reefs, and live/hard bottom habitat of the South Atlantic.

Expansion of the Oculina Bank HAPC

The EFH Amendment contains Amendment 4 to the Fishery Management Plan for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region. As contained in Amendment 4, we propose to expand the boundaries of the current Oculina Bank HAPC to encompass an area bounded on the north by 28°30′ N. lat., on the south by 27°30′ N. lat., on the east by the 100-fathom (183-m) contour, as shown on the latest edition of NOAA chart 11460, and on the west by 80°0′ W. long.; and two additional satellite areas, the first is bounded on the north by 28°30′ N. lat., on the south by 28°29′ N. lat., on the east by 80°0′ W. long., and on the west by 80°3′ W. long., and the second is bounded on the north by 28°17′ N. lat., on the south by 28°16′ N. lat., on the east by 80°0′ W. long., and on the west by 80°3′ W. long.

The current boundaries of the Oculina Bank HAPC were established in the final rule to implement the original FMP (49 FR 29607, July 23, 1984). In the Oculina Bank HAPC, we prohibit fishing with a bottom longline, bottom trawl, dredge, pot, or trap and a fishing vessel may not anchor, use an anchor and chain, or use a grapple and chain.

Subsequently, we prohibited fishing for snapper-grouper in the Oculina Bank HAPC (59 FR 27242, May 26, 1994). The purpose

was to evaluate the benefits of marine reserves. In effect, an experimental closed area was established for snapper-grouper with the same boundaries as the Oculina Bank HAPC implemented in the original FMP.

Under Amendment 4 to the FMP, we propose to expand only the Oculina Bank HAPC--the experimental closed area would not be expanded and its restrictions on snapper-grouper fishing would not be changed or expanded. The proposed expanded Oculina Bank HAPC would coincide with the current closed area for rock shrimp, in which trawling for rock shrimp is prohibited.

Expansion of the Oculina Bank HAPC is necessary to protect the *Oculina* coral concentrations contained in the area of expansion. *Oculina* coral, a slow growing, delicate stony coral, is easily damaged by bottom tending gear, anchoring, etc. *Oculina* coral provides important habitat for snapper-grouper species and for rock shrimp and calico scallop spawning stock.

Availability of the Habitat Plan and EFH Amendment

You will find specifications of EFH and HAPCs and additional background and rationale for the expansion of the Oculina Bank HAPC in the Habitat Plan and the EFH Amendment, which includes Amendment 4 to the Fishery Management Plan for Coral, Coral Reefs, and Live/Hard Bottom Habitats of the South Atlantic Region. We announced availability of the Habitat Plan and EFH Amendment in the Federal Register (63 FR *****, October **, 1998). We must receive written comments on Amendment 4 by [insert date]. In the final rule, we will address all comments on Amendment 4 or on this

proposed rule that are received during their respective comment periods.

Clarity of this Rule

E.O. 12866 and the President's memorandum of June 1, 1998, require each agency to write all rules in plain language. We invite your comments on how to make this proposed rule easier to understand. For example:

- Have we organized the material to suit your needs?

- Are the requirements in the rule clearly stated?

- Does the rule contain technical language or jargon that isn't clear?

- Would a different format (grouping and order of sections, use of headings, paragraphing) make the rule easier to understand?

- Would more (but shorter) sections be better?

- Could we improve clarity by adding tables, lists, or diagrams?

- What else could we do to make the rule easier to understand?

Classification

At this time, we have not determined that Amendment 4 is consistent with the national standards of the Magnuson-Stevens Act and other applicable laws. In making that determination, we will take into account the data, views, and comments we receive from you during the comment period.

The Council prepared a DSEIS for Amendment 4. We published a notice of its availability on July 17, 1998 (63 FR 98-19120). The comment period ended on August 24, 1998. The environmental

impacts described in the DSEIS are summarized as follows: Expanding the Oculina Bank HAPC to include the *Oculina* coral and the hard bottom/soft coral habitat within the area north of the current Oculina Bank HAPC boundary and in two satellite areas will provide additional protection for essential fish habitat. It will reduce the gear related impact of the rock shrimp and calico scallop fisheries on live/hard bottom and coral habitat by eliminating trawl gear from being used in the expanded area. It would also eliminate damage from other fishing gear which contacts the bottom.

Trawl damage occurs from direct contact with live/hard bottom, including *Oculina* coral. *Oculina* is only known to be distributed in bank formation south of 29° N. latitude. Therefore, loss of this essential snapper grouper habitat will be prevented and the biological integrity enhanced.

There is concern that repetitive trawling of the limited fishable bottom over the years has and may continue to impact the benthic habitat and the fishery resources it sustains. Therefore, additional benefits that will come with protecting these habitats is protection of a portion of the rock shrimp and calico scallop spawning stock. This will help the fishery recover in years when recruitment is low due to poor environmental conditions.

We received one comment on the Habitat DSEIS specific to the proposed total ban on fishing within the experimental closed area. The comment pointed out that the prohibition on all fishing within the experimental closed area would impact the commenter's business by $1,600,000 per year based on a reduction of just over 50% in

the number of sport fishing boats in his marina facility. He questioned the enforcement justification and the research used to justify the proposed action. The council also received many public hearing comments and written comments on this issue that concurred with the above objection to the action that were not specific to the DSEIS review period.

Subsequently, based on recommendations from the Habitat and Coral Advisory Panels and the Habitat Committee the Council concluded additional regulations prohibiting all fishing in the experimental closed area were not warranted. A voluntary NMFS/industry vessel monitoring system will be implemented on a portion of the rock shrimp vessels and 100% of the calico scallop vessels will be required to have a vessel monitoring system (Calico Scallop FMP). We believe these additional regulations, better public education, and cooperation between NMFS enforcement and industry will adequately prevent fishing activities that impact habitat within the experimental closed area.

The SEIS is included in the Amendment. We announced availability of the SEIS in the Federal Register on October *****, 1998 (63 FR *****). The environmental impacts in the SEIS are essentially unchanged from the DSEIS.

We have determined that this proposed rule is not significant for purposes of E.O. 12866.

The Assistant General Counsel for Legislation and Regulation of the Department of Commerce certified to the Chief Counsel for Advocacy of the Small Business Administration that this proposed rule, if adopted, would not have a significant economic impact on a substantial number of small entities as follows:

Fisheries affected by this rule include the rock shrimp and calico scallop trawl fisheries. Currently, the area we propose to add to the HAPC is closed to trawling for rock shrimp (with the exception of the two small satellite HAPC areas). The two satellite areas are small and consist of *Oculina* pinnacles that are not preferred trawling sites according to the Rock Shrimp Advisory Panel. There should be no further impacts on the rock shrimp fishery.

It is estimated that about 25 calico scallop vessels currently participate in this fishery. Based on input from the Calico Scallop Advisory Panel and other available data, the regulations are not likely to result in a change in annual gross revenues of more than 5 percent. It is clear that the impacts will be minimal based on input from the affected individual businesses. All of the firms expected to be impacted by the rule are small entities and hence there is no differential impact.

The analyses of economic impacts of the proposed action indicate it will not have a significant impact on the exvessel revenues of calico scallop vessels. Input from the Calico Scallop Advisory Panel would suggest that no entities would be forced out of business.

The conclusion is that small businesses will not be significantly affected by the proposed rule. Hence, the determination is made the proposed rule will not have a significant impact on a substantial number of small business entities and an Initial Regulatory Flexibility Analysis (IRFA) is not required. (The full details of the economic analyses conducted

for the proposed rule are contained in the RIR under the heading "Economic Impacts" in Section 4. of the Amendment.)

Accordingly, we did not prepare a regulatory flexibility analysis.

List of Subjects in 50 CFR Part 622

Fisheries, Fishing, Puerto Rico, Reporting and recordkeeping requirements, Virgin Islands.

Dated:

—

For the reasons set out in the preamble, 50 CFR part 622 is proposed to be amended as follows:

PART 622--FISHERIES OF THE CARIBBEAN, GULF, AND SOUTH ATLANTIC

1. The authority citation for part 622 continues to read as follows:

Authority: 16 U.S.C. 1801 et seq.

2. In § 622.2, the definition of "You" is added in alphabetical order to read as follows:

§ 622.2 Definitions and acronyms.

* * * * *

You means any person, unless the context clearly indicates otherwise.

3. In § 622.35, paragraph (g) is removed and paragraph (c) is revised to read as follows:

§ 622.35 South Atlantic EEZ seasonal and/or area closures.

* * * * *

(c) Oculina Bank--(1) HAPC. The Oculina Bank HAPC encompasses an area bounded on the north by 28°30′ N. lat., on the south by 27°30′ N. lat., on the east by the 100-fathom (183-m) contour, as shown on the latest edition of NOAA chart 11460, and on the west by 80°0′ W. long.; and two additional satellite areas, the first is bounded on the north by 28°30′ N. lat., on the south by 28°29′ N. lat., on the east by 80°0′ W. long., and on the west by 80°3′ W. long., and the second is bounded on the north by 28°17′ N. lat., on the south by 28°16′ N. lat., on the east by 80°0′ W. long., and on the west by 80°3′ W. long.

In the Oculina Bank HAPC, you may not:

(i) Use a bottom longline, bottom trawl, dredge, pot, or trap.

(ii) If aboard a fishing vessel, anchor, use an anchor and chain, or use a grapple and chain.

(iii) Fish for rock shrimp or calico scallops, or possess rock shrimp or calico scallops in or from the area on board a fishing vessel.

(2) Experimental closed area. Within the Oculina Bank HAPC, the experimental closed area is bounded on the north by 27°53′ N. lat., on the south by 27°30′ N. lat., on the east by 79°56′ W. long., and on the west by 80°00′ W. long. You may not fish for South Atlantic snapper-grouper complex species in the experimental

closed area and may not retain South Atlantic snapper-grouper complex species in or from the area. You must release immediately any South Atlantic snapper-grouper complex species taken incidentally in the experimental closed area by hook-and-line gear by cutting the line without removing the fish from the water.

* * * * *