FISHERY MANAGEMENT PLAN FOR THE DOLPHIN AND WAHOO FISHERY OF THE ATLANTIC

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

JANUARY 2003

South Atlantic Fishery Management Council
In Cooperation with the New England Fishery Management Council,
Mid-Atlantic Fishery Management Council

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TABLE OF CONTENTS

PAGE

TABLE OF CONTENTS

TABLE OF CONTENTS

PAGE

TABLE OF CONTENTS

TABLE OF CONTENTS

PAGE

LIST OF TABLES

LIST OF TABLES (Cont.)

PAGE

LIST OF TABLES (Cont.)

PAGE

LIST OF TABLES (Cont.)

LIST OF FIGURES

PAGE

LIST OF ACRONYMS/GLOSSARY

ABC (Allowable Biological Catch)- Refers to the range of allowable catch for a species or species group. Usually set each year and used to set the annual Total Allowable Catch, TAC.

ACCSP (Atlantic Coast Cooperative Statistics Program)- A comprehensive data collection program jointly developed by the Atlantic coastal states, regional and federal fishery management agencies.

AP (Advisory Panel)- Members of the public who are appointed by the Council to review information and give advice. Members are familiar with the fishing industry or a particular fishery.

ASMFC (Atlantic States Marine Fisheries Commission)- An interstate commission required to adopt fishery management plans for coastal fisheries. The Commission reviews fishery management actions in each state on the Atlantic coast to see if the states are complying with the measures in the interstate management plans.

Bottom longline means a longline that is deployed with enough weights and/or anchors to maintain contact with the ocean bottom.

BRD (Bycatch Reduction Device)- Any gear or trawl modification to allow finfish to escape (e.g. BRDs in shrimp trawls).

Charleston Bump closed area means the Atlantic Ocean area seaward of the inner boundary of the U.S. EEZ from a point intersecting the inner boundary of the U.S. EEZ at 34°00' N. lat. near Wilmington Beach, NC, and proceeding due east to connect by straight lines the following coordinates in the order stated: 34°00' N. lat., 76°00' W. long.; 31°00' N. lat., 76°00' W. long.; then proceeding due west to intersect the inner boundary of the U.S. EEZ at 31°00' N. lat. near Jekyll Island, GA.

CPUE (Catch Per Unit Effort)- The number or weight of fish caught by an amount of effort. Typically, effort is a combination of gear type, gear size and the length of time the gear is used. CPUE is often used as a measurement of relative abundance for a particular fish.

East Florida Coast closed area means the Atlantic Ocean area seaward of the inner boundary of the U.S. EEZ from a point intersecting the inner boundary of the U.S. EEZ at 31°00min; N. lat. near Jekyll Island, GA, and proceeding due east to connect by straight lines the following coordinates in the order stated: 31°00min; N. lat., 78°00min; W. long.; 28°17min; N. lat., 79°12min; W. long.; then proceeding along the outer boundary of the EEZ to the intersection of the EEZ with 24°00min; N. lat.; then proceeding due west to the following coordinates: 24°00min; N. lat., 81°47min; W. long.; then proceeding due north to intersect the inner boundary of the U.S. EEZ at 81°47min; W. long. near Key West, FL.

EEZ (Exclusive Economic Zone)- All waters from the seaward boundary of coastal states out to 200 miles. For the South Atlantic region, the EEZ ranges from 3 to 200 nautical miles offshore.

EFH (Essential Fish Habitat)- The waters and substrate necessary for fish spawning, breeding, feeding, or growth to maturity.

EFH-HAPC (Essential Fish Habitat/Habitat Areas of Particular Concern)- Areas designated as EFH that meet additional criteria specified in the Sustainable Fisheries Act (SFA).

Export means a shipment to a destination outside the customs territory of the United States for which a Shipper's Export Declaration (Customs Form 7525) is required. Atlantic HMS destined from one foreign country to another, which transits the United States and for which a Shipper's Export Declaration is not required to be filed, is not an export under this definition.

FEIS (Final Environmental Impact Statement) and **DEIS** (Draft Environmental Impact Statement)- A requirement of the National Environmental Policy Act (NEPA), an EIS focuses on significant environmental issues, including social and economic concerns, and provides alternatives to the proposed management actions within each Fishery Management Plan.

FAD (Fish Attracting Device)- A man-made object that fish associate with food or prey.

Floatline means a line attached to a buoyant object that is used to support the mainline of a longline at a specific target depth.

FMP (Fishery Management Plan)- A plan to achieve specified management goals for a fishery. It includes data, analyses and management measures for a fishery.

Gangion means a line that serves to attach a hook, suspended at a specific target depth, to the mainline of a longline.

High-flyer means a flag, radar reflector or radio beacon transmitter, suitable for attachment to a longline to facilitate its location and retrieval.

HMS (Highly Migratory Species)- Specified as swordfish, tunas, sharks, and billfish. These fish are managed by the National Marine Fisheries Service's HMS Division.

ICCAT (International Convention for the Conservation of Atlantic Tunas)- An intergovernmental fishery organization responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and adjacent seas.

IFQ (Individual Fishing Quota)- Established by the Magnuson-Stevens Act, it is the annual catch limit for a person who has a permit to harvest a specific portion of the Total Allowable Catch of a species.

ITQ (Individual Transferable Quota)- A form of limited entry that gives harvest rights to fishermen by assessing a fixed share of the catch to each fisherman.

Longline means fishing gear that is set horizontally, either anchored, floating, or attached to a vessel, and that consists of a mainline or groundline with three or more leaders (gangions) and hooks, whether retrieved by hand or mechanical means.

MSY (Maximum Sustainable Yield)- The largest average catch that can be taken continuously (sustained) from a stock under average environmental conditions. This is used as a management goal.

MRFSS (Marine Recreational Fishing Statistics Survey)- An annual survey by the NMFS to estimate the number, catch, and effort of recreational fishermen.

NMFS (National Marine Fisheries Service)- A federal agency with scientists, research vessels and a data collection system, responsible for managing the nation's saltwater fish. It supports and oversees the actions of fishery managers under the Magnuson Fishery and Conservation Act.

OY (Optimum Yield)- The harvest level for a species that achieves the greatest overall benefits, including economic, social and biological considerations.

Pelagic longline means a longline that is suspended by floats in the water column and that is not fixed to or in contact with the ocean bottom.

SAFE (Stock Assessment and Fishery Evaluation)- A report that provides a summary of the most recent biological condition of a stock of fish and the economic and social condition of the recreational and commercial fishermen and seafood processors who use the fish. The report provides information to determine harvest levels.

SAW/SARC (Stock Assessment Workshop/Stock Assessment Review Committee)- A group of individuals skilled in the study of fish population dynamics and appointed by a federal fishery management council who review the scientific data on the condition of a stock of fish.

SMZ (Special Management Zone)- An area of particular concern, where specific management strategies are in place. These management strategies may include gear restrictions, catch limits, seasonal closures or permit requirements.

SPR (Spawning Potential Ratio)- The number of eggs that could be produced by an average recruit in a fished stock divided by the number of eggs that could be produced by an average recruit in an unfished stock.

SSB (Spawning Stock Biomass)-The total weight of the fish in a stock that are old enough to spawn.

SSBR (Spawning Stock Biomass Per Recruit)- The spawning stock biomass divided by the number of recruits to the stock or how much spawning biomass an average recruit would be expected to produce.

SSC (Scientific and Statistical Committee) – A committee, appointed by the Council, of university, government (state and federal), and private sector professionals knowledgeable in technical areas such as statistics, fishery biology, economics, sociology, etc.

TAC (Total Allowable Catch)- The annual recommended catch for a species group. The Council sets the TAC from the range of the allowable biological catch.

In order to understand and discuss the theory behind fishery management, key biological terms must be defined. Listed below are definitions used by fishery biologists in assessing the condition of a fishery.
Population- A group of individuals of the same species living in a certain area.
Species- A group of similar organisms that can freely interbreed.
Stock- A harvested or managed unit of fish.

It is important to note that often a species may have several populations, and fisheries managers will refer to the group of populations as a stock or manage the populations separately. With migrating species, such as king and Spanish mackerel, this management practice often applies.

In other cases, several species may be included in the same stock because they are harvested together or it may simply be more convenient to manage the species together. The South Atlantic Fishery Management Council employs this practice in the management of snapper and grouper species.

Endangered Species Act (ESA): Section 7 **r**equires a biological evaluation (BE) of the potential effects of a FMP's action(s) on any species or designated critical habitat listed under the ESA.

Marine Mammal Protection Act (MMPA): Enacted in 1972 to protect and manage marine mammals, this act prohibits the taking (harassing, killing, capturing, etc.) with certain exceptions, of marine mammals in U.S. waters and by U.S. citizens on the high seas, and prohibits the importing of marine mammals and marine mammal products.

National Environmental Policy Act (NEPA): In 1969, this federal statute enacted requirements for all federal agencies regarding human impact on the environment. These requirements include interdisciplinary analyses of all environmental effects for any federal action. Such analyses include Environmental Assessments and Environmental Impact Statements.

LIST OF ACTIONS

PAGE

ACTION 5. Require that the operator of a commercial or for-hire vessel obtain an operator's permit issued by the National Marine Fisheries Service to harvest or possess dolphin or wahoo in or from the Atlantic EEZ. On each federally permitted dolphin/wahoo commercial or for-hire vessel, there must be on board at least one operator who has been issued a federal operator's permit for the dolphin/wahoo fishery. The federally permitted operator will be held accountable for violations of fishing regulations and also may be subject to a permit sanction. If an operator's permit has been sanctioned, during the permit sanction period the individual operator may not work in any capacity aboard a federally permitted fishing vessel.

No performance or competency testing will be required to obtain a permit. However, the permit may be revoked for violation of Federal dolphin and wahoo regulations as authorized by 15 C.F.R. 904.

The federal permit program will have the following requirements:

1. Any operator of a vessel fishing for dolphin or wahoo (either commercial or for-hire) must have an operator's permit issued by the NMFS Regional Administrator.
2. An operator is defined as the master or other individual on board a vessel who is in charge of that vessel (see 50 CFR 620.2).
3. The operator is required to submit an application, supplied by the Regional Administrator, for an Operator's Permit. The permit will be issued for a period of up to three years.
4. The applicant must provide his/her name, mailing address, telephone number, date of birth, and physical characteristics (height, weight, hair, and eye color) on the application. In addition to this information, the applicant must provide two passport size color photos.
5. The permit is not transferable.
6. Permit holders will be required to carry their permit aboard the fishing vessel during fishing and off-loading operations and must have it available for inspection upon request by an authorized officer.
7. The Regional Administrator may charge an administrative fee for the operator permit consistent with NOAA guidelines. **132**

ACTION 6. In the Atlantic, require reporting of vessel permit holders (commercial and for-hire) and include reporting requirements as specified in the Atlantic Coastal Cooperative Statistics Program (ACCSP). It is the Councils' intent that existing logbook requirements continue until the cooperating partners meet to determine whether these efforts will continue under ACCSP. **135**

ACTION 7. Maximum Sustainable Yield for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 18.8 and 46.5 million pounds. The Maximum Sustainable Yield proxy for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 1.41 and 1.63 million pounds. **146**

ACTION 8. Optimum Yield (OY) for dolphin and wahoo is the amount of harvest that can be taken by fishermen while not exceeding 75% of MSY (between 14.1 and 34.9 million pounds) for dolphin and 100% of MSY (between 1.41 and 1.63 million pounds) for wahoo. **149**

DOLPHIN WAHOO FISHERY MANAGEMENT PLAN COVER SHEET

This integrated document contains all elements of the Dolphin and Wahoo Fishery Management Plan, Final Environmental Impact Statement (FEIS), Initial Regulatory Flexibility Analysis (IRFA), 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 Plan. Introductory information and/or background for the FEIS, IRFA, RIR, and SIA/FIS are included within the separate table of contents for each of these sections. **General information begins on page 1; information for agency reviewers continues below.**

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NAME OF ACTION

(X) Administrative ( ) Legislative

SUMMARY

The overall goal of the fishery management plan for the South Atlantic, Mid-Atlantic, and New England Councils' areas of jurisdiction is to adopt a precautionary and risk-averse approach to management which in the first instance attempts to maintain the status quo. This will require that current catch levels not be exceeded and that recent conflict between sectors of the fishery (commercial longliners and recreational fishermen) be resolved. Status quo should reflect trends (average catch and effort levels) in the fishery over the five years, 1993 through 1997.

Owing to the significant importance of the dolphin/wahoo fishery to the recreational fishing community in the Atlantic, the goal of this fishery management plan is to maintain the current harvest level of dolphin and insure that no new fisheries develop. With the potential for effort shifts in the historical longline fisheries for sharks, tunas, and swordfish, these shifts or expansions into nearshore coastal waters to target dolphin could compromise the current allocation of the dolphin resource between recreational and commercial user groups. Further, these shifts in effort in the commercial fishery, dependant upon the magnitude (knowing that some dolphin trips may land over 25,000 pounds in a single trip) could result in user conflict and localized depletion in abundance.

Problems and issues identified by the Councils and addressed by this fishery management plan are as follows:

(1) Localized reduction of fish abundance due to high fishing pressure;

(2) Disruption of markets;

(3) Conflict and/or competition between recreational and commercial user groups of dolphin fish;

(4) Reduced social and economic benefits;

(5) Bycatch;

(6) Importance of predator/prey relationships between dolphin and other pelagic species; and

(7) Limited biological, habitat, economic, and social information on dolphin and wahoo stocks and fisheries.

Objectives addressed by this fishery management plan are as follows:

(1) Address localized reduction in fish abundance. The Councils remain concerned over the potential shift of effort by longline vessels to traditional recreational fishing grounds and the resulting reduction in local availability if commercial harvest intensifies;

(2) Minimize market disruption. Commercial markets (mainly local) may be disrupted if large quantities of dolphin are landed from intense commercial harvest or unregulated catch and landing by charter or other components of the recreational sector;

(3) Minimize conflict and/or competition between recreational and commercial user groups. If commercial longlining effort increases, either directing on dolphin and wahoo or targeting these species as a significant bycatch, conflict and/or competition may arise if effort shifts to areas traditionally used by recreational fishermen;

(4) Optimize the social and economic benefits of the dolphin and wahoo fishery. Given the significant importance of dolphin and wahoo to the recreational sector throughout the range of these species and management unit, manage the resources to achieve optimum yield on a continuing basis;

(5) Reduce bycatch of the dolphin fishery. Bycatch is a problem in the pelagic longline fishery for highly migratory species. Any increase in overall effort, and more specifically shifts of effort into nearer shore, non-traditional fishing grounds by swordfish and tuna vessels, may result in increased bycatch of non-target species.

In addition, National Standard 9 requires that: "Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch." Therefore bycatch of the directed dolphin fishery must be addressed;

(6) Direct research to evaluate the role of dolphin and wahoo as predators and prey in the pelagic ecosystem; and

(7) Direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

The Councils are establishing a fishery management plan for dolphin and wahoo and proposing the following actions:

Action 1. The management unit is the population of dolphin (common dolphin- *Coryphaena hippurus* and pompano dolphin- *Coryphaena equiselis*) from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts;

Action 2. The management unit is the population of wahoo (*Acanthocybium solandri*) from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts;

Action 3. In the Atlantic any dealer, defined as the person who first receives dolphin or wahoo harvested in or from the EEZ by way of purchase, barter, trade, or transfer in commerce, will be required to possess a valid dealer permit issued by the National Marine Fisheries Service and to report data needed to monitor the dolphin and wahoo fisheries;

Action 4. Require that the owner of a for-hire vessel obtain a vessel permit from the National Marine Fisheries Service to harvest or possess dolphin or wahoo in or from the Atlantic EEZ. Require that the owner of a commercial vessel obtain a vessel permit from the National Marine Fisheries Service to harvest or possess dolphin or wahoo in or from the Atlantic EEZ;

In order to qualify for a commercial vessel permit in the Atlantic, during one of the three calendar years preceding the control date, the vessel owner (1) must have 25 percent of his or her earned income derived from commercial or for-hire fishing, or must have earned at least $10,000 from either commercial or for-hire fishing and (2) must be able to document 250 pounds of landings and sale of dolphin and/or wahoo on or before the control date of May 21, 1999 in the Atlantic. Alternatively individuals may also qualify for a commercial permit if they hold a valid permit in the snapper-grouper, king mackerel, or swordfish fisheries. The commercial permit is transferable (1 for 1) with vessel when sold or replaced. Allow a 200 pound incidental harvest possession limit of dolphin and/or wahoo for vessels with a valid federal commercial permit fishing North of 39° North latitude.

For a person aboard a fishing vessel to fish for dolphin and wahoo in the exclusive economic zone (EEZ), possess dolphin and wahoo in or from the EEZ, off-load dolphin and wahoo from the EEZ, or sell dolphin and wahoo in or from the EEZ, a vessel permit for dolphin and wahoo must be issued to the vessel and be on board.

A fee will be charged to cover the administrative costs of issuing federal vessel permits. There are no requirements to qualify for a for-hire vessel permit;

Action 5. Require that the operator of a commercial or for-hire vessel obtain an operator's permit issued by the National Marine Fisheries Service to harvest or possess dolphin or wahoo in or from the Atlantic EEZ. On each federally permitted dolphin/wahoo commercial or for-hire vessel, there must be on board at least one operator who has been issued a federal operator's permit for the dolphin/wahoo fishery. The federally permitted operator will be held accountable for violations of fishing regulations and also may be subject to a permit sanction. If an operator's permit has been sanctioned, during the permit sanction period the individual operator may not work in any capacity aboard a federally permitted fishing vessel.

No performance or competency testing will be required to obtain a permit. However, the permit may be revoked for violation of Federal dolphin and wahoo regulations as authorized by 15 C.F.R. 904.

The federal permit program will have the following requirements:

1. Any operator of a vessel fishing for dolphin or wahoo (either commercial or for-hire) must have an operator's permit issued by the NMFS Regional Administrator.

2. An operator is defined as the master or other individual on board a vessel who is in charge of that vessel (see 50 CFR 620.2).

3. The operator is required to submit an application, supplied by the Regional Administrator, for an Operator's Permit. The permit will be issued for a period of up to three years.

4. The applicant must provide his/her name, mailing address, telephone number, date of birth, and physical characteristics (height, weight, hair, and eye color) on the application. In addition to this information, the applicant must provide two passport size color photos.

5. The permit is not transferable.

6. Permit holders will be required to carry their permit aboard the fishing vessel during fishing and off-loading operations and must have it available for inspection upon request by an authorized officer.

7. The Regional Administrator may charge an administrative fee for the operator permit consistent with NOAA guidelines;

Action 6. In the Atlantic, require reporting of vessel permit holders (commercial and for-hire) and include reporting requirements as specified in the Atlantic Coastal Cooperative Statistics Program (ACCSP). It is the Councils' intent that existing logbook requirements continue until the cooperating partners meet to determine whether these efforts will continue under ACCSP;

Action 7. Maximum Sustainable Yield for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 18.8 and 46.5 million pounds. The Maximum Sustainable Yield proxy for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 1.41 and 1.63 million pounds;

Action 8. Optimum Yield (OY) for dolphin and wahoo is the amount of harvest that can be taken by fishermen while not exceeding 75% of MSY (between 14.1 and 34.9 million pounds) for dolphin and 100% of MSY (between 1.41 and 1.63 million pounds) for wahoo;

Action 9. Overfishing level. Overfishing is defined in terms of the NMFS Guidelines Checklist. A maximum fishing mortality threshold (MFMT) - In the Atlantic, U.S. Caribbean, and Gulf of Mexico overfishing for dolphin and wahoo is defined as a fishing mortality rate (F) in excess of F_{MSY} ($F_{30\% \text{ Static SPR}}$). A minimum stock size threshold (MSST) – In the Atlantic, U.S. Caribbean, and Gulf of Mexico the minimum stock size threshold for dolphin and wahoo is defined as a ratio of current biomass ($B_{current}$) to biomass at MSY or (1-M)*B_{MSY}, where 1-M should never be less than 0.5. Using the best available estimates of natural mortality (M = 0.68-0.80) in the formula results in a MSST of 50% B_{MSY}. The stock would be overfished if current biomass ($B_{current}$) was less than MSST and would be recovered when current biomass was equal or greater than the biomass at MSY; and

Action 10. Establish a framework procedure for the Dolphin and Wahoo FMP to provide the South Atlantic Fishery Management Council with a mechanism to independently adjust management measures for their area of responsibility through framework action.

Action 11. Prohibit sale of recreationally caught dolphin or wahoo in or from the Atlantic EEZ except for allowing for-hire vessels that possess the necessary state and Federal commercial permits to sell dolphin harvested under the bag limit in or from the Atlantic EEZ;

Action 12. Establish a cap of 1.5 million pounds or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the Council will review the data and evaluate the need for additional regulations which may be established through the framework;

Action 13. Establish a recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Headboats (with a valid certificate of inspection) will be allowed a bag limit of 10 dolphin per paying passenger;

Action 14. Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed;

Action 15. Establish a minimum size limit for dolphin of 20 inches fork length off Florida and Georgia and no minimum size limit north of Georgia;

Action 16. Establish a commercial trip limit for wahoo (landed head and tail intact) of 500 pounds with no transfer at sea allowed;

Action 17. Do not establish a size limit for wahoo in the Atlantic EEZ;

Action 18. Establish a recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ;

Action 19. Specify allowable gear for dolphin and wahoo in the Atlantic EEZ as longline; hook and line gear including manual, electric, or hydraulic rod and reels; bandit gear; handline; and spearfishing gear (including powerheads);

Action 20. Prohibit the use of surface and pelagic longline gear for dolphin and wahoo within any "time or area closure" in the South Atlantic Council's area of jurisdiction (Atlantic Coast) which is closed to the use of pelagic gear for highly migratory pelagic species;

Action 21. Establish a fishing year of January 1 to December 31 for the dolphin and wahoo fishery in the Atlantic EEZ;

Action 22. Expand the list of Essential Fish Habitat (EFH) definitions that were approved for dolphin by the Secretary of Commerce to apply to dolphin and wahoo throughout the Atlantic. EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum*;

Action 23. Expand the list of Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) that were approved for dolphin by the Secretary of Commerce to apply to dolphin and wahoo throughout the Atlantic. EFH-HAPCs for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and The Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic *Sargassum*; and

Action 24. Assessment of the Impacts of Present Fishing Activities on EFH. No action to implement additional management measures to reduce impacts of fishing on dolphin wahoo EFH. Defer to measures in the *Sargassum* Fishery Management Plan which has been submitted to the Secretary of Commerce for formal review, and incorporate by reference the Comprehensive Habitat Amendment approved by the Secretary on June 3, 1999.

Public hearings were held in the following locations:

Atlantic

Charleston, South Carolina	May 1, 2000	Savannah, Georgia	May 15, 2000
Atlantic Beach, Florida	May 2, 2000	Key West, Florida	June 8, 2000
Cocoa Beach, Florida	May 3, 2000	Islamorada, Florida	June 12, 2000
Ft. Lauderdale, Florida	May 4, 2000	Ocean City, Maryland	June 26, 2000
Kill Devil Hills, North Carolina	May 9, 2000	Toms River, New Jersey	June 27, 2000
Morehead City, North Carolina	May 10, 2000	Ronkonkoma, New York	June 28, 2000
Wrightsville Beach, North Carolina	May 11, 2000	New London, Connecticut	June 29, 2000

Caribbean

San Juan, Puerto Rico	May 17, 2000	St. Thomas, U.S.V.I.	May 18, 2000
St. Croix, U.S.V.I.	May 19, 2000		

Gulf of Mexico

Port Aransas, Texas	July 31, 2000	Galveston, Texas	August 1, 2000
Kenner, Louisiana	August 7, 2000	Biloxi, Mississippi	August 8, 2000
Orange Beach, Alabama	August 9, 2000	Panama City, Florida	August 10, 2000
Ft. Myers, Florida	August 15, 2000	Key West, Florida	August 16, 2000

Public Comment At Council Sessions

St. Thomas, USVI	August 16, 2000
Mobile, Alabama	September 13, 2000
Charleston, South Carolina	September 22, 2000
Biloxi, Mississippi	November 15, 2000
Atlantic Beach, North Carolina	November 30, 2000
St. Thomas, USVI	February 21, 2001
Charleston, South Carolina	September 19, 2002
New Bern, North Carolina	December 5, 2002

FINAL ENVIRONMENTAL IMPACT STATEMENT

This integrated document contains all elements of the Dolphin and Wahoo Fishery Management Plan, Final Environmental Impact Statement (FEIS), Initial Regulatory Flexibility Analysis (IRFA), 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 Plan. Introductory information and/or background for the FEIS, IRFA, RIR, and SIA/FIS are included within the separate table of contents for each of these sections. **General information begins on page 1; information for agency reviewers continues below.**

( ) Draft (**X**) Final

SUMMARY

The following problems affect the dolphin wahoo fishery:

1. Localized reduction of fish abundance due to high fishing pressure.
2. Disruption of markets.
3. Conflict and/or competition between recreational and commercial user groups of dolphin fish.
4. Reduced social and economic benefits.
5. Bycatch.
6. Importance of predator/prey relationships between dolphin and other pelagic species.
7. Limited biological, habitat, economic, and social information on dolphin and wahoo stocks and fisheries.

The following objectives are addressed in the dolphin and wahoo fishery management plan:

1. Address localized reduction in fish abundance.
2. Minimize market disruption.
3. Minimize conflict and/or competition between recreational and commercial user groups.
4. Optimize the social and economic benefits of the dolphin and wahoo fishery.
5. Reduce bycatch of the dolphin fishery.
6. Direct research to evaluate the role of dolphin and wahoo as predators and prey in the pelagic ecosystem.
7. Direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

A Final EIS is provided for actions proposed for the dolphin and wahoo fishery management plan. The Councils are establishing a fishery management plan for dolphin and wahoo and proposing actions presented in the List of Actions following the FMP table of contents.

Notice of Intent to Prepare a DEIS Published on: January 17, 2001
Comments on Notice by: February 16, 2001

DEIS to NMFS on: May 24, 2001 DEIS to EPA on: September 14, 2001
Comments on DEIS requested by: November 5, 2001

Three DEIS comments were received from the EPA (Appendix I):

I. United States Department of the Interior, Office of the Secretary, Washington, DC (dated 9/25/02) - "This is to inform you that the Department may have comments, but will be unable to reply within the allotted time. Please consider this letter as a request for an extension of time in which to comment on the document. Our comments, if any, should be available by late October 2001."

Council Response: No additional comments have been received as of 10/2/02.

II. United States Department of State, Bureau of Oceans and International Environmental and Scientific Affairs, Washington, DC (dated 10/12/01) - "As these documents do not contain an international component, we have no comment."

Council Response: None necessary.

III. United States Environmental Protection Agency, Region 4 (dated 11/5/01) - "Overall, EPA supports the proposed dolphin and wahoo FMP. However, we offer the following comments on the NEPA process and have enclosed additional comments on the FMP:

Overall, EPA supports the proposed dolphin and wahoo FMP. However, we offer the following comments on the NEPA process and have enclosed additional comments on the FMP. In summary, EPA conceptually supports the proposed FMP for dolphin and wahoo and will primarily defer to the expertise of the NMFS and the Councils on the bases and assumptions for the proposed actions. However, our NEPA and FMP comments should be considered/clarified by the NMFS/Councils in their development of the pending FEIS as well as future fishery EISs. We rate this DEIS an "EC-1" (Environmental Concerns) due to our NEPA and FMP comments.

1. *NEPA Document* - Compared to previous FMP EISs reviewed by EPA, the present DEIS is more consistent with the NEPA process. We note that background information, management objectives/goals, and options to proposed actions are provided. Moreover, we note that the specific management objectives addressed by individual proposed actions are itemized in the discussion/conclusion sections for those actions. This serves to relate the actions to the FMP objectives.

In addition to such a listing of applicable proposed actions for each management objective, we recommend that a summary table be provided in the FEIS where all actions applicable to each management objective are listed by objective so that the public can readily determine which actions will satisfy each management goal. In the text, NMFS may also wish to more specifically discuss how each proposed action would satisfy specific goals. A summary of how bycatch, for example, would be reduced by the FMP objectives would be of public interest.

Despite NEPA improvements, the DEIS is somewhat cumbersome given that 28 actions are proposed with as many as seven options for these actions. While we support the NEPA concept of reasonable alternatives (options), instances were noted where options could have been lumped into the action and others where the options should have been split into two options since ranges were offered and selections were not yet made. In some cases, the rationale for rejection of options needed further clarification. Some streamlining in the FEIS and future NEPA documents may be possible and should be considered. The summary tables (e.g., Table 3) for the various actions and options are helpful.

Councils' Response: We agree that the document is somewhat cumbersome given the extremely large number of actions, however, establishing a fishery management plan is a complex and detailed process. All Actions are either required by existing law or are necessary to protect dolphin and wahoo. We have attempted to present the material in a logical and easily comparable format. The idea of listing actions and options by objective will be explored in future EIS documents. Within the Dolphin Wahoo FMP, such a comparison is shown by issue/problem which closely correspond to the objectives. In options with ranges, we have expanded the discussion to talk about the range below and above the point value chosen (see Table 3). We have expanded and clarified the rationale for rejection of options. Council staff are attending NEPA training sessions and the South Atlantic Council now has a full-time NEPA Scientist on staff. We anticipate future documents to be streamlined and improved.

2. *Public Acceptance* - Regarding previous (1989) consideration for managing dolphin and wahoo, page 4 states that "...the Councils decided to forego any management for dolphin due to lack of support for any specific measures at that time." While we understand that public support and involvement is desirable to management success, it is fishery data (landings, stock biomass, etc.) that are key in determining the need for a FMP more so than public receptiveness. Historically, fishery restrictions (bag limits, minimum size, reporting, permits, etc.) are often not welcomed by commercial or recreational fishers, particularly for a previously unregulated fishery such as the present dolphin and wahoo fisheries.

Councils' Response: We agree that fishery data are key in determining the need for a FMP however, for situations like dolphin where the Councils are implementing precautionary management, public support is very helpful. The public now supports implementation of dolphin regulations prior to any negative impacts on the stock.

3. *Role of Federal Lead Agency* - Page 5 states that "[t]he Councils concluded this meets the intent of NEPA." While we understand the important role and expertise of the Councils, they are not federal agencies. Accordingly, we believe that NMFS, as the lead federal agency, should determine NEPA compliance of the federal DEIS. Therefore, the above passage should perhaps read in the FEIS as "NMFS concluded this meets the intent of NEPA," or perhaps as "NMFS and the Councils concluded this meets the intent of NEPA." Other such statements regarding NEPA compliance and the role of the federal lead agency versus the technical role of the Councils should be revisited for the FEIS. Conversely, we are pleased to note that page 178, referring to Action 5, states that "[t]his option is strongly supported by the National Marine Fisheries Service and many vessel owners."

Councils' Response: The reference to page 5 indicates where the Council determined that the structure of the document meets NEPA intent while also meeting the Magnuson-Stevens Act. This determination is appropriate for the Council to make in order to complete the FMP. However, NMFS also makes the same determination when they review any Council document. If the document is approved, then NMFS is concurring with the Council's conclusions. NMFS prepares additional documents during this stage to indicate their conclusions relative to NEPA. We will revise our statements to indicate that the Councils and NMFS concluded….rather than only indicating the Council concluded….

4. *Framework Procedure* - We agree with the use of the framework procedure to quickly modify a FMP where additional information or discussion makes such modification necessary (adaptive management). The NEPA process, however, would still need to be served under framework modifications. We assume that NMFS will ensure NEPA compliance during the framework process.

Councils' Response: We will continue to ensure NEPA compliance during the framework process as we have done in the past. The South Atlantic Council's process involves a public hearing at one Council meeting and then a final review and opportunity for public comment at the following meeting. Once the document is submitted to NMFS there is another opportunity for public comment on the proposed rule.

5. *Options* - As suggested above, some options proposed in the DEIS themselves offer a range of choices. For example, Option 2 for Action 15 (proposing a 20-inch fork length (FL) as a minimum size for dolphin) offers an 18- to 24-inch FL range and suggests that a final FL will be chosen. Options to a proposed action should preferably provide only one FL, i.e., two options should have been presented -- one above 20 inches and one below 20 inches. Since Option 2 offers a range above and below 20 inches, its merits are difficult to comment on by resource agencies and the public. Conversely, other ranges presented in the DEIS such as for the maximum sustainable yield (MSY: Action 7) are appropriate since they present a statistical confidence limit range. However, even in such instances, the need to settle on one MSY value -- such as an average MSY -- seems appropriate.

We also note that Options 2 and 3 for Action 23 seem more consistent with the proposed action than variants to the proposed action. The FEIS should revisit these and revise them as needed, or better identify differences between the options and Action 23.

Councils' Response: We will structure our options to address this concern in future documents. These options were taken to public hearings by the Council and are being retained. Additional discussion has been added to discuss impacts above and below the value chosen. The Council has not specified one MSY given the very limited data available. The Council concluded a range is more appropriate at this stage. As more data become available, the framework procedure can be used to specify a point value for MSY. The EFH options have been expanded and figures added to provide further contrast.

6. *List of Acronyms & Glossary* - Because of the technical nature of fishery science, we recommend that the FEIS include a *List of Acronyms* and a *Glossary* to make the document more user-friendly to the general public (e.g., MSY, SPR, F, OY, FL, RecFIN, ComFIN, fecundity, pelagic, proxy, *Sargassum*, etc.). Although several such terms are defined in the DEIS, their consolidation would facilitate public reviews. Similarly, when listing taxonomic fish families (as was done for the gut analysis for dolphin in Chapter 3: pg. 31), we suggest that the common name also be included with the family name (e.g., Scombridae: mackerels & tunas). In addition, we suggest that the FEIS summarize the concept of Essential Fish Habitat (EFH) in pelagic waters where bottom habitat would not be damaged by fishing gear or most development as it would for EFHs in inshore waters. For example, how would the expansive and meandering Gulf Stream, which is proposed as a dolphin and wahoo EFH in Action 22, be protected as an EFH? Also, we suggest that local terms such as "chicken" dolphin (juvenile dolphin) be further defined as to size (<18-inch FL?) and other characteristics.

Councils' Response: A list of Acronyms & Glossary has been added. Some of the other comments have been addressed or will be addressed in future documents.

In addition to the above NEPA process comments, EPA has provided comments and recommendations on the 28 proposed actions of the FMP and their options in the enclosed *Detailed Comments*. Some of our potential concerns include that similar but nevertheless different species and congeners are lumped into one FMP, that permit fees are required in some regions but not in all regions of the management unit, that operators of for-hire vessels will still be able to sell dolphin and wahoo which may affect the assurance of food quality standards, that the proposed minimum size limit for dolphin would only apply to portions of the Atlantic, the current NMFS position on the harvesting of *Sargassum* weed particularly as it relates to dolphin and wahoo EFH and the status of the *Sargassum* FMP, and the mechanism for the enforcement of the proposed FMP. We suggest additional discussion in the FEIS.

EPA offers the following comments on the FMP actions and their options for the NMFS/Councils consideration in the development of the FEIS:

7. ***Action 1 (Management Unit for Dolphin)*** - We note that the range for the dolphin is broad geographically (Nova Scotia to Brazil) as is the range of the management unit (Atlantic EEZ to the Caribbean EEZ). However, samples within the range indicated no genetic differences and tagging information shows that dolphin move within the range. Accordingly, it seems reasonable that one management plan for dolphin is appropriate for the management unit. It is unclear, however, if both the common dolphin and the pompano dolphin, which are both to be regulated under the same FMP, were examined genetically and via tagging. While differences may not exist within a species, physical and behavioral differences could exist between dolphin congeners. The FEIS should clarify. The DEIS indicates, for example, that pompano dolphin are a smaller-sized species and prefer warmer waters than the common dolphin.

+ *Option 1 for Action 1 (No Action)* - In regard to management of dolphin at a time when the stock appears healthy (pg. 163), we do not disagree with such a proactive NMFS regulation if it is followed by adaptive management of the proposed FMP through the framework process. We note that conflicts between commercial and recreational fishers have occurred, that juvenile "chicken" dolphin are being harvested and that areas of localized reductions have occurred, which suggest that some regulation is already appropriate at this time. As such, we agree with the NMFS rejection of Option 1. However, given the many species being overfished, it is arguable that resources needed for this FMP may be more needed for those species with stocks in greater jeopardy -- unless these species are also already being fully managed. We will defer to the expertise of the NMFS and Councils.

Councils' Response: Genetic and tagging work did not address the pompano dolphin. Such work is included in the list of research needs.

8. ***Action 2 (Management Unit for Wahoo)*** - The biology and stock status of wahoo is less known than for dolphin. However, the pelagic distribution appears similar and like dolphin, there appears to be movement within the range. Wahoo and dolphin are also harvested by some of the same fishers. It therefore may not be unreasonable to lump wahoo with dolphin in the same FMP and management unit (Atlantic, Caribbean and Gulf of Mexico EEZ). However, given that two different species with different genera are involved and data are limited, separate FMPs may ultimately be more appropriate if a need is identified through the proposed collection of reporting data.

+ *Option 1 for Action 2 (No Action)* - We agree with the NMFS rejection of Option 1 in an effort to compile data to better understand wahoo stocks. Again, adjustment to the proposed FMP appear likely as data become available.

Councils' Response: The Council concluded resources would be better utilized to include both dolphin and wahoo in one FMP given both species are harvested by the same fishermen. It would be duplicative and wasteful to develop a separate FMP for wahoo.

9. ***Action 3 (Dealer Permits for Atlantic and Gulf)*** - EPA agrees with the use of dealer permits in order to better assess dolphin and wahoo landings and changes in landings. In regard to the fee for these permits, NMFS may wish to consider waiving this cost since the information gathered by the dealers is invaluable to the understanding of the two fisheries. The permit fees are also nominal so that revenues would not seem to be a significant gain or loss to the agency. If not waived, however, we suggest that the proposed federal use of the permit fees be disclosed (e.g., fisheries management, enforcement, conservation, permit processing, NMFS policy, etc.) in the FEIS.

+ *Option 1 for Action 3 (No Action)* - We agree with the NMFS rejection of Option 1 so that the two fisheries will be monitored.

+ *Option 2 for Action 3 (Dealer Permits for Caribbean)* - This option proposes a permit and fee for the Caribbean. The Councils have rejected this option since the fees might be an economic burden for Caribbean dealers which may also be fishers and vessel owners, which require additional permits and fees. EPA does not disagree in the sense that we believe that the permit fees might be waived in general, as suggested above. With or without fees, however, we believe that dealer reporting of landings should be required through permits for all subregions of the management unit (Atlantic, Gulf and Caribbean) in order to monitor the two fisheries and for comparisons. It may be argued, however, that if fees are charged in the Atlantic and Gulf but not the Caribbean, some discontent may develop among U.S. dolphin and wahoo fishers.

+ *Option 3 for Action 3 (State vs. Federal Permits for Caribbean)* - For Option 3, EPA defers to the NOAA General Counsel which has "indicated that pursuant to the Magnuson-Stevens Act, it was not feasible to defer to local government permits for harvest and possession of a Federally managed species"(pg. 171).

Councils' Response: We agree that the information being gather is valuable. However, the decision to waive the fee is up to NMFS and not the Council. The FMP states that an administrative fee "may" be charged.

Options addressing the Caribbean and Gulf have been removed from the Dolphin Wahoo FMP. The EPA comments will be addressed by the CFMC and GMFMC as they manage dolphin and wahoo in their areas of jurisdiction.

10. ***Action 4A (Vessel Permits for Atlantic and Gulf)*** - We concur with the action to require the owners of for-hire vessels to obtain a NMFS permit to harvest or possess wahoo or dolphin so that the number of commercial fishing vessels and commercial effort can be determined. A nominal fee would be charged. As indicated above for dealer fees, NMFS may wish to waive this fee considering the value of such a permitting requirement to the understanding of the two species.

Councils' Response: We agree that the information being gather is valuable. However, the decision to waive the fee is up to NMFS and not the Council. The FMP states that an administrative fee "may" be charged.

11. ***Action 4B (Specifics for Vessel Permits for Atlantic)*** - We concur with the presented specifics regarding the need for a vessel permit such as a permit being required if at least 25% of the vessel owner's income was derived from commercial or for-hire fishing. It is unclear, however, as to why a 200-pound wahoo and dolphin bycatch possession limit is allowed for permitted commercial fishers fishing north of 39 degrees North latitude. It is also unclear how such permitting will be enforced. The FEIS should discuss.

+ *Option 1 for Actions 4A and 4B (No Action)* - EPA agrees with the NMFS rejection of this option so that the two fisheries can be further characterized through vessel permitting.

Councils' Response: The 200 pound limit is intended to cover the likely incidental harvest in the area north of 39 degrees North latitude. This would allow this harvest to continue without these fishermen being required to obtain another permit. This trip limit will be enforced along with other fishing regulations as vessels are intercepted and the quantities possessed measured.

12. ***Action 4C (Vessel Permits Without Fees for Caribbean)*** - Due to the economics of the Caribbean subregion, the Councils propose that no permitting fee be charged but that the vessel permitting process be initiated.

As suggested above, we believe that vessel permits should be required for all subregions within the management unit for dolphin and wahoo. With or without fees, the permitting should be consistent within the management unit. It may be argued, however, that if fees are charged in the Atlantic and Gulf but not the Caribbean, some discontent may develop among U.S. dolphin and wahoo fishers.

+ *Option 1 for Action 4C (No Action)* - EPA agrees with the NMFS rejection of this option so that the two fisheries can be further characterized through vessel permitting.

Councils' Response: Options addressing the Caribbean and Gulf have been removed from the Dolphin Wahoo FMP. The EPA comments will be addressed by the CFMC and GMFMC as they manage dolphin and wahoo in their areas of jurisdiction.

13. ***Action 5 (Operator Permits for Atlantic and Gulf)*** - EPA agrees with the requirement of an operator's permit for commercial or for-hire vessels to harvest or possess dolphin or wahoo. We particularly agree that the operator must be onboard, is held accountable for violations of fishery regulations, and that the permit is not transferable and can be revoked and sanctioned.

+ *Option 1 for Action 5 (No Action)* - We concur with the NMFS rejection of this option to minimize onboard violations of the FMP and other fishery regulations.

+ *Option 2 for Action 5 (Operator Permits for Caribbean)* - EPA disagrees with the apparent proposed permit exemption for Carribean operators. The argument that the Caribbean fishery shows no sign of decline can be made for many other areas within the management unit. We suggest that this option be revisited in the FEIS and that Action 5 perhaps be modified to include the Caribbean. This would provide consistency across the management unit, allow comparison against the Atlantic and Gulf, and help ensure FMP compliance in the Caribbean. EPA would not oppose waiving a permit fee, but believes the permitting process and enforcement should be consistent within the management unit.

Councils' Response: Options addressing the Caribbean and Gulf have been removed from the Dolphin Wahoo FMP. The EPA comments will be addressed by the CFMC and GMFMC as they manage dolphin and wahoo in their areas of jurisdiction.

14. ***Action 6: SubAction 6A (Reporting Requirements for Atlantic)*** - EPA will defer to the NMFS expertise regarding data collection techniques and analysis such as the listed ACCSP, RecFIN, ComFIN and the existing logbook requirements. EPA recommends use of standardized methodology and consistency within the management unit to allow regional comparisons.

Councils' Response: We agree and have specified the ACCSP standard for data collection.

15. ***Action 6: SubAction 6B (Reporting Requirements for Gulf and Caribbean)*** - EPA will defer to the NMFS expertise regarding data collection techniques and analysis. Techniques for Gulf and Caribbean will apparently be developed through the framework process. EPA recommends use of standardized methodology and consistency within the management unit to allow regional comparisons.

+ *Option 1 for Action 6 (No Action)* - We concur with the NMFS rejection of this option so that data can be appropriately reduced and interpreted.

Councils' Response: Options addressing the Caribbean and Gulf have been removed from the Dolphin Wahoo FMP. The EPA comments will be addressed by the CFMC and GMFMC as they manage dolphin and wahoo in their areas of jurisdiction.

16. ***Action 7 (Dolphin & Wahoo Maximum Sustainable Yield: MSY)*** - EPA will defer to the expertise of the NMFS and Councils regarding the best estimate of the MSY for both dolphin and wahoo. We also understand that the MSY is based on the spawning stock size (biomass) preferred by NMFS/Councils. While we understand that the ranges provided represent 80% confidence levels, it would seem that one figure such as the mean be disclosed and used in analysis. The FEIS should discuss.

+ *Option 1 for Action 7 (No Action)* - We concur with the NMFS rejection of this option since the MSY estimate is essential to the management of dolphin stocks and required (or an MSY proxy) by the Magnuson-Stevens Act.

+ *Option 2 for Action 7 (Other MSY Estimates)* - We defer to the NMFS and Councils regarding the preference for biomass-derived MSY estimates as presented in Action 7.

+ *Option 3 for Action 7 (Other MSY Estimates)* - We defer to the NMFS and Councils regarding the preference for biomass-derived MSY estimates as presented in Action 7.

Councils' Response: The MSY represents the production available from the stock and not what is preferred by NMFS/Councils. The law requires that MSY be specified in terms of biomass. The available data are not sufficient for specifying a point value at this time. When sufficient data become available and NMFS provides a point estimate of MSY in the SAFE Report, the Council will adopt such value through the framework procedure.

17. ***Action 8 (Dolphin & Wahoo Optimum Yield: OY)*** - EPA will defer to the expertise of the NMFS and Councils regarding the best estimate of the OY for both dolphin and wahoo. OY is defined as "the maximum number of fish that can be harvested safely as reduced by social, economic, and ecological features." We are pleased to note that while the OY is often less than MSY it cannot exceed MSY and that ecological features can result in reduced landings. The FEIS should further discuss what specific ecological considerations would be implemented for this FMP.

+ *Option 1 for Action 8 (No Action)* - We concur with the NMFS rejection of this option to prevent overfishing.

+ *Option 2 for Action 8 (Other OY Estimates)* - We defer to the NMFS and Councils regarding the preference for biomass-derived OY estimates as presented in Action 8.

+ *Option 3 for Action 8 (Other OY Estimates)* - We defer to the NMFS and Councils regarding the preference for biomass-derived OY estimates as presented in Action 8.

+ *Option 4 for Action 8 (Other OY Estimates)* - We defer to the NMFS and Councils regarding the preference for biomass-derived OY estimates as presented in Action 8. Also, data presently do not exist to calculate spawning stock size (biomass) by subregions.

Councils' Response: Data are not available to incorporate specific ecological considerations for establishing OY for dolphin and wahoo. This issue will be address when data become available through the annual SAFE Report developed by NMFS.

18. ***Action 9 (Overfishing)*** - EPA will defer to the expertise of the NMFS and Councils regarding the best estimate of fishing mortality and other components involved in estimating the overfishing estimate for both dolphin and wahoo.

+ *Option 1 for Action 9 (No Action)* - We concur with the NMFS rejection of this option to prevent overfishing.

Councils' Response: No response necessary.

19. ***Action 10 (Framework Procedure)*** - We agree with adjustments to the proposed FMP through the framework procedure to expedite modifications. However, NEPA compliance will still be necessary for such adaptive management.

+ *Option 1 for Action 10 (No Action)* - We concur with the NMFS rejection of this option to allow rapid FMP modifications.

Councils' Response: We will continue to ensure NEPA compliance during the framework process as we have done in the past. The South Atlantic Council's process involves a public hearing at one Council meeting and then a final review and opportunity for public comment at the

following meeting. Once the document is submitted to NMFS there is another opportunity for public comment on the proposed rule.

20. ***Action 11 (Sale of Dolphin & Wahoo)*** - We agree that dolphin and wahoo should not be sold by recreational fishers. However, this action exempts for-hire vessels with commercial permits that comply with regulations, which are allowed to sell dolphin and wahoo. EPA can only agree with this exception if the commercial permits for the for-hire vessels require the food quality standards of commercial vessels. It is also unclear as to why Action 11 is only proposed for the Atlantic subregion. The FEIS should discuss.

+ *Option 1 for Action 11 (No Action)* - We concur with the NMFS rejection of this option since recreational fishers can avoid food quality standards that commercial fishers cannot legally avoid.

+ *Option 2 for Action 11 (Phase-Out Period)* - This option proposes to phase out the for-hire vessel exemption in 3-5 years so that only true commercial vessels will eventually be able to sell dolphin and wahoo. We do not disagree with the NMFS rejection of Option 2 if the for-hire vessels indeed are bound by commercial food quality standards.

+ *Option 3 for Action 11 (Prohibit For-Hire Vessels Sales)* - This option would limit the sale of dolphin and wahoo to commercial vessels. Again, we do not disagree with the NMFS rejection of Option 3 if the for-hire vessels indeed are bound by commercial food quality standards. However, EPA favors Option 3 since it provides the best assurance for food quality standards. On the other hand, it does present some societal and economic issues for for-hire vessels.

Councils' Response: Commercial and for-hire vessels selling their catch must abide by all food quality requirements equally. Options addressing the Caribbean and Gulf have been removed from the Dolphin Wahoo FMP. The EPA comments will be addressed by the CFMC and GMFMC as they manage dolphin and wahoo in their areas of jurisdiction.

21. ***Action 12 (Commercial Landings Cap)*** - Although not a rigorous Total Allowable Catch (TAC), this action caps commercial landings at 13% of total landings or 1.5 M pounds, whichever is greater. These caps are based on the average of recent fishery statistics (1994-1997), including the highest (1995) landings (Note - It is unclear why Action 12 (Atlantic EEZ) and Action 27 (Gulf EEZ) used significantly different baseline years; the FEIS should discuss.). Although the NMFS can adjust the caps if exceeded, this non-binding cap offers a target that should perhaps evolve into a TAC as data become available. EPA agrees with capping commercial landings to help resolve commercial/recreational fisher use conflicts.

+ *Option 1 for Action 12 (No Action)* - We concur with the NMFS rejection of this option in order to set a cap, albeit non-binding, and to help resolve fisher use conflicts.

+ *Option 2 for Action 12 (Historical Catch)* - Option 2 bases the cap on historical landings from one of several time periods different from proposed Action 12. We will defer to the NMFS regarding the selection of the appropriate time frame but favor recent landings used in Action 12.

+ *Option 3 for Action 12 (Gear Types)* - Option 2 bases the cap on gear types by different parts of the subregion. We will defer to the NMFS regarding the selection of the appropriate time frame but favor the statistics used in Action 12.

Councils' Response: Options addressing the Caribbean and Gulf have been removed from the Dolphin Wahoo FMP. The EPA comments will be addressed by the CFMC and GMFMC as they manage dolphin and wahoo in their areas of jurisdiction.

22. ***Action 13 (Bag Limit)*** - This action proposes a 10 dolphin per person per day and 60 dolphin per boat per day limit. We conceptually agree with bag limits and will defer to the NMFS regarding the basis of these limits. This action serves to cap recreational fishing.

+ *Option 1 for Action 13 (No Action)* - We concur with the NMFS rejection of this option in order protect dolphin abundance.

+ *Option 2 for Action 13 (Reduced Dolphin Bag Limit Per Boat Per Day)* - We agree with the NMFS rejection of Option 2 regarding dolphin bag limits for for-hire vessels (18-60 per vessel per day) since we will defer to the expertise of the NMFS/Councils proposing Action 13 bag limits. However, the lower bag limit proposed in Option 2 (18 vs. 60) would provide greater protection of stock abundance. From a NEPA standpoint, this option is vague since it provides a wide range rather than a distinct bag limit.

+ *Option 3 for Action 13 (Reduced Dolphin Bag Limit Per Person Per Day)* - We agree with the NMFS rejection of Option 3 regarding dolphin bag limits for fishers (5-10 per person per day) since we will defer to the expertise of the NMFS/Councils proposing Action 13 bag limits. However, the lower bag limit proposed in Option 3 (5 vs. 10) would provide greater protection of stock abundance. From a NEPA standpoint, this option is vague since it provides a wide range rather than a distinct bag limit.

+ *Option 4 for Action 13 (Bag Limit Exemptions)* - We agree with the NMFS rejection of Option 4 proposing Action 13 bag limits with an exemption for headboats fishing in waters north of 39 degrees North Latitude since we will defer to the expertise of the NMFS/ Councils proposing Action 13 bag limits. Such exemptions would allow greater landings and therefore reduce dolphin abundance. The basis of such an exemption is also unclear.

Councils' Response: The use of ranges will be addressed in future documents. The public has not indicated that use of ranges is vague or problematical but we will modify to address the NEPA concerns as we prepare new documents.

23. ***Action 14 (Commercial Trip Limits)*** - EPA conceptually agrees with a limit on commercial dolphin landings per trip (3,000 pounds per trip north of 31 degrees North Latitude and 1,000 pounds south) and agrees that no at-sea catch transfers should be allowed. We will defer to the expertise of the NMFS/Councils regarding the basis for these limits. However, the basis for these limits is somewhat unclear (data vs. maintenance of status quo and public opinion). The basis and regional differences should be better discussed in the FEIS.

+ *Option 1 for Action 14 (No Action)* - We concur with the NMFS rejection of this option in order to limit the amount of fishing effort in the dolphin commercial fishery.

+ *Option 2 for Action 14 (1,000-5,000 Pound Trip Limits)* - We agree with the NMFS rejection of Option 2 since we will defer to the expertise of the NMFS/Councils proposing Action 14 trip limits. The increased limits proposed in Option 2 (5,000 vs. 3,000 pounds) would impact abundance.

Councils' Response: The basis for the different trip limits will be expanded.

24. ***Action 15 (Dolphin Size Limits)*** - We conceptually agree with setting a minimum size limit south of Georgia and defer to the expertise of the NMFS/Councils regarding the basis for Action 15 size limits of a 20-inch FL. We understand (pg. 224) that most common dolphin mature at a FL of 18 inches so that it is likely that dolphin will have spawned by the time they have reached the proposed minimum size limit. The size limit would also prevent harvest of juvenile "chicken" dolphin and reduce the harvest of the smaller pompano dolphin species (parenthetically, the FL size range of juvenile "chicken" or "peanut" dolphin should be defined in the FEIS). It would also raise the current limit of an 18-inch FL in Georgia.

The basis for the exemption of a size limit for waters north of Georgia should be further discussed in the FEIS. We note (pg. 228) that the proposal for no size limit in South Carolina is to reduce the number of dolphin regulatory discards which may or may not survive.

+ *Option 1 for Action 15 (No Action)* - We agree with the rejection of this option in order to reduce the taking of young dolphin that become sexually mature at 18-inch FL.

+ *Option 2 for Action 15 (18 to 24-inch FL Size Limit)* - We agree with the NMFS rejection Option 2 since the lower FL range would allow harvesting of young (just sexually-mature) dolphin. From a NEPA perspective, Option 2 is also vague since it provides a range rather than a distinct minimum size limit such as provided in Action 15.

Councils' Response: The discussion on "chicken" size will be added. The use of ranges will be addressed in future documents. The public has not indicated that use of ranges is vague but we will modify to address the NEPA concerns.

25. ***Action 16 (Wahoo Commercial Trip Limit of 500 Pounds)*** - EPA conceptually agrees with a limit on commercial wahoo landings per trip and agrees that no at-sea catch transfers should be allowed. We will defer to the expertise of the NMFS/Councils regarding the basis for this limit.

Although somewhat unclear, we assume that the DEIS did not intent to present 16A and 16B subactions. The FEIS should clarify and may only wish to note that commercial trip limits of 0-2,400 pounds were considered by NMFS/Councils, but that 500 pounds is being proposed. Otherwise, options within the 0-2,400 pound range should be established and considered in the FEIS.

+ *Option 1 for Action 16 (No Action)* - We agree with the NMFS rejection of this option in order to cap commercial trip landings and prevent and minimize localized rapid reductions in abundance due to extended fishing effort or use of efficient gear.

Councils' Response: Action 16 has been modified to remove the suboptions. The use of ranges will be addressed in future documents. The public has not indicated that use of ranges is vague but we will modify to address the NEPA concerns.

26. ***Action 17 (No Size Limit for Wahoo)*** - Since wahoo mature at a 45-inch FL, sexually immature specimens are frequently caught. This affects wahoo spawning potential and the size of subsequent year classes. Since recreational fishing can involve gaffing, the survival rate of discards is low. Accordingly, no size limit is proposed by NMFS/Councils.

EPA can agree with this approach if a recreational bag limit (as proposed in Action 18) and commercial trip limit (as proposed in Action 16) are promulgated since they should similarly serve to allow an adequate number of juveniles to become sexually mature and spawn. Other options might include use of larger lures that might be rejected by juveniles and releasing hooked juveniles without gaffing.

+ *Option 1 for Action 17 (35 to 45-Inch FL Minimum Size for Wahoo)* - EPA agrees with the NMFS rejection of this option since a bag limit and trip limit should serve to preserve a breeding population.

Councils' Response: Bag and trip limits are being proposed. Consideration of additional options would further delay implementation of the Dolphin Wahoo FMP and was rejected by the Councils.

27. ***Action 18 (Wahoo Bag Limit of 2 Per Person Per Day)*** - As discussed above, we conceptually agree with a wahoo bag limit and will defer to the expertise of the NMFS/Councils regarding the basis for the bag limit.

+ *Option 1 for Action 18 (No Action)* - We agree with the NMFS rejection of this option in order to prevent overfishing of adults and juveniles in order to protect the breeding population.

+ *Option 2 for Action 18 (Bag Limit Exemption of For-Hire Captain & Crew)* - We agree with the NMFS rejection of Option 2 to promote the intent of Action 18 and to prevent inconsistent bag limit regulations onboard for-hire vessels.

Councils' Response: No response necessary.

28. ***Action 19 (Allowable Gear for Dolphin and Wahoo)*** - We agree with regulating the gear type and efficiency as a form of fishery management.

+ *Option 1 for Action 19 (No Action)* - We agree with the NMFS rejection of this option in order to regulate the type of gear introduced into the fishery that may result in overfishing.

Councils' Response: No response necessary.

29. ***Action 20 (Prohibit Dolphin & Wahoo Long Lines in HMS Closed Areas)*** - We strongly agree with this approach in order to be consistent with HMS FMP, facilitate management and enforcement, and prevent additional recreational/commercial fisher use conflicts.

+ *Option 1 for Action 20 (No Action)* - We agree with the NMFS rejection of this option in order to be consistent with the HMS FMP.

Councils' Response: No response necessary.

30. ***Action 21 (Fishing Year of Jan 1 to Dec 31)*** - It is unclear as to why establishing a fishing year is proposed since fishing is to be allowed during the whole year with no time closures. Presumably, the intent is to establish the concept as a management tool which can be modified to include closures as needed through framework. As suggested on page 248, this action would initiate a benchmark for data collection and monitoring.

+ *Option 1 for Action 21 (No Action)* - We agree with the NMFS rejection of this option in order to establish this management tool.

Councils' Response: The fishing year is established to provide a timeframe for reporting data and for future use if closures should become necessary.

31. ***Action 22A (EFH for Dolphin and Wahoo)*** - This action proposes to expand the Essential Fish Habitat (EFH) approved for dolphin to also apply to wahoo. Specifically, these EFHs include the Gulf Stream, Charleston Gyre, Florida Current and pelagic *Sargassum*. EPA supports the EFH concept and will defer to the expertise of the NMFS/Councils regarding their selection. We suggest that the FEIS further discuss the EFH as it relates to pelagic waters (as opposed to inshore waters) since no bottom habitat would be damaged through fishing gear or through most development. For example, how would the expansive and meandering Gulf Stream be protected as an EFH?

Councils' Response: The discussion about pelagic waters has been expanded. The Gulf Stream will be protected by its designation as EFH because any activities that may impact EFH would be subject to comment by the Council and NMFS.

32. ***Action 22B (EFH-HAPCs for Dolphin and Wahoo)*** - This action proposes to expand approved EFH-HAPCs (Habitat Areas of Particular Concern) for dolphin to apply to wahoo in the Atlantic. These EFH-HAPCs include the Ten-Fathom Ledge in North Carolina and The "Wall" off the Florida Keys. EPA also supports the EFH-HAPCs concept and will defer to the expertise of the NMFS/Councils regarding their designation. Additional discussion of these pelagic areas relative to the definition of EFH-HAPCs is requested.

+ *Option 1 for Action 22 (No Action)* - We agree with the NMFS rejection of this option in order to expand the designation of EFHs and EFH-HAPCs for dolphin and wahoo.

+ *Option 2 for Action 22 (Expand EFH and EFH-HAPC to Include Sargassum)* - This option would include *Sargassum* weed wherever it occurs in the Atlantic gyre. The NMFS has rejected Option 2 since *Sargassum* extends beyond U.S. EEZ waters where there is no federal jurisdiction.

While EPA does not disagree with this legal definition, the FEIS should consider a hybrid action that includes *Sargassum* in U.S. waters as an EFH-HAPC throughout the range of dolphin and wahoo, since the flotsam is used as open ocean "islands" for food and cover by these pelagic species.

Councils' Response: The discussion about pelagic waters has been expanded. The EPA suggestion about a hybrid action for Option 2 would further delay implementation of the FMP and was rejected by the Council. *Sargassum* is identified as EFH.

33. ***Action 23 (Fishing Impacts on EFH)*** - Consistent with EPA NEPA review comments on the recent *Sargassum* FMP, we agree that *Sargassum* should not be harvested in order to protect this pelagic ecosystem which is used by dolphin and wahoo. If the *Sargassum* FMP is approved by NOAA, no additional action would seem to be needed. If not, we believe EFH protection of *Sargassum* communities would seem appropriate within the presently proposed FMP and should require the return to sea of any *Sargassum* unavoidably brought onboard during fishing. Dolphin and wahoo fishing in other proposed EFH-HAPCs would not seem to degrade these habitats since they are located in deep waters and fishing gear does not involve trawls or dredges that can damage benthic habitats.

+ *Option 1 for Action 23 (No Action)* - We agree with the NMFS rejection of this option in order to protect EFH-HAPCs for dolphin and wahoo against fishing impacts, particularly *Sargassum* communities and the harvesting of *Sargassum* weed.

+ *Option 2 for Action 23 (Prohibit Harvest and Possession of Sargassum)* - This option is unclear since it was rejected by NMFS yet it appears to support proposed Action 23. Page 263 states that Option 1 (no action) was rejected because "[n]ot prohibiting harvest of pelagic *Sargassum* in the South Atlantic EEZ would not meet objectives of the plan or the requirements of the Magnuson-Stevens related to essential fish habitat," yet Option 2 was also rejected because "...NMFS disapproved prohibiting any harvest of pelagic *Sargassum* in their letter rejecting the original [*Sargassum*] FMP..." (pg. 265). The FEIS should discuss this apparent inconsistency and discuss the current NMFS position on the *Sargassum* fishery and the status of the *Sargassum* FMP. EPA supports the prohibition of *Sargassum* harvesting.

It is noted that Options 2 seems more consistent with the proposed Action 23 than an option to Action 23. The FEIS should revisit Option 2 and incorporate it into Action 23 or emphasize the difference between Option 2 and Action 23.

+ *Option 3 for Action 23 (Prohibit Harvest and Possession of Sargassum With Exceptions)* - This option would allow harvesting of *Sargassum* in specified areas. We agree with the NMFS rejection of this option. It is unclear however, if this option was rejected because some harvesting would be allowed in some areas, or if no harvesting would be allowed in some areas. The FEIS should discuss the position of the NMFS regarding *Sargassum* harvesting and protection of EFHs. Again, EPA supports the prohibition of *Sargassum* harvesting and also agrees with the Councils that "...any removal of pelagic Sargassum represents a net loss of EFH..." (pg. 269).

Councils' Response: The Council has been informed by NMFS and NOAA GC that the *Sargassum* FMP must be implemented before the Dolphin Wahoo FMP can be implemented. Therefore, the ultimate outcome of *Sargassum* will be known and if additional action by the Council is necessary, the changes can be made.

34. **Management Measures for U.S. Waters of the Caribbean**

Councils' Response: The Dolphin Wahoo FMP now covers the Atlantic only. The EPA's comments will be addressed by the CFMC as they develop the management program within the Caribbean.

35. **Management Measures for U.S. Waters of the Gulf of Mexico**

Councils' Response: The Dolphin Wahoo FMP now covers the Atlantic only. The EPA's comments will be addressed by the GMFMC as they develop the management program within the Gulf of Mexico.

FEIS to NMFS on: December , 2002 FEIS to EPA on: _____
Comments on FEIS requested by: _____

REGULATORY IMPACT REVIEW (RIR)

This integrated document contains all elements of the Dolphin and Wahoo Fishery Management Plan, Final Environmental Impact Statement (FEIS), Initial Regulatory Flexibility Analysis (IRFA), 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 Plan. Introductory information and/or background for the FEIS, IRFA, RIR, and SIA/FIS are included within the separate table of contents for each of these sections. **General information begins on page 1; information for agency reviewers continues below.** The page numbers below refer to the economic discussions.

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

The RIR also serves as the basis for determining whether any proposed actions are a "significant regulatory action" under certain criteria provided in Executive Order 12866. This RIR analyzes the probable impacts of the proposed Fishery Management Plan (FMP) for the Dolphin and Wahoo Fishery of the Atlantic.

In addition, information from the RIR is used to assess the impacts of the proposed actions on small entities. Because of the nature of these proposed actions, an initial regulatory flexibility analysis (IRFA) is prepared in Section 4.8 to provide full disclosure of their impacts on small entities.

PROBLEMS AND OBJECTIVES

The general problems and objectives are found in the FMP (Section 1.0). The FMP proposes to establish a management program for the dolphin and wahoo fishery. Further exposition of these issues is found in discussions under each proposed action.

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 attempted. A complete analysis for each measure is contained in Section 4 under "Economic Impacts", and the RIR assessment is summarized in the following table.

Summary of Expected Changes in Net Economic Benefits (Summary of RIR)

The following table summarizes only the economic effects of the proposed fishery managemen actions and alternatives. The detailed economic analyses are contained in Section 4.0 (see RIR Table of Contents for the exact page references). [Note: This table does not include the Council's rationale for choosing among alternatives.] The Council's preferred options are presented in the following table in bold.

Table 1. Summary of Expected Changes in Net Benefits (Summary of Regulatory Impact Review).

Proposed Actions & Rejected Options	Positive Impacts	Negative Impacts	Net Impacts
Proposed Action 1. The management unit is the population of dolphin from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts.	There will be no economic impact from this option since it only establishes a management unit.	There will be no direct economic impact from this option since it only establishes a management unit.	There will be no direct economic impact. However, future actions to improve the dolphin fishery are expected to increase economic benefits to society.
Rejected Options:			
Option 1. No Action.	There would be no direct economic impact from this option.	This option would not allow for development of a comprehensive FMP for dolphin.	There would be no direct economic impact from this option. However, it would not allow FMP development and thus limit future actions to protect the dolphin fishery. This situation would result in reduced net benefits to society.
Option 2. Four other management units were considered: (1) Caribbean as a management unit, with Gulf and Atlantic combined as a management unit; (2) Atlantic as a management unit, with Caribbean and Gulf combined as a management unit; (3) Gulf as a management unit, with Caribbean and Atlantic combined as a management unit; and (4) separate management units for each region: Gulf, Caribbean, and Atlantic.	There would be no direct economic impact from this option since it would only establish a management unit.	There would be no direct economic impact from this option since it only establishes a management unit.	There would be no direct economic impact. However, future actions to improve the dolphin fishery are expected to increase economic benefits to society. Note: The Caribbean and Gulf of Mexico Council jurisdictions are no longer part of this FMP.

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

Proposed Actions & Rejected Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Proposed Action 2. The management unit is the population of wahoo from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts.	There will be no economic impact from this option since it only establishes a management unit.	There will be no direct economic impact from this option since it only establishes a management unit.	There will be no direct economic impact. However, future actions to improve the wahoo fishery are expected to increase economic benefits to society.
Rejected Options:			
Option 1. No Action.	There would be no direct economic impact from this option.	This option would not allow for development of a comprehensive FMP for wahoo.	There would be no direct economic impact from this option. However, it would not allow FMP development and thus limit future actions to protect the wahoo fishery. This situation would result in reduced net benefits to society.
Option 2. Four other management units were considered: (1) Caribbean as a management unit, with Gulf and Atlantic combined as a management unit; (2) Atlantic as a management unit, with Caribbean and Gulf combined as a management unit; (3) Gulf as a management unit, with Caribbean and Atlantic combined as a management unit; and (4) separate management units for each region: Gulf, Caribbean, and Atlantic.	There would be no direct economic impact from this option since it would only establish a management unit.	There would be no direct economic impact from this option since it only establishes a management unit.	There would be no direct economic impact. However, future actions to improve the wahoo fishery are expected to increase economic benefits to society. Note: The Caribbean and Gulf of Mexico Council jurisdictions are no longer part of this FMP.

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

Proposed Actions & Rejected Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Proposed Action 3. In the Atlantic any dealer, defined as the person who first receives dolphin or wahoo harvested in or from the EEZ by way of purchase, barter, trade, or transfer in commerce, will be required to possess a valid dealer permit issued by the National Marine Fisheries Service and to report data needed to monitor the dolphin and wahoo fisheries.	This measure should aid enforcement and improve data collection and analyses in the future.	There will be a permit fee for dealers who do not already possess a Federal dealer permit for other species in the Atlantic and Gulf. There will also be a time cost for all dealers completing reports. The public cost of processing these reports is estimated at $12.50 per hour.	If this proposed action is successful in discouraging non-compliance there will be increased benefits from other management measures. Also, management decisions based on additional information is expected to increase net economic benefits.
Rejected Options:			
Option 1. No Action.	There would be no permit fee or time cost for dolphin and wahoo dealers.	This situation would not result in improved compliance with fishery regulations and data collection for management.	This option would not result in the increased benefits to society from improved data collection and analyses for better management of these fisheries.
Option 2. Dealer Permits in the Atlantic, Gulf, and Caribbean.	This measure should aid enforcement and improve data collection and analyses in the future.	There would be similar costs to dealers as stated under the proposed action. Except that this option would also require dealer permits in the Caribbean which is not necessary as most dealers are fishermen and possess vessel permits. Requiring physical facilities would also pose additional unnecessary cost on Caribbean fishermen.	Similar to the proposed action, this option would likely increase future economic benefits to society. However, not to the same extent as the proposed action since there would be an unnecessary cost levied on dealers in the Caribbean. Note: The Caribbean and Gulf of Mexico Council jurisdictions are no longer part of this FMP.

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

Proposed Actions & Rejected Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Proposed Action 4. For-Hire and Commercial Vessel Permits.	This measure will improve enforcement and data collection, and could increase economic benefits from the fishery in the long-term resulting from improved management.	A permit fee will increase cost to vessel owners. Estimated at $50 per vessel and $20 for vessels holding multiple permits. Opportunity cost for completing an application is estimated at $5. Also, there will be a loss in revenue to those vessels that do not meet the permit qualification criteria.	This action is likely to increase economic benefits in the future. In comparison to Option 1, it will slow the growth rate of capacity in this fishery.
Rejected Options:			
Option 1. No Action for 4.	There would be no cost for vessel permits.	This option would not provide the basis for identification of vessels in the dolphin and wahoo fishery and subsequent data collection.	This option would not result in improved management or enforcement and hence is likely to result in reduced economic benefits in the future.
Proposed Action 5. For-Hire and Commercial Operator Permits.	This action will improve enforcement and aid in data collection. It should decrease costs to vessel owners from fisheries violations.	Vessel operators will incur a cost of $50 every three years. In addition, the public costs for setting up this system is estimated at $10,000.	This action is likely to increase net benefits in the future.
Rejected Options:			
Option 1. No Action.	There would be no vessel operator's fee. The agency would not incur the cost of setting up and operating this program.	This option would not improve compliance with management regulations and decrease costs to vessel owners from fisheries violations.	This option would not increase future economic benefits.

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

Proposed Actions & Rejected Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Proposed Action 6. Reporting Requirements.	This action will provide the data for managing the fishery to increase benefits. Logbook reporting should increase regulatory compliance.	The time cost will be $12.50 per hour. The agency cost will be $11 per logbook and $100 per vessel annually.	The benefits from collecting necessary data and improved compliance should outweigh the time and other costs associated with this additional reporting.
Rejected Options:			
Option 1. No Action.	There would be no time and agency cost associated with this option.	This option would not provide critical information for managing the fishery or improve regulatory compliance.	This option would not provide information to manage the fishery so as to increase economic benefits.
Proposed Action 7. Maximum Sustainable Yield of 18.8-46.5 million pounds for dolphin and proxy of 1.41-1.63 million pounds for wahoo. Note: This FMP no longer applies to the Caribbean and Gulf of Mexico Council jurisdictions, however, the range of MSY for dolphin and wahoo stocks based on available data is still appropriate.	There will be no direct economic impact since defining MSY does not alter current use of the resource.	There will be no direct economic impact since defining MSY does not alter current use of the resource.	Economic effects will stem from the relationship between MSY, OY, and TAC.
Rejected Options:			
Option 1. No Action.	There would be no direct economic impact from this option.	There would be no direct economic impact. However, not setting MSY will not allow for development of the FMP.	As a result of not setting MSY and inability to develop this FMP, this option could result in reduced net economic benefits to society.
Option 2. MSY of 16-18 million pounds for dolphin and SPR proxy for wahoo.	There would be no direct economic impact since defining MSY does not alter current use of the resource.	There would be no direct economic impact since defining MSY does not alter current use of the resource.	Economic effects would stem from the relationship between MSY, OY, and TAC.
Option 3. MSY of 18.8-46.5 million pounds for dolphin and MSY proxy of 1.63-2.176 million pounds for wahoo.	There would be no direct economic impact since defining MSY does not alter current use of the resource.	There would be no direct economic impact since defining MSY does not alter current use of the resource.	Economic effects would stem from the relationship between MSY, OY, and TAC.

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

Proposed Actions & Rejected Options	Positive Impacts	Negative Impacts	Net Impacts
Proposed Action 8. Optimum Yield for dolphin and wahoo is the amount of harvest that can be taken by fishermen while not exceeding 75% of MSY (between 14.1 and 34.9 million pounds) for dolphin and 100% of MSY (between 1.41 and 1.63 million pounds) for wahoo.	There will be no direct economic effects since defining OY does not alter current use of the resource.	There will be no direct economic effects since defining OY does not alter current use of the resource.	Economic effects will stem from the relationship between OY, and TAC.
Rejected Options:			
Option 1. No Action.	There would be no direct economic effect.	There would be no direct economic effect.	However, this option would not allow for management of dolphin and wahoo which could lead to reduced economic benefits.
Option 2. OY tied to SPR.	There would be no direct economic effects since defining OY does not alter current use of the resource.	There would be no direct economic effects since defining OY does not alter current use of the resource.	Economic effects would stem from the relationship between OY, and TAC.
Option 3. OY based on 75% of MSY.	There would be no direct economic effects since defining OY does not alter current use of the resource.	There would be no direct economic effects since defining OY does not alter current use of the resource.	Economic effects would stem from the relationship between OY, and TAC.
Option 4. OY based on biomass.	There would be no direct economic effects since defining OY does not alter current use of the resource.	There would be no direct economic effects since defining OY does not alter current use of the resource.	Economic effects would stem from the relationship between OY, and TAC.
Proposed Action 9. Definition of overfishing for dolphin and wahoo.	There will be no direct economic effect from this measure. Economic benefits would stem from management measures implemented to prevent overfishing.	There will be no direct economic effect from this measure. Economic costs would stem from management measures implemented to prevent overfishing.	Measures taken to prevent overfishing will increase long-term benefits.
Rejected Options:			
Option 1. No Action.	There would be no direct economic effect from this option.	This option would not allow for implementation of the FMP.	This option would not allow for management of dolphin and wahoo and future actions to prevent overfishing, which would decrease economic benefits.
Option 2. Overfishing based on SPR.	There would be no direct economic effect from this measure. Economic benefits would stem from management measures implemented to prevent overfishing.	There would be no direct economic effect from this measure. Economic costs would stem from management measures implemented to prevent overfishing.	Measures taken to prevent overfishing will increase long-term benefits.

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

Proposed Actions & Rejected Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Proposed Action 10. Establish a framework procedure for the Dolphin and Wahoo FMP.	This will increase flexibility through more rapid response to changes in the fishery.	There will be agency expenditures for meetings and staff work. .	This action will likely increase economic benefits from a more rapid response to "problems" that arise in the fishery.
Rejected Options:			
Option 1. No Action.	There would be no additional agency cost from this procedure.	This option would not provide the Councils a mechanism to rapidly implement regulations for their area of jurisdiction.	There would be delays in taking action to address problems in the fishery. This situation could lead to a loss of economic benefits.
Proposed Action 11. Prohibit sale of recreationally caught dolphin or wahoo in or from the Atlantic EEZ except for allowing for-hire vessels that possess the necessary state and Federal commercial permits to sell dolphin harvested under the bag limit in or from the Atlantic EEZ.	This action will allow the for-hire sector to continue to earn revenue from the sale of bag limit caught dolphin. There will be some reduction in health risks but not to the same extent as under Option 2 and Option 3.	There will be a loss of revenue to private recreational fishermen who sell their dolphin catch and for hire vessels who sell their wahoo catch. The magnitude of this loss is expected to be lower than under Option 3 and Option 2 (after the phase out period). Allowing sale of dolphin by the for hire sector could pose health risks and increase harvesting demand in the future but not to the same degree as Option 1.	It is not possible to determine the net economic impacts.
Rejected Options:			
Option 1. No Action.	This option would allow the private and for-hire recreational sectors to continue to earn revenue from the sale of fish.	Taking no action could result in increased health risks and increased harvesting pressure by the recreational sector.	It is not possible to determine the net economic impacts.
Option 2. Allow for-hire vessels that possess the necessary commercial permits to continue to sell fish for a 3-5 year phase-out period.	This option would allow for-hire vessels to phase out sale and substitute other revenue earning activities. There would also be reduced health risks.	There would be a loss of revenue to private recreational fishermen who sell their catch. Some for-hire vessels/crew members may not be able to transition to other revenue earning activities.	It is not possible to determine the net economic impacts.
Option 3. Prohibit sale of recreationally caught dolphin and wahoo in the Atlantic EEZ. The intent is to not allow sale from private/rental or for-hire trips and limit sale to vessels with a commercial permit.	This option could reduce health risks from consuming improperly handled fish.	There would be a loss in total revenue to the recreational entities that currently sell bag limit caught dolphin and wahoo. In some areas, such as the Florida Keys, crew members depend on the sale of recreationally caught fish for a large part of their income.	It is not possible to determine the net economic impacts.

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

Proposed Actions & Rejected Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Proposed Action 12. Establish a cap of 1.5 million pounds or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the Council will review the data and evaluate the need for additional regulations which may be established through the framework.	There will be no direct economic effects.	There will be no direct economic effects.	However, if the Councils take restrictive action(s) in the future to maintain these allocation shares there will be a change in economic benefits.
Rejected Options:			
Option 1. No Action.	There would be no direct economic effects in the short term.	There would be no direct economic effects in the short term.	However, it is unknown whether future shifts in harvesting levels would occur and thus result in changes in overall benefits to society.
Option 2. Allocate the dolphin resource to both recreational and commercial harvesters in the Atlantic EEZ based on the historical average catch (1984-1997, 1990-1997, or 1994-1997).	There would be no direct economic effects since the shares are not associated with a TAC.	There would be no direct economic effects since the shares are not associated with a TAC.	However, if the Councils take restrictive action(s) in the future to maintain these allocation shares there would be a change in economic benefits.
Option 3. Sub-allocate the resource to commercial harvesters based on a historical split between gear types and average landings between 1994 and 1997.	There would be no direct economic effects since the shares are not associated with a TAC.	There would be no direct economic effects since the shares are not associated with a TAC.	However, if the Councils take restrictive action(s) in the future to maintain these allocation shares there would be a change in economic benefits.

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

Proposed Actions & Rejected Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Proposed Action 13. Establish a recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Headboats (with a valid certificate of inspection) will be allowed a bag limit of 10 dolphin per paying passenger.	This measure could allow more angler trips for dolphin if "localized depletion" occurs under present conditions.	This measure could decrease benefits for avid anglers constrained by the bag limit or boat limit.	The net economic benefits will depend on the relative changes in these angler benefits.
Rejected Options:			
Option 1. No Action.	There would be no reduction in recreational benefits in the short-term.	This situation would result in loss of future benefits if "localized depletion" occurs.	There would be a reduction in net user benefits in the future if localized depletion occurs and there is overfishing.
Option 2. Establish a recreational boat limit of 18-60 dolphin per boat (including private and for-hire vessels).	This option could allow for more anglers trips to harvest dolphin as compared to the status quo.	There would be a decrease in recreational benefits on those trips where the boat limit constrain harvest.	The net economic benefit would depend on the relative changes in these angler benefits and the boat limit chosen.
Option 3. Establish a recreational bag limit of 5-10 dolphin per person per day, excluding the captain and crew of for-hire vessels in the Atlantic EEZ.	This option could allow for more anglers trips to harvest dolphin as compared to the status quo.	There would be a decrease in recreational benefits on those trips where the bag limit constrain harvest. Also, forgone income to crew from the sale of bag limit caught dolphin.	The net economic benefit would depend on the relative changes in these angler benefits and the bag limit chosen.
Option 4. Establish a recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. For-hire vessels fishing North of 39° N. Latitude (Delaware Bay, Delaware) would be exempt from the boat limit of 60 dolphin.	This option could allow for more anglers trips to harvest dolphin as compared to the status quo.	There would be a decrease in recreational benefits on those trips where the boat limit and bag limit constrain harvest.	The net economic benefits would depend on the relative changes in these angler benefits.

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

Proposed Actions & Rejected Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Proposed Action 14. Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed.	There will be an increase in benefits if this measure prevents growth overfishing and localized depletion.	This measure will decrease net revenue to the commercial harvesters who are constrained by the trip limit.	If this measure is necessary to prevent overfishing, prevent localized depletion, or to regulate market supply throughout the year, then economic benefits will increase.
Rejected Options:			
Option 1. No Action.	This option would not constrain commercial ex-vessel revenue.	This option could result in lower net benefits if the commercial harvesting sector exceeds its allocation, or if unrestrained harvest results in "localized" market flooding.	Economic benefits could decrease if "no action" results in local market flooding and/or the commercial sector exceeds its allocation.
Option 2. Establish a commercial dolphin trip limit of 1,000-5,000 pounds or an equivalent number of fish with no transfer at sea allowed in the Atlantic EEZ.	There would be an increase in benefits if this measure prevents growth overfishing and localized depletion.	This measure would decrease net revenue to the commercial harvesters who are constrained by the trip limit.	If this measure is necessary prevent overfishing, prevent localized depletion, or to regulate market supply throughout the year, then economic benefits would increase.

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

Proposed Actions & Rejected Options	Positive Impacts	Negative Impacts	Net Impacts
Proposed Action 15. Establish a minimum size limit for dolphin of 20 inches fork length off Florida and Georgia and no minimum size limit north of Georgia.	There will be no increase in short-term benefits. Long term benefits could increase if present fishing conditions result in growth overfishing or this action is necessary to improve the quality of recreational fishing.	This action will not allow for the harvest of most pompano dolphin. There will be a reduction in short-term net revenue and consumer surplus.	This action will increase long-term net benefits if there are improvements in the yield from the fishery, and improvements in the size structure of the stock.
Rejected Options:			
Option 1. No Action.	There would be no loss of benefits to recreational and commercial fishermen in the short-term.	There would be a loss of economic benefits in the future if current fishing practices result in growth overfishing.	Under this option long-term benefits would decrease if a minimum size limit is needed to "improve" the stock status or to prevent growth overfishing.
Option 2. Establish an 18-24 inch fork length minimum size limit for dolphin.	There would be no increase in short term benefits. Long term benefits could increase if present fishing conditions result in growth overfishing or this action is necessary to improve the quality of recreational fishing.	This action would not allow for the harvest of most pompano dolphin. There will be a reduction in short-term net revenue and consumer surplus.	This action would increase long-term net benefits if there are improvements in the yield from the fishery, and improvements in the size structure of the stock.
Proposed Action 16. Establish a commercial trip limit for wahoo (head and tails intact) of 500 pounds with no transfer at sea allowed.	There will be an increase in benefits if this measure prevents overfishing and localized depletion.	This measure will decrease net revenue to the commercial harvesters who are constrained by the trip limit.	If this measure is necessary to prevent overfishing, prevent localized depletion, or to regulate market supply throughout the year, then economic benefits will increase.
Rejected Options:			
Option 1. No Action.	This option would not constrain commercial ex-vessel revenue.	This option could result in lower net benefits if the commercial harvesting sector exceeds its allocation, or if unrestrained harvest results in "localized" market flooding.	Economic benefits could decrease if "no action" results in local market flooding and/or overfishing occurs in the future.

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

Proposed Actions & Rejected Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Proposed Action 17. Do not establish a size limit for wahoo in the Atlantic EEZ.	There will be no loss of benefits to recreational and commercial fishermen in the short-term.	There will be a loss of economic benefits in the future if current fishing practices result in growth overfishing.	Under this option long-term benefits will decrease if a minimum size limit is needed to "improve" the stock status or to prevent growth overfishing.
Rejected Options:			
Option 1. Establish a 35-45 inch fork length minimum size limit for wahoo in the Atlantic EEZ.	There would be no increase in short-term benefits. Long term benefits could increase if present fishing conditions result in growth overfishing or this action is necessary to improve the quality of recreational fishing.	There would be a reduction in short-term net revenue and consumer surplus.	This action would increase long-term net benefits if there are improvements in yield from the fishery, and improvements in the size structure of the stock.
Proposed Action 18. Establish a recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.	This measure could allow more angler trips for wahoo if "localized depletion" occurs under present fishing conditions.	This measure could decrease benefits for avid anglers constrained by the bag limit.	The net economic benefits will depend on the relative changes in these angler benefits.
Rejected Options:			
Option 1. No Action.	There would be no reduction in recreational benefits in the short-term.	This situation would result in loss of future benefits if "localized depletion" occurs.	There would be a reduction in net user benefits in the future if localized depletion occurs and there is overfishing.
Option 2. Establish a recreational bag limit of 2 wahoo per person per day for the recreational fishery, excluding the captain and crew of for-hire boats in the Atlantic EEZ.	This measure could allow more angler trips for wahoo if "localized depletion" occurs under present conditions.	This measure would decrease benefits for avid anglers constrained by the bag limit. There would also be a loss of expected income from sale of bag limit caught wahoo.	The net economic benefits would depend on the relative changes in these angler benefits.

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

Proposed Actions & Rejected Options	Positive Impacts	Negative Impacts	Net Impacts
Proposed Action 19. Specify allowable gear for dolphin and wahoo in the Atlantic EEZ as longline; hook and line gear including manual, electric, or hydraulic rod and reels; bandit gear; handline; and spearfishing gear (including powerheads).	There will be no economic impact from this measure.	There will be no economic impact from this measure.	There will be no economic impact from this measure.
Rejected Options:			
Option 1. No Action.	There would be no economic impact from this option.	There would be no economic impact from this option.	There would be no economic impact from this option.
Proposed Action 20. Prohibit the use of surface and pelagic longline gear for dolphin and wahoo within any "time or area closure" in the South Atlantic Council's area of jurisdiction (Atlantic Coast) which is closed to the use of pelagic gear for highly migratory pelagic species.	There will be no positive economic impact in the short-term.	This measure will reduce ex-vessel revenue in the long line fleet (estimated range $96,379 to $155,942 per year).	This action could increase future benefits to society if it aids in the rebuilding of HMS species.
Rejected Options:			
Option 1. No Action.	There would be no loss of income to the longline sector from prohibition on fishing in the HMS closed areas.	There would be no positive economic impact in the long term from improvements in the HMS stocks.	This option would not provide benefits from the faster recovery of HMS species.
Proposed Action 21. Establish a fishing year of January 1 to December 31 for the dolphin and wahoo fishery in the Atlantic EEZ.	There will be no economic impact from this measure.	There will be no economic impact from this measure.	There will be no economic impact from this measure.
Rejected Options:			
Option 1. No Action.	There would be no economic impact from this option.	There would be no economic impact from this option.	There would be no economic impact from this option.

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

Proposed Actions & Rejected Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Proposed Action 22. Expand the list of Essential Fish Habitat (EFH) definitions that were approved for dolphin by the Secretary of Commerce to apply to dolphin and wahoo throughout the Atlantic. EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum*.	There will be no direct economic impact from this measure.	There will be no direct economic impact from this measure.	However, actions implemented to protect habitat could result in increased long-term net benefits but have short-term negative effects on some sectors.
Rejected Options:			
Option 1. No Action.	There would be no direct economic impact from this option.	This option would not allow for development of the Dolphin/Wahoo FMP and subsequent management of these species.	Even though there would be no direct economic effects, this option would not allow the Council to take timely action(s) to protect habitat and critical habitat. This could lead to reduced net economic benefits.
Option 2. Expand the EFH definition to include Sargassum where it occurs in the north Atlantic Gyre in the Sargasso Sea and the EEZ between 20° N. latitude and 40° N. latitude and 30° W. longitude and the western edge of the Gulf Stream.	There would be no direct economic impact from this measure.	There would be no direct economic impact from this measure.	However, actions implemented to protect EFH could result in increased long-term net benefits but have negative effects on some sectors.

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

Proposed Actions & Rejected Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Proposed Action 23. Expand the list of Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) that were approved for dolphin by the Secretary of Commerce to apply to dolphin and wahoo throughout the Atlantic. EFH-HAPCs for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and The Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic *Sargassum*.	There will be no direct economic impact from this measure.	There will be no direct economic impact from this measure.	However, actions implemented to protect EFH-HAPCs could result in increased long-term net benefits but have negative effects on some sectors.
Rejected Options:			
Option 1. No Action.	There would be no direct economic impact from this option.	This option would not allow for development of the Dolphin/Wahoo FMP and subsequent management of these species.	Even though there would be no direct economic effects, this option would not allow the Council to take timely action(s) to protect habitat and critical habitat. This could lead to reduced net economic benefits.
Option 2. Expand the EFH and EFH-HAPC definitions to include Sargassum where it occurs in the north Atlantic Gyre in the Sargasso Sea and the EEZ between 20° N. latitude and 40° N. latitude and 30° W. longitude and the western edge of the Gulf Stream.	There would be no direct economic impact from this measure.	There would be no direct economic impact from this measure.	However, actions implemented to protect EFH-HAPCs could result in increased long-term net benefits but have negative effects on some sectors.

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

Proposed Actions & Rejected Options	**Positive Impacts**	**Negative Impacts**	**Net Impacts**
Proposed Action 24. Assessment of the Impacts of Present Fishing Activities on EFH. No action to implement additional management measures to reduce impacts of fishing on dolphin wahoo EFH. Defer to measures in the *Sargassum* Fishery Management Plan which has been submitted to the Secretary of Commerce for formal review, and incorporate by reference the Comprehensive Habitat Amendment approved by the Secretary on June 3, 1999.	Economic effects will depend on the measures that are implemented in the SAFMC *Sargassum* Plan.	Economic effects will depend on the measures that are implemented in the SAFMC *Sargassum* Plan.	Net economic effects will depend on the measures that are implemented in the SAFMC *Sargassum* Plan.
Rejected Options:			
Option 1. Prohibit any impacts from current fishing activities on EFH for dolphin and wahoo and oppose future use of fishing gears that are likely to negatively impact such EFH.	There may not be any increase in benefits derived from further action over and above what is expected from implementation of the Council's recommendations in the revised *Sargassum* harvest.	There would be decreased benefits from reduction in sustainable populations of dolphin and wahoo that depend on *Sargassum.*	This option could result in reduced net economic benefits if future harvest of *Sargassum* becomes excessive.

Based on analyses of the proposed actions and other alternatives, the Council has concluded that this action is not likely to result in a rule that may: have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; the President's priorities, or the principles set forth in this Executive Order.

This is a new fishery management plan for the dolphin and wahoo species. Even though these proposed management measures are similar to those adopted for other species managed by the SAFMC, this plan could fit under the criteria of raising novel legal or policy issues arising out of legal mandates and thus this RIR is classified as significant under E.O. 12866. The measures contained in this plan are proposed to address a number of problems in the dolphin/wahoo fishery such as localized depletion, conflict among recreational and commercial user groups, and market disruption in local areas due to unusually large landings of dolphin from intense commercial harvest or unregulated catch and landing by charter or other components of the recreational sector. Please refer to Section 1.0, the purpose and need section of this document, for a more complete description of the objectives and goals of this fishery management plan.

SOCIAL IMPACT ASSESSMENT/FISHERY IMPACT STATEMENT

This integrated document contains all elements of the Dolphin and Wahoo Fishery Management Plan, Final Environmental Impact Statement (FEIS), Initial Regulatory Flexibility Analysis (IRFA), 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 Plan. Introductory information and/or background for the FEIS, IRFA, RIR, and SIA/FIS are included within the separate table of contents for each of these sections. **General information begins on page 1; information for agency reviewers continues below.** The page numbers below refer to the social discussion.

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)]. 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 (FIS) [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 that 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 plan, it must be noted that very little data are available for analysis. Social impacts on the harvesters, the processing sector, 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 to define or determine impacts upon fishing communities. A complete analysis for each measure is contained in Section 4 under "Social Impacts", and the SIA/FIS assessment is summarized in the following table.

Summary of Social Impacts

Table 2. Summary of Social Impacts (SIA/FIS).

ACTION	SOCIAL IMPACTS
ACTION 1. Management Unit for Dolphin.	This action will have an indirect but positive social impact on the fishery. Creating a management unit will lead to better data collection and knowledge of all sectors participating in the dolphin fishery in the U.S. Atlantic.
ACTION 2. Management Unit for Wahoo.	This action will have an indirect but positive social impact on the fishery. Creating a management unit will lead to better data collection and knowledge of all sectors participating in the wahoo fishery in the U.S Atlantic.
ACTION 3. Dealer Permits.	Being able to identify and quantify those directly involved in marketing the fish, the dealers, can only help to attain appropriate management of the fishery. Dealers are in the unique position of being involved on a regular basis with the participants in various fisheries, and they are often the first source of information about changes in landings, prices, and fishing conditions, both natural and social. Dealers can also act to quickly disseminate information from management agencies about proposed or real changes in regulations. While permitting might be seen in the short-term as burdensome paperwork by some of the dealers, the long-term benefits for the fishery in general will outweigh any perceived negative impacts.
ACTION 4. For-Hire and Commercial Vessel Permits.	Permitting vessels will allow for easy identification of those individuals involved in the harvesting of dolphin and wahoo. This information could be used in future social impact assessments to determine the effects of management measures on users.
ACTION 5. For-Hire and Commercial Operator Permit.	Aside from the benefits to be gained from being able to identify who is operating commercial and for-hire vessels, thus enhancing understanding of the fishery, compliance with other fishery regulations may be increased due to the threat of sanctions.
ACTION 6. Reporting Requirements.	Data collection is a crucial part of fisheries management as the numbers of participants in each fishery increases. Industry reporting is required to provide necessary data to manage fisheries. Logbooks are required in a growing number of fisheries to resolve many of the deficiencies in data collection. Most objections to this type of requirement center upon the duplication of reporting and different destination for each report. Once fully implemented, ACCSP will reduce redundancy which will make this option more acceptable to fishery participants.

Table 2. Summary of Social Impacts (Cont.).

ACTION 7. Maximum Sustainable Yield for Dolphin and Wahoo.	The Council must address MSY. Negative impacts for any designation of MSY will stem from how MSY is tied to other management specifications like the overfished level or optimum yield.
ACTION 8. Optimum Yield for Dolphin and Wahoo.	Social impacts from specifying optimum yield are determined from the management actions that stem from each Council's management timeline for reaching OY.
ACTION 9. Definition of Overfishing for Dolphin and Wahoo.	Social impacts from defining overfishing are determined from the management actions that are taken to rebuild a stock if it is in an overfished status.
ACTION 10. Framework Procedure for the Dolphin and Wahoo FMP.	By specifying this framework mechanism for modifying management regulations, a more rapid response to changes in the fishery will be facilitated, thereby enhancing management of the fishery.
ACTION 11. Prohibit sale of recreationally caught dolphin or wahoo in or from the Atlantic EEZ except for allowing for-hire vessels that possess the necessary state and Federal commercial permits to sell dolphin harvested under the bag limit in or from the Atlantic EEZ.	There will be a loss in benefits to the recreational sector, ranging from the fishermen themselves to the restaurants and possibly consumers. Commercial fishermen may experience an increase in benefits.
ACTION 12. Establish a cap of 1.5 million pounds or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the Council will review the data and evaluate the need for additional regulations which may be established through the framework.	Setting commercial and recreational sector allocations at levels that are reflective of historical landings will have no negative social impact on either the commercial or recreational participants. A possible positive social impact is that the potential conflict between the two sectors will be reduced, as this action does not change the status quo.
ACTION 13. Establish a recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Headboats (with a valid certificate of inspection) will be allowed a bag limit of 10 dolphin per paying passenger.	Fishers may experience marked decreased satisfaction in the fishing experience when bag limits are set at very low (1-3) numbers. Setting the bag limit at a higher number (5-10) may not decrease fishing satisfaction substantially, however there is no data in this fishery to adequately answer this question.

Table 2. Summary of Social Impacts (Cont.).

ACTION 14. Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed.	The impact of commercial trip limits will depend on the level selected and the area fished. Most trips have an average landing of less than 4,000 pounds, averaging approximately 2,000 pounds. If the commercial trip limit is set at the upper level, it is predicted that there will be few social impacts. If the limit is set at the lower end of the range, it may precipitate a change in the configuration of the commercial sector.
ACTION 15. Establish a minimum size limit for dolphin of 20 inches fork length off Florida and Georgia and no minimum size limit north of Georgia.	Not restricting the size of fish landed will allow more freedom for fishers to catch a variety of species within the management unit. The benefits of this action come from giving the fisher a degree of autonomy and furthermore, the lack of a size limit works well in conjunction with proposed bag limits and boat limits.
ACTION 16. Establish a commercial trip limit for wahoo (landed head and tail intact) of 500 pounds with no transfer at sea allowed.	It is predicted that setting a commercial trip limit for wahoo of 500 pounds will not have a negative impact upon the participants in this fishery.
ACTION 17. Do not establish a size limit for wahoo in the Atlantic EEZ.	There will be no foreseeable negative social impacts from this measure.
ACTION 18. Establish a recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.	Setting a low bag limit for wahoo may decrease fishing satisfaction for those in the recreational fishing sector. The impact will vary by region.
ACTION 19. Specify allowable gear for dolphin and wahoo in the Atlantic EEZ as longline; hook and line gear including manual, electric, or hydraulic rod and reels; bandit gear; handline; and spearfishing gear (including powerheads).	There will be no impact since this option does not place restrictions on current gear types in the dolphin and wahoo fisheries. Specifying allowable gear will prevent gear from being introduced into the fishery and exacerbating the potential for conflict between recreational and commercial fishermen.

Table 2. Summary of Social Impacts (Cont.).

ACTION 20. Prohibit the use of surface and pelagic longline gear for dolphin and wahoo within any "time or area closure" in the South Atlantic Council's area of jurisdiction (Atlantic Coast) which is closed to the use of pelagic gear for highly migratory pelagic species.	Social impacts from Action 20 itself are predicted to be minimal; most impacts will result from the general time and area closures for the commercial HMS fishery proposed by NMFS. However, lack of data on commercial longline dolphin fishers makes it difficult to predict outcomes with accuracy.
ACTION 21. Establish a fishing year of January 1 to December 31 for the dolphin and wahoo fishery in the Atlantic EEZ.	There will be no immediate social impacts from establishing a fishing year.
ACTION 22. Expand the list of Essential Fish Habitat (EFH) definitions that were approved for dolphin by the Secretary of Commerce to apply to dolphin and wahoo throughout the Atlantic. EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum*.	The identification of EFH will have few, if any, social impacts itself. Impacts may result from future management measures.
ACTION 23. Expand the list of Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) that were approved for dolphin by the Secretary of Commerce to apply to dolphin and wahoo throughout the Atlantic. EFH-HAPCs for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and The Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic *Sargassum*.	The establishment EFH-HAPCs will have few, if any, social impacts itself. Impacts may result from future management measures.

Table 2. Summary of Social Impacts (Cont.).

ACTION	SOCIAL IMPACTS
ACTION 24. Assessment of the Impacts of Present Fishing Activities on EFH. No action to implement additional management measures to reduce impacts of fishing on dolphin wahoo EFH. Defer to measures in the *Sargassum* Fishery Management Plan which has been submitted to the Secretary for formal review, and incorporate by reference the Comprehensive Habitat Amendment approved by the Secretary, on June 3, 1999.	Public sentiment was overwhelming in favor of a total prohibition. Comments were received from 33 States and Puerto Rico, and from 16 foreign countries. A total of 235 comments were received on the original FMP (175 from individuals and 60 from agencies/organizations). All comments were in favor of the Council's proposed actions except the comment from Mr. William Campbell and one suggestion that additional research was needed. The Council's preferred option is as close to the total prohibition as is feasible, and the many non-use stakeholders would derive social benefits from this action. The protection of this habitat and thus of the dolphin and wahoo habitat is readily accepted by almost all members of the public who hold a stake in this fishery. Hence, there will be both short and long term positive social impacts from this option.

SOCIAL IMPACT ASSESSMENT DATA NEEDS

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 will 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 and gender); residence; household size; household income (fishing/non-fishing); occupational skills; and association with vessels and firms (role and status).

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

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

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

This list of data needs is not exhaustive or all-inclusive. 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 even more necessary for managing fisheries. A further recommendation is for the NMFS to review and implement the "Southeast Social and Cultural Data and Analysis Plan" as this will address many of the current data needs.

The Atlantic Coastal Cooperative Statistics Program (ACCSP) Program Design contains detailed social and economic data needs and draft survey instruments. Social and economic data collection projects should at least collect the minimum data elements.

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1.0 PURPOSE AND NEED

1.1 Issues/Problems

In recent years, landings of dolphin and wahoo from the Atlantic have increased. For example, on the average, between 1994 and 1997, the combined landings from all sectors of the fishery in the Atlantic reached an all time high for the management unit, with the highest landings being reached in 1995. Given that the fishery is historically a recreational fishery, concern was raised when commercial landings in the Atlantic increased, due in part to an increasing number of longliners targeting dolphin or modifying their fishing practices such that dolphin and wahoo constitute a greater portion of their longline trips. While commercial landings have stabilized or decreased in some areas, there still exists the possible redirection of effort from vessels displaced from other directed fisheries. The South Atlantic Council continues to receive correspondence expressing concern over the use of longlines in the fishery, the previous increase in landings of dolphin by longliners, and the possible increase in longline effort that may occur when vessels are displaced from the directed Highly Migratory Species fishery resulting from closures. Even though dolphin grow rapidly and mature early, the Councils are concerned that recent increases in landings could result in localized depletion of stocks and a shift in the historical levels of catch between commercial and recreational fishermen. This increase in landings has resulted from both the commercial longline fishery and the historical recreational fishery, with the most significant increase in harvest of wahoo and dolphin coming from the recreational sector, more specifically the charterboat fishery. Another complicating factor in determining landings by sector is that commercial landings also include fish that were caught by the recreational sector.

Conflict among user groups developed because of the initial redirection of effort by the longline fishery for dolphin and wahoo in the Atlantic. Longliners have indicated their shift in effort in previous years came about due to an early closure in other fisheries such as swordfish and shark. With new regulations within these fisheries, the future of their participation in the dolphin fishery is unknown; however, there could be further effort shifts. There has also been concern over the potential for the increased bycatch of small billfish associated with this effort shift in the Atlantic.

The following problems and issues were identified by the Councils and are addressed by this fishery management plan:

1. Localized reduction of fish abundance due to high fishing pressure. (What is the best approach to maintain a sufficiently high abundance level?)

2. Disruption of markets. (What is the best approach to maintain stable markets for dolphin?)

3. Conflict and/or competition between recreational and commercial user groups of dolphin fish. (What is the best approach to reduce conflict and/or competition that has recently developed between these two sectors of the fishery?)

4. Reduced social and economic benefits. (What is the best approach to optimize social and economic benefits of the dolphin fishery?)

5. Bycatch. (Given the mandate in the Magnuson-Stevens Act to address bycatch in all fishery management plans, what is the best approach to quantify and reduce existing bycatch within the fishery, as well as, prevent an increase in non-target bycatch?)

6. Importance of predator/prey relationships between dolphin and other pelagic species.

7. Limited biological, habitat, economic, and social information on dolphin and wahoo stocks and fisheries.

In addition, it is the Councils' intent to address other required provisions including the identification of Essential Fish Habitat (EFH), establishment of Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs), and strategies to minimize or avoid impacts of fishing activity on EFH.

1.2 Management Objectives

The overall goal of the fishery management plan for the South Atlantic, Mid-Atlantic, and New England Councils' areas of jurisdiction is to adopt a precautionary and risk-averse approach to management which in the first instance attempts to maintain the status quo. This will require that current catch levels not be exceeded and that recent conflict between sectors of the fishery (commercial longliners and recreational fishermen) be resolved. Status quo should reflect trends (average catch and effort levels) in the fishery over the last five years 1993 through 1997.

Owing to the significant importance of the dolphin/wahoo fishery to the recreational fishing community in the Atlantic, the goal of this fishery management plan is to maintain the current harvest level of dolphin and insure that no new fisheries develop. With the potential for effort shifts in the historical longline fisheries for sharks, tunas, and swordfish, these shifts or expansions into nearshore coastal waters to target dolphin could compromise the current allocation of the dolphin resource between recreational and commercial user groups. Further, these shifts in effort in the commercial fishery, dependant upon the magnitude (knowing that some dolphin trips may land over 25,000 pounds in a single trip) could result in user conflict and localized depletion in abundance.

Objectives identified by the Councils and addressed by this fishery management plan are as follows:

1. Address localized reduction in fish abundance. The Councils remain concerned over the potential shift of effort by longline vessels to traditional recreational fishing grounds and the resulting reduction in local availability if commercial harvest intensifies.

2. Minimize market disruption. Commercial markets (mainly local) may be disrupted if large quantities of dolphin are landed from intense commercial harvest or unregulated catch and landing by charter or other components of the recreational sector.

3. Minimize conflict and/or competition between recreational and commercial user groups. If commercial longlining effort increases, either directing on dolphin and wahoo or targeting these species as a significant bycatch, conflict and/or competition may arise if effort shifts to areas traditionally used by recreational fishermen.

4. Optimize the social and economic benefits of the dolphin and wahoo fishery. Given the significant importance of dolphin and wahoo to the recreational sector throughout the range of these species and management unit, manage the resources to achieve optimum yield on a continuing basis.

5. Reduce bycatch of the dolphin fishery. Bycatch is a problem in the pelagic longline fishery for highly migratory species. Any increase in overall effort, and more specifically shifts of effort into nearer shore, non-traditional fishing grounds by swordfish and tuna vessels, may result in increased bycatch of non-target species.

In addition, National Standard 9 requires that: "Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch." Therefore bycatch of the directed dolphin fishery must be addressed.

Appendix C (FSEIS for HMS Regulatory Amendment 1) contains data on dolphin-wahoo pelagic longline fishery analysis. The data presented on page C-66 and in Table C-4 indicate that pelagic longlines targeting dolphin do in fact result in a bycatch of HMS species.

6. Direct research to evaluate the role of dolphin and wahoo as predator and prey in the pelagic ecosystem.

7. Direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

1.3 History of Management

Management of dolphin has been considered previously in the public hearing drafts for Amendment 5 and Amendment 8 to the Fishery Management Plan for Coastal Pelagic Resources in the Gulf of Mexico and South Atlantic Regions. During October of 1989, the Council took to public hearing an action to impose a bag limit for dolphin of 5 fish per person per day for recreational fishermen and a requirement of a coastal pelagics permit to be exempt from the bag limit. In addition, a proposed 18 inch minimum size limit was also included. Public hearings for Amendment 5 were held from Key West, Florida to Norfolk, Virginia in the South Atlantic and to Corpus Christi, Texas in the Gulf. Amendment 8 included several options for management of dolphin, including: 20 inch commercial minimum size limit, 10 fish recreational bag limit, 5 fish per person per day limit (recreational and commercial), 10 fish per person per day limit (recreational and commercial), require coastal pelagics permit for over the bag limit fish, and establish a commercial trip limit of between 1,000 and 12,000 pounds. Public hearings were held on Amendment 8 in the Gulf of Mexico, South Atlantic, and Mid-Atlantic regions. In each case, after reviewing public hearing testimony, the Councils decided to forego any management for dolphin due to lack of public support for any specific measures at that time.

A **control date** of May 21, 1999 for possible future limited entry was established for the commercial dolphin and wahoo fishery in the South Atlantic and endorsed for the entire Atlantic

Pursuant to Section 305(c)(2)(A) of the Magnuson-Stevens Act, the South Atlantic Council requested implementation, through emergency action, of the following measures for the dolphin wahoo fishery in the Atlantic EEZ: 1) Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the

SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed; 2) Specify allowable gear for dolphin and wahoo in the Atlantic EEZ as longline and hook and line gear including manual, electric, or hydraulic rod and reels, bandit gear, handline, and spearfishing gear (including powerheads); and 3) Prohibit the use of surface and pelagic longline gear for dolphin and wahoo within any "time or area closure" in the South Atlantic Council's area of jurisdiction (Atlantic Coast) which is closed to the use of pelagic gear for highly migratory pelagic species. The Council approved this request at the November 30, 2000 Council meeting in Atlantic Beach, North Carolina and submitted it in January 2001. On September 12, 2001, NMFS corresponded with the South Atlantic Council indicating they would not be implementing the proposed actions under an Emergency Interim Rule because "Since you submitted your request, several issues arose that had a direct bearing on the EIR, and the relationship of these issues to the EIR had to be considered during the decision-making process. Based on the information provided by the Council, as well as additional information reviewed by our agency, we have determined that there is no current basis for implementing the proposed actions under and EIR." Basically the review process took so long that the summer fishing season was over and NMFS determined that based on the catches during the summer, the emergency interim rule was not required. The did advise that if in the future catches do increase, the would once again consider an emergency request. Note: EIR refers to an emergency interim rule.

In February 2001, under the guidance of NMFS and NOAA General Counsel, the Gulf, Caribbean, and South Atlantic Councils met in joint session and approved the Dolphin Wahoo FMP for submission to the Secretary of Commerce for formal review. However, prior to submission and prompted by litigation, it was determined that the FMP did not meet mandates of SFA relative to Essential Fish Habitat (EFH). The Councils, NMFS and NOAA General Counsel worked to revise the FMP, including additional meetings, public hearings and a DEIS review.

The Councils were scheduled to meet in July 2002 to approve the revised FMP for submission to the Secretary but were advised by NOAA GC that recent litigation would require the Gulf of Mexico and Caribbean Councils to incorporate bycatch measures in the FMP rather than deferring implementation through the framework procedures as proposed in the joint FMP.

Developing new measures for the Gulf and Caribbean will require additional public hearings and an additional DEIS filing and review; a process which could exceed a year, thereby further delaying implementation of management measures for the Atlantic. On July 16, 2002 the South Atlantic Council, after concluding all bycatch and other mandates of SFA are met for the Atlantic, requested the Secretary of Commerce approve the Council's withdrawal from joint preparation of a Dolphin and Wahoo FMP with the Caribbean and Gulf of Mexico while retaining true lead for the Atlantic.

1.4 Proposed Measures

The Councils are establishing a fishery management plan for dolphin and wahoo and proposing actions listed in the List of Actions following the FMP table of contents.

2.0 ALTERNATIVES

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 Councils' documents must also conform to the Magnuson-Stevens Act and "Other Applicable Law" requirements. National Environmental Policy Act regulations are one of the "Other Applicable Laws" referenced. The South Atlantic Council decided to consolidate Magnuson-Stevens Act and "Other Applicable Law" (including NEPA) requirements into one non-duplicative and non-repetitive document. The Council's approach is to present the bulk of the evaluation of alternatives and discussion about the effects on the environment in Section 4.0 Environmental Consequences of Fisheries Activities. Section 2.0 Alternatives, is presented as a summary of Section 4.0. The Council and NMFS concluded this meets the intent of NEPA regulatory requirements.

The Caribbean and Gulf of Mexico Council jurisdictions are no longer part of this FMP. A number of alternatives addressing these areas were removed from this document but are part of the administrative record.

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

The proposed action addresses the issues/problems of (1) localized reduction of fish abundance, (2) disruption of markets, (3) conflict and/or competition between recreational and commercial user groups, (4) reduced social and economic benefits, (5) bycatch, (6) predator/prey relationships, and (7) limited data.

The following problems/issues pertaining to the dolphin and wahoo fishery have been identified. In addition, the following problems/issues identified in the Comprehensive Amendment Addressing Essential Fish Habitat (EFH) (SAFMC, 1998c) are also addressed for the dolphin and wahoo fishery. The abbreviated summary title is used in the impact table (Table 3) to identify which problems/issues are addressed by which proposed management measures.

Socio-Economic Problem/Issue	**Summary Title**
· Conflict and/or competition between commercial and recreational user groups.	***Conflicts/Competition***
· Reduced social and economic benefits.	***Benefits***
· Limited statistical, social, and economic information.	***Data***
· Disruption of markets.	***Markets***

Biological Problem/Issue	**Summary Title**
· Localized reduction in fish abundance.	***Overfishing***
· Limited information on production, distribution, and ecology of EFH and dolphin and wahoo use of EFH.	***Data***
· Predator/prey relationships between dolphin and other pelagic species.	***Ecosystem***
· Bycatch.	***Bycatch***
· 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 and recommend measures to reduce impact from non-fishing activities.	***Habitat Protection***

How the alternatives address the problems and issues identified by the Councils is summarized in Table 3. Management alternatives and their consequences are in the rows and issues and problems are in the columns.

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

Table 3. Summary of Environmental Consequences.

Alternatives	**Issues/Problems**	
	Biological: Data	**Social and Economic: Conflicts/Competition and Data**
Proposed Action 1: The management unit is the population of dolphin (common dolphin - *Coryphaena hippurus* and pompano dolphin - *Coryphaena equiselis)* from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts.	Establishing a management unit for dolphin will provide the basis for conservation and management of these resources in the EEZ. Research on dolphin, wahoo, and their essential habitat such as pelagic *Sargassum* will be encouraged as a federally managed species.	Will allow the Councils to implement comprehensive management for wahoo throughout the waters of the Atlantic.
Rejected Options:		
Option 1. No Action	Would not provide the basis for comprehensive management and protection of dolphin or their essential fish habitat.	Would not allow for comprehensive management.
2. The Caribbean, with Gulf and Atlantic combined; 3. The Atlantic, with Caribbean and Gulf combined; 4. The Gulf, with Caribbean and Atlantic combined; and 5. Management units for each region: Gulf, Caribbean, and Atlantic.	Establishing a management unit for dolphin would provide the basis for conservation and management of these resources in the EEZ. Research on dolphin, wahoo and their essential habitat such as pelagic *Sargassum* will be encouraged as a federally managed species. However, the segregation of stocks into various geographical combinations would not manage dolphin to the maximum extent practicable throughout their range.	Would allow the Councils to implement comprehensive management for dolphin throughout the waters of the Atlantic, U.S. Caribbean, and Gulf of Mexico. Note: The Caribbean and Gulf of Mexico Council jurisdictions are no longer part of this FMP.
Proposed Action 2: The management unit is the population of wahoo (*Acanthocybium solandri*) from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts.	Establishing a management unit for wahoo will provide the basis for conservation and management of these resources in the EEZ. Research on dolphin, wahoo, and their essential habitat such as pelagic *Sargassum* will be encouraged as a federally managed species.	Would allow the Councils to implement comprehensive management for wahoo throughout the waters of the Atlantic. Would allow for better data collection and knowledge of all sectors in the dolphin and wahoo fishery.
Rejected Options:		
Option 1. No Action.	Would not provide the basis for comprehensive management and protection of wahoo or their essential fish habitat.	Would not allow for comprehensive management.
2. The Caribbean, with Gulf and Atlantic combined; 3. The Atlantic, with Caribbean and Gulf combined; 4. The Gulf, with Caribbean and Atlantic combined; and 5. Management units for each region: Gulf, Caribbean, and Atlantic.	Establishing a management unit for wahoo would provide the basis for conservation and management of these resources in the EEZ. Research on dolphin, wahoo, and their essential habitat such as pelagic Sargassum would be encouraged as a federally managed species. However, the segregation of stocks into various geographical combinations would not manage wahoo to the maximum extent practicable throughout their range.	Would not allow the Councils to implement comprehensive management for wahoo in the form preferred by the Councils. Note: The Caribbean and Gulf of Mexico Council jurisdictions are no longer part of this FMP.

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

Table 3. Summary of Environmental Consequences (Cont.)

Alternatives	Issues/Problems	
	Biological: Data	**Social and Economic: Data**
Proposed Action 3: Dealer Permits. Rejected Options:	There will not be any direct biological impacts; however, this action would most likely produce positive indirect biological benefits through better data collection in the future. The information obtained from dealers would allow for better stock assessments.	Small cost to sector but will lead to better data collection.
Option 1. No Action. Option 2. Dealer permits in the Atlantic, Gulf of Mexico, and Caribbean.	Would not allow for better data collection. There will not be any direct biological impacts; however, this action would most likely produce positive indirect biological benefits through better data collection in the future. The information obtained from dealers would allow for better stock assessments.	Would not allow for better data collection. Small cost to sector but would lead to better data collection. The additional required dealer permit may create an undue economic burden to the Caribbean fishermen who commonly act as the dealer, owner, and operator of the vessel. In addition, there is a degree of uncertainty associated with the degree of impacts of the dealer permit fee on the fishermen. Note: The Caribbean and Gulf of Mexico Council jurisdictions are no longer part of this FMP.
Proposed Actions 4: For-Hire and Commercial Vessel Permits. Rejected Options:	This action would most likely produce positive indirect biological benefits through better data collection in the future. The information obtained from dealers would allow for better stock assessments.	Small cost to sector but will lead to better data collection.
Option 1. No Action.	Would not allow for better data collection.	Would not allow for better data collection.
Proposed Action 5: For-Hire and Commercial Operator Permits. Rejected Options:	Will make vessel captains more accountable for damaging habitat or violating regulations intended to protect the long-term viability of the stock.	Small cost to sector but will lead to better compliance with fishery management regulations. Omission of the permit requirements in the Caribbean eliminates the potential burden on the artisanal Caribbean fisherman.
Option 1. No Action.	Would not make vessel captains more accountable for damaging habitat or violating regulations intended to protect the long-term viability of the stock.	Would not allow for improved compliance with fishery management regulations.

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

Table 3. Summary of Environmental Consequences (Cont.)

Alternatives	Issues/Problems	
	Biological: Overfishing and Data	**Social and Economic: Data**
Proposed Action 6: Reporting requirements for dolphin and wahoo. Rejected Options:	Provide information for stock assessment and management.	Small cost to sector but will lead to better data collection.
Option 1. No Action.	Would not provide information for stock assessment and management.	Would not allow for better data collection.
Proposed Action 7: Maximum Sustainable Yield for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 18.8 and 46.5 million pounds. The Maximum Sustainable Yield proxy for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 1.41 and 1.63 million pounds. Note: This FMP no longer applies to the Caribbean and Gulf of Mexico Council jurisdictions, however, the range of MSY for dolphin and wahoo based on available data is still appropriate. Rejected Options:	None. Impacts for any designation of MSY will stem from how MSY is tied to other management measures. Lack of adequate information to specify an MSY based on information other than average landings for wahoo will encourage research to quantify distribution and production. Wahoo MSY of 1.41 - 1.63 recommend by NMFS SEFSC as being based on best available data.	No direct impacts. Indirect impacts for any designation of MSY will stem from how MSY is tied to other management measures like the overfished level or optimum yield.
Option 1. No Action.	None. Biological consequences arise from the measures taken to prevent exceeding MSY.	Magnuson-Stevens Act requires the Councils to set MSY or a proxy in development of a FMP. Thus this option would not allow for comprehensive management of dolphin and wahoo in the future.
Option 2. The Maximum Sustainable Yield for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 16 and 18 million pounds. The Maximum Sustainable Yield proxy for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is 30% Static SPR.	None. Biological consequences arise from the measures taken to prevent exceeding MSY.	None. Impacts for any designation of MSY would stem from how MSY is tied to other management measures like the overfished level or optimum yield.
Option 3. Maximum Sustainable Yield for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 18.8 and 46.5 million pounds. The Maximum Sustainable Yield proxy for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 1.63 and 2.176 million pounds.	None. Biological consequences arise from the measures taken to prevent exceeding MSY.	None. Impacts for any designation of MSY would stem from how MSY is tied to other management measures like the overfished level or optimum yield.

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

Table 3. Summary of Environmental Consequences (Cont.)

Alternatives	Issues/Problems	
	Biological: Overfishing and Data	**Social and Economic: Data and Benefits**
Proposed Action 8: Optimum Yield (OY) for dolphin and wahoo is the amount of harvest that can be taken by fishermen while not exceeding 75% of MSY (between 14.1 and 34.9 million pounds) for dolphin and 100% of MSY (between 1.41 and 1.63 million pounds) for wahoo. Rejected Options:	Mandated to specify and achieve optimum yield or a fishery on a continuing basis. Impacts from specifying optimum yield are determined from the management actions taken to achieve optimum yield.	Impacts from specifying optimum yield are determined from the management actions taken to achieve optimum yield.
Option 1. No Action.	None. Biological consequences arise from the measures taken to prevent exceeding OY.	There would be no impacts.
Option 2. Optimum Yield (OY) for dolphin and wahoo is the amount of harvest that can be taken by U.S. fishermen while maintaining the Spawning Potential Ratio (SPR) at or above 40% Static SPR.	None. Biological consequences arise from the measures taken to prevent exceeding OY.	Impacts from specifying optimum yield would be determined from the management actions taken to achieve optimum yield.
Option 3. Optimum Yield (OY) for dolphin and wahoo is the amount of harvest that can be taken by fishermen while not exceeding 75% of MSY (between 14.1 and 34.9 million pounds) for dolphin and (1.63 and 2.176 million pounds) for wahoo.	None. Biological consequences arise from the measures taken to prevent exceeding OY.	Impacts from specifying optimum yield would be determined from the management actions taken to achieve optimum yield.
Option 4. Optimum Yield (OY) for dolphin and wahoo is the amount of harvest that can be taken by fishermen while maintaining a total spawning stock size (biomass) as shown below. a. Atlantic Dolphin = __ pounds. b. Atlantic Wahoo = ___ pounds. c. U.S. Caribbean Dolphin = __ pounds. d. U.S. Caribbean Wahoo =__ pounds. e. Gulf of Mexico Dolphin = __ pounds. f. Gulf of Mexico Wahoo = _____ pounds.	None. Biological consequences arise from the measures taken to prevent exceeding OY.	Impacts from specifying optimum yield would be determined from the management actions taken to achieve optimum yield.

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

Table 3. Summary of Environmental Consequences (Cont.)

Alternatives	Issues/Problems	
	Biological: Overfishing and Data	**Social and Economic: Data**
Proposed Action 9: A maximum fishing mortality threshold (MFMT) - In the Atlantic, U.S. Caribbean, and Gulf of Mexico overfishing for dolphin and wahoo is defined as a fishing mortality rate (F) in excess of F_{MSY} ($F_{30\%Static\ SPR}$). A minimum stock size threshold (MSST) – In the Atlantic, U.S. Caribbean, and Gulf of Mexico the minimum stock size threshold for dolphin and wahoo is defined as a ratio of current biomass ($B_{current}$) to biomass at MSY or (1-M)*$B_{MSY,}$ where 1-M should never be less than 0.5. Using the best available estimates of natural mortality (M = 0.68-0.80) in the formula results in a MSST of 50% $B_{MSY.}$ The stock would be overfished if current biomass ($B_{current}$) was less than MSST and would be recovered when current biomass was equal or greater than the biomass at MSY.	None. Biological consequences arise from the measures taken to prevent exceeding the fishing mortality rate and minimum stock size threshold.	None. Except actions taken to ensure that the fishery does not exceed the fishing mortality rate and the minimum stock size threshold, will have economic and social impacts.
<u>Rejected Options:</u>		
Option 1. No Action.	None. Biological consequences arise from the measures taken to prevent exceeding the fishing mortality rates specified.	None by itself.
Option 2. In the Atlantic and U.S. Caribbean overfishing for dolphin and wahoo is defined as a fishing mortality rate (F) in excess of the fishing mortality rate at 30% Static SPR ($F_{30\%\ Static\ SPR}$). A threshold level for dolphin and wahoo is defined as 10% Static SPR in the Atlantic. The overfished threshold is based upon a transitional SPR of 30%.	None. Biological consequences arise from the measures taken to prevent exceeding the fishing mortality rates specified.	None by itself.

(Effects of Alternatives on the Issues/Problems) (Cont.)

Table 3. Summary of Environmental Consequences (Cont.)

Alternatives	Issues/Problems	
	Biological: Overfishing and Data	**Social and Economic: Data**
Proposed Action 10: Establish a framework procedure for the Dolphin and Wahoo FMP. Rejected Options:	None. The Councils will be able to take action to prevent overfishing and negative impacts on EFH and EFH-HAPCs more quickly through framework rather than plan amendment.	This measure will expedite adoption of fishery management regulations and thus provide higher social and economic benefits.
Option 1. No Action.	None. However, the Council would not be able to take action to prevent overfishing and negative impacts on EFH and EFH-HAPCs through framework.	Could lead to reduced benefits if management measures are not expeditiously implemented.

Alternatives	Issues/Problems	
	Biological: Overfishing and Data	**Social and Economic: Conflicts/Competition and Data**
Proposed Action 11: Prohibit sale of recreationally caught dolphin or wahoo in or from the Atlantic EEZ except for allowing for-hire vessels that possess the necessary state and Federal commercial permits to sell dolphin harvested under the bag limit in or from the Atlantic EEZ. Rejected Options:	To the extent prohibition of sale will reduce the number of dolphin and wahoo retained, there will be some positive benefits.	Reduced revenue in the private recreational sector in the short-term from prohibiting sale of dolphin, and the entire recreational sector from the prohibition of wahoo sale. Unable to determine if this option would increase or decrease long-term benefits.
Option 1. No Action.	Without prohibiting sale of recreationally caught dolphin there would be no incentive to stop or limit the practice of catching entire schools of immature small "peanut" or "chicken" dolphin. Over exploitation could lead to localized depletion.	Unable to determine if this option would increase or decrease long-term benefits.
Option 2. Allow for-hire vessels that possess the necessary commercial permits to continue to sell fish for a 3-5 year phase-out period.	To the extent prohibition of sale will reduce the number of dolphin and wahoo retained, there will be some positive benefits. This will have greater biological benefits in 3-5 years over the proposed action and no action.	Reduced revenue in the recreational sector in the short-term. However, the for-hire sector could phase in other revenue generating activities during the allotted 3-5 years. Unable to determine if this option would increase or decrease long-term benefits.
Option 3. Prohibit sale of recreationally caught dolphin and wahoo in the Atlantic EEZ. The intent is to not allow sale from private/rental or for-hire trips and limit sale to vessels with a commercial permit.	This option is identical to the proposed except that all sale of recreationally caught dolphin and wahoo would be prohibited. To the extent prohibition of sale would reduce the number of dolphin retained, there may be some positive benefits. This would provide the greatest biological benefits of all the alternatives.	Reduced economic benefits in the short-term. This option would have the greatest negative social impacts of all the alternatives. Unable to determine if this option would increase or decrease long-term benefits.

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

Table 3. Summary of Environmental Consequences (Cont.)

Alternatives	Issues/Problems	
	Biological: Overfishing and Data	**Social and Economic: Conflicts/Competition and Data**
Proposed Action 12: Establish a cap of 1.5 million pounds or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the Council will review the data and evaluate the need for additional regulations which may be established through the framework. Rejected Options:	Will prevent the harvest from going unregulated and lessening the possibility of an increase to a level that is not sustainable.	Will allocate the resource on a historical basis to reduce conflict between user groups.
Option 1. No Action.	Would allow the harvest to go unchecked and increase to a level that is not sustainable.	Would not reduce conflict between recreational and commercial sectors.
Option 2. Allocate the dolphin resource to both recreational and commercial harvesters in the Atlantic EEZ based on the historical average catch (1984-1997, 1990-1997, or 1994-1997).	Would prevent the harvest from going unregulated and lessening the possibility of an increase to a level that is not sustainable. However, allocation would not be based on the most recent allocations and reflect the increase in commercial harvest of dolphin.	Would allocate the resource on a historical basis to reduce conflict between user groups. However, allocation would not be based on the most recent allocations and reflect the increase in commercial harvest of dolphin.
Option 3. Sub-allocate the resource to commercial harvesters based on a historical split between gear types and average landings between 1994 and 1997.	Would prevent the harvest from going unregulated and lessening the possibility of an increase to a level that is not sustainable. However, allocation would not be based on the most recent allocations and reflect the increase in commercial harvest of dolphin.	Would allocate the resource on a historical basis to these commercial user groups and ensure that user groups receive their fair share of the resource.

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

Table 3. Summary of Environmental Consequences (cont.)

Alternatives	Issues/Problems	
	Biological: Overfishing and Data	**Social and Economic: Conflicts/Competition and Benefits**
Proposed Action 13: Establish a recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Headboats (with a valid certificate of inspection) will be allowed a bag limit of 10 dolphin per paying passenger. Rejected Options:	Prevent waste from excessive catches in excess of the bag limit. There may be some fishing resulting in some release mortality but there would be a greater tendency to stop fishing when the bag limit is filled. This option would reduce the potential for excessive harvest, relay a conservation ethic to fishermen, and prevent the transport of a large catch and subsequent dumping of undesired fish. This action will result in an 8%, 7%, and 7% reduction in recreationally landed weight in New England, Mid-Atlantic, and South Atlantic respectively.	Will reduce economic and social benefits in the short term to anglers constrained by this bag limit. However, if this measure improves the quality of fishing for a larger number of participants then economic benefits will increase.
Option 1. No Action.	Continued waste. This option would not reduce the potential for excessive harvest, relay a conservation ethic to fishermen, or prevent the transport of a large catch and subsequent dumping of undesired fish.	The status quo may not optimize benefits to fishermen due to continued wastage.
Option 2. Establish a recreational boat limit of 18-60 dolphin per boat (including private and for-hire vessels).	Prevent waste from excessive catches in excess of the bag limit. There may be some fishing resulting in some release mortality but there would be a greater tendency to stop fishing when the bag limit is filled. This option would reduce the potential for excessive harvest, relay a conservation ethic to fishermen, and prevent the transport of a large catch and subsequent dumping of undesired fish. The quantity reduced would depend upon the bag limit chosen. Establishing a recreational boat limit of 20 dolphin per boat (including private and for-hire vessels) would result in a 15%, 20%, and 34% reduction in recreationally landed weight in New England, Mid-Atlantic, and South Atlantic respectively. Establishing a recreational boat limit of 60 dolphin per boat (including private and for-hire vessels) would result in a 3%, 2%, and 2% reduction in recreationally landed weight in New England, Mid-Atlantic, and South Atlantic respectively.	Impact would depend on the bag limit chosen. By not designating a per person factor, this option would not spread the waste and resource equally among users.

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

Table 3. Summary of Environmental Consequences (cont.)

Alternatives	Issues/Problems	
	Biological: Overfishing and Data	**Social and Economic: Conflicts/Competition and Benefits**
Option 3. Establish a recreational bag limit of 5-10 dolphin per person per day, excluding the captain and crew of for-hire boats in the Atlantic EEZ.	Prevent waste from excessive catches in excess of the bag limit. There may be some fishing resulting in some release mortality but there would be a greater tendency to stop fishing when the bag limit is filled. This option would reduce the potential for excessive harvest, relay a conservation ethic to fishermen, and prevent the transport of a large catch and subsequent dumping of undesired fish. By excluding the captain and crew, and utilizing a recreational bag limit of less than 10, this option may be more restrictive than the proposed in terms of individual fish quota on charter vessels. However, the absence of a per boat cap may raise the totals above the proposed. Establishing a recreational boat limit of 5 dolphin per person per day would result in a 14%, 17%, and 26% reduction in recreationally landed weight in New England, Mid-Atlantic, and South Atlantic respectively. Establishing a recreational boat limit of 10 dolphin per person per day would result in a 5%, 5%, and 5% reduction in recreationally landed weight in New England, Mid-Atlantic, and South Atlantic respectively.	Impact would depend on the bag limit chosen.
Option 4. Establish a recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. For-hire vessels fishing North of 39° N. Latitude (Delaware Bay, Delaware) would be exempt from the boat limit of 60 dolphin.	Prevent waste from excessive catches in excess of the bag limit. There may be some fishing resulting in some release mortality but there would be a greater tendency to stop fishing when the bag limit is filled. This option would reduce the potential for excessive harvest, relay a conservation ethic to fishermen, and prevent the transport of a large catch and subsequent dumping of undesired fish. The quantity reduced would be nearly identical to the proposed alternative in terms of restrictions. However, by not restricting fishermen north of Delaware Bay with a 60 fish boat limit, the total harvest for the Atlantic seaboard may be higher.	Would reduce benefits in the short-term. This option accommodates local fishing interest by not restricting fishermen north of Delaware Bay with a 60 fish boat limit, thus possibly producing an additional degree of satisfaction in their fishing experience when north of Delaware Bay.

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

Table 3. Summary of Environmental Consequences (cont.)

Alternatives	Issues/Problems	
	Biological: Overfishing and Data	**Social and Economic: Conflicts/Competition and Benefits**
Proposed Action 14: Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed. Rejected Options:	Will constrain the fishery by preventing unlimited removal and potentially an increase in bycatch. The 3,000 pound commercial trip limit would result in a 0.4%, 1.7%, and 0.4% reduction in commercial trips in New England, Mid-Atlantic, and South Atlantic respectively. The 3,000 pound commercial trip limit would result in a 1.1%, 6.5%, and 5.1% reduction in commercially landed weight in New England, Mid-Atlantic, and South Atlantic respectively. The 1,000 pound commercial trip limit would result in a 1.1% and 12.9% reduction in commercial trips and commercially landed weight off Florida's east coast.	Can reduce the likelihood of sudden declines in the price of dolphin from unusually large quantities on the market at any one time.
Option 1. No Action.	Would not constrain the fishery and allow unlimited removal and potentially an increase in bycatch. There would not be any reduction in trips or weight.	Could increase the likelihood of "market flooding" and not allow for the "optimal" number of fishermen to harvest the resource throughout the year.
Option 2. Establish a commercial dolphin trip limit of 1,000-5,000 pounds or an equivalent number of fish with no transfer at sea allowed in the Atlantic EEZ.	Would constrain the fishery by preventing unlimited removal and potentially an increase in bycatch. A 1,000 pound commercial trip limit would result in a 1.4%, 6%, and 1.4% reduction in commercial trips in New England, Mid-Atlantic, and South Atlantic respectively. A 1,000 pound commercial trip limit would result in a 5.8%, 21.6%, and 16.5% reduction in commercially landed weight in New England, Mid-Atlantic, and South Atlantic respectively. A 4,000 pound commercial trip limit would result in a 0%, 0.8%, and 0.2% reduction in commercial trips in New England, Mid-Atlantic, and South Atlantic respectively. A 4,000 pound commercial trip limit would result in a 0%, 3.4%, and 2.7% reduction in commercially landed weight in New England, Mid-Atlantic, and South Atlantic respectively.	The short-term impact would depend on the actual trip limit chosen. A greater socio-economic impact to the fishermen would be expected from a trip limit of 1,000 pounds, while the designation of a 5,000 pound trip limit would not result in reduced socio-economic impacts.

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

Table 3. Summary of Environmental Consequences (cont.)

Alternatives	Issues/Problems	
	Biological: Overfishing and Data	**Social and Economic: Conflicts/Competition and Benefits**
Proposed Action 15: Establish a minimum size limit for dolphin of 20 inches fork length off Florida and Georgia and no minimum size limit north of Georgia.	Provides opportunity for all fish to spawn at least once. Eliminates incentive to target school dolphin but makes landing of most pompano dolphin illegal. A minimum size limit of 20 inches fork length would result in a 0% and 33% reduction in the number of recreational landings off the coast of Georgia and Florida respectively. A minimum size limit of 20 inches fork length would result in a 0% and 10% reduction in recreationally landed weight off the coast of Georgia and Florida respectively. A minimum size limit of 20 inches fork length would result in a 16.7% reduction in commercially landed weight in the South Atlantic. This option would have more regulatory discards than the no action alternative, but less regulatory discards than a dolphin minimum size limit greater than 20 inches.	Will not allow fishermen to harvest most pompano dolphin, but could increase long-term net benefits if this measure improves the size distribution of the stock and prevents growth overfishing.
Rejected Options:		
Option 1. No Action.	Does not provide opportunity for all fish to spawn at least once. Does not eliminate incentive to target school dolphin. There would be no increase in regulatory discards.	Would allow fishermen to harvest pompano dolphin, but could reduce long-term benefits if growth overfishing occurs.
Option 2. Establish an 18-24 inch fork length minimum size limit for dolphin.	Provides opportunity for most fish to spawn at least once. Eliminates incentive to target school dolphin but makes landing of most pompano dolphin illegal. A minimum size limit of 18 inches fork length would result in a 0% and 21% reduction in the number of recreational landings off the coast of Georgia and Florida respectively. A minimum size limit of 18 inches fork length would result in a 0% and 6% reduction in recreationally landed weight off the coast of Georgia and Florida respectively. A minimum size limit of 22-24 inches fork length would result in a 6% and 44% reduction in the number of recreational landings off the coast of Georgia and Florida respectively. A minimum size limit of 22-24 inches fork length would result in a 4% and 16% reduction in recreationally landed weight off the coast of Georgia and Florida respectively. The amount of expected regulatory discards would depend upon the size limit. Generally, the smaller the size limit, the more regulatory discards. In turn, an increase in regulatory discards would likely increase the potential for discard mortality.	The impact would depend on the size limit chosen. A greater socio-economic impact to the fishermen would be expected following the establishment of an 18 inch minimum size limit, while the designation of a 24 inch size limit would result in reduced socio-economic impacts.

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

Table 3. Summary of Environmental Consequences (cont.)

Alternatives	Issues/Problems	
	Biological: Overfishing and Data	**Social and Economic: Conflicts/Competition and Benefits**
Proposed Action 16: Establish a commercial trip limit for wahoo (landed head and tails intact) of 500 pounds with no transfer at sea allowed. Rejected Options:	Depending on level established could constrain the fishery and prevents unlimited removal and potentially an increase in bycatch.	Can constrain benefits in the short-term, but could increase long-term benefits if this measure is necessary to improve yield and ensure the distribution of harvest throughout the year and geographic region.
Option 1. No Action.	Would not constrain the fishery and allow unlimited removal and potentially an increase in bycatch.	May not optimize benefits if growth overfishing occurs.
Proposed Action 17: Do not establish a size limit for wahoo in the Atlantic EEZ. Rejected Options:	Will allow harvest prior to maturity.	May not optimize benefits if growth overfishing occurs.
Option 1. Establish a 35-45 inch minimum size limit for wahoo in the Atlantic EEZ.	Allows fish to reach maturity prior to capture and may result in long-term benefits to the population. However, fishermen safety could be sacrificed by requiring the release of wahoo. In addition, the more random nature of harvest does not support the use of size limits in this fishery.	Impacts will depend on the size limit chosen.

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

Table 3. Summary of Environmental Consequences (cont.)

Alternatives	Issues/Problems	
	Biological: Overfishing and Data	**Social and Economic: Conflicts/Competition and Benefits**
Proposed Action 18: Establish a recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.	Prevent waste. This option would reduce the potential for excessive harvest, relay a conservation ethic to fishermen, and prevent the transport of a large catch and subsequent dumping of undesired fish. A recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ would result in a 5.6%, 7.9%, and 13.7% reduction in recreationally landed weights in New England, Mid-Atlantic, and South Atlantic respectively.	Will reduce short-term benefits in the recreational sector, however this can increase overall net user benefits if it ensures the "optimal" level of participation.
Rejected Options:		
Option 1. No Action.	Continue waste. This option would not reduce the potential for excessive harvest, relay a conservation ethic to fishermen, or prevent the transport of a large catch and subsequent dumping of undesired fish. There would be a 0% reduction in recreationally landed weight as a result of this option.	Could decrease recreational satisfaction in the future if status quo does not allow for the "optimal" level of participation.
Option 2. Establish a recreational bag limit of 2 wahoo per person per day for the recreational fishery, excluding the captain and crew of for-hire boats in the Atlantic EEZ.	Prevent waste. This option would reduce the potential for excessive harvest, relay a conservation ethic to fishermen, and prevent the transport of a large catch and subsequent dumping of undesired fish. This option would potentially provide a greater degree of prevention for excessive harvest than the proposed option by excluding the captain and crew of for-hire boats in the bag limits.	Would reduce short-term benefits in the recreational sector, however this can increase overall net user benefits if it ensures the "optimal" level of participation. This option may result in increased dissatisfaction compared to the proposed action for anglers on headboat trips as their catch may be reduced by excluding the captain and crew of for-hire boats in the bag limits.

Alternatives	Issues/Problems	
	Biological: Data	**Social and Economic: Conflicts/Competition and Benefits**
Proposed Action 19: Specify allowable gear for dolphin and wahoo in the Atlantic EEZ as longline; hook and line gear including manual, electric, or hydraulic rod and reels; bandit gear; handline; and spearfishing gear (including powerheads).	Could reduce potential bycatch of non-target species and prevent non-traditional, highly efficient gears from entering the fishery.	No impact to vessels currently in the fishery, but could prevent future user conflicts.
Rejected Options:		
Option 1. No Action.	Would not reduce potential bycatch of non-target species and prevent non-traditional, highly efficient gears from entering the fishery.	If present gears are retained no impact to commercial fishery.

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

Table 3. Summary of Environmental Consequences (cont.)

Alternatives	Issues/Problems	
	Biological: Overfishing, Bycatch and Data	**Social and Economic: Competition/Conflict and Data**
Proposed Action 20. Prohibit the use of surface and pelagic longline gear for dolphin and wahoo within any "time or area closure" in the South Atlantic Council's area of jurisdiction (Atlantic Coast) which is closed to the use of pelagic gear for highly migratory pelagic species. Rejected Options:	Reduction in pelagic longline bycatch, bycatch mortality, and incidental catch consistent with National Standard 9. Reduce bycatch mortality of threatened loggerhead and endangered leatherback sea turtles. This action also supports the HMS closure for vessels targeting dolphin and wahoo that do not possess an HMS permit.	Will reduce revenue in the longline fleet, but could increase benefits to society if measures result in rebuilding of HMS species and reduced mortality for threatened and endangered sea turtles.
Option 1. No Action.	Would not reduce incidental bycatch mortality and incidental catch consistent with National Standard 9. Would not reduce bycatch mortality of threatened loggerhead and endangered leatherback sea turtles.	Could reduce benefits in the long-term if HMS species fail to recover or there is increased mortality of threatened and endangered sea turtles.
Proposed Action 21: Establish a fishing year of January 1 to December 31 for the dolphin and wahoo fishery in the Atlantic EEZ. Rejected Options:	Establishing a fishing year would present an agreed upon methodology on how data will be organized.	The fishing year is necessary to track the non-binding cap established under Action 12.
Option 1. No Action.	Not establishing a fishing year would not present an agreed upon way to organize data.	This would not allow the non-binding cap to be tracked.

Alternatives	Issues/Problems	
	Biological: Habitat Identification, Habitat Protection, and Data	**Social and Economic: Benefits**
Proposed Action 22: Expand the list of Essential Fish Habitat (EFH) definitions that were approved for dolphin by the Secretary of Commerce to apply to dolphin and wahoo throughout the Atlantic. EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum*. Rejected Options:	Identification of EFH is necessary in order to manage dolphin and wahoo stocks. It is also a required provision of fishery management plans under Section 303(a)(7) of the M-SFCMA. Identifying EFH for dolphin and wahoo will provide the basis for management and protection of essential fish habitat.	There will be no impacts from identifying essential fish habitat itself. Measures to minimize damage could have economic impacts.
Option 1. No Action.	Likely loss of essential fish habitat and essential fish habitat - habitat areas of particular concern.	None by itself. Would not allow for actions to protect essential fish habitat, which could result in decreased benefits in the long-term.

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

Table 3. Summary of Environmental Consequences (cont.)

Alternatives	Issues/Problems	
	Biological: Habitat Identification, Habitat Protection, and Data	**Social and Economic: Benefits**
Option 2. Expand the EFH definition to include Sargassum where it occurs in the north Atlantic Gyre in the Sargasso Sea and the EEZ between 20° N. latitude and 40° N. latitude and 30° W. longitude and the western edge of the Gulf Stream.	Identification of EFH is necessary in order to manage dolphin and wahoo stocks. It is also a required provision of fishery management plans under Section 303(a)(7) of the M-SFCMA. Identifying EFH for dolphin and wahoo will provide the basis for management and protection of essential fish habitat. The Councils rejected this option because it includes areas beyond the EEZ.	There will be no impacts from identifying essential fish habitat itself. Measures to minimize damage could have economic impacts.
Proposed Action 23: Expand the list of Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) that were approved for dolphin by the Secretary of Commerce to apply to dolphin and wahoo throughout the Atlantic. EFH-HAPCs for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and the Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic *Sargassum*. <u>Rejected Options:</u>	Establishing EFH-HAPCs for dolphin and wahoo will provide protection of essential fish habitat. Research on *Sargassum* production, distribution, and ecology will be encouraged. In addition, research in EFH-HAPCs including highly dynamic and productive habitats such as "The Point" off NC and "The Charleston Bump" off SC will also be supported. This action is consistent with the Council's designation of pelagic *Sargassum* as essential fish habitat and essential fish habitat - habitat areas of particular concern for coastal migratory pelagics species (SAFMC, 1998b, c.)	Developing a list of EFH-HAPCs will have no economic and social impacts. Impacts may result from future management measures.
Option 1. No Action.	Likely loss of essential fish habitat and essential fish habitat - habitat area of particular concern.	There would be no direct economic or social impacts from this option. Not specifying EFH-HAPCs would limit the Council from taking action in the future to minimize fishing related habitat damage. Degradation of EFH could threaten the long-term economic and social viability of the dolphin/wahoo fishery and thus lead to reduced net economic benefits and reduced social benefits to society.

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

Table 3. Summary of Environmental Consequences (cont.)

Alternatives	Issues/Problems	
	Biological: Habitat Identification, Habitat Protection, and Data	**Social and Economic: Benefits**
Option 2. Expand the EFH and EFH-HAPC definitions to include *Sargassum* where it occurs in the north Atlantic Gyre in the Sargasso Sea and the EEZ between 20° N. latitude and 40° N. latitude and 30° W. longitude and the western edge of the Gulf Stream.	Establishing EFH-HAPCs for dolphin and wahoo will provide protection of essential fish habitat. Research on *Sargassum* production, distribution, and ecology will be encouraged. This action is consistent with the Council's designation of pelagic *Sargassum* as essential fish habitat and essential fish habitat - habitat areas of particular concern for coastal migratory pelagics species (SAFMC, 1998b, c.) The Council recognizes it is inconsistent with CEQ's regulations (40 CFR 1506.2(d)) to reject an option solely because it is out of an agency's area of authority. However, NMFS and NOAA GC advised the Council to reject this option because the designation is outside the Council's area of jurisdiction.	Developing a list of EFH-HAPCs would have no economic and social impacts. Impacts may result from future management measures.
Proposed Action 24: Assessment of the Impacts of Present Fishing Activities on EFH. Defer to measures in the *Sargassum* Fishery Management Plan which has been submitted to the Secretary for formal review, and incorporate by reference the Comprehensive Habitat Amendment approved by the Secretary, on June 3, 1999.	Provides mechanism to address impacts of fishing on dolphin wahoo EFH if *Sargassum* FMP is not approved.	Economic and social impacts will depend on whether the measures in the *Sargassum* Plan are adopted.
<u>Rejected Options:</u>		
Option 1. No Action	If the *Sargassum* FMP is not approved and no action is taken there would be a likely a loss of essential fish habitat and essential fish habitat - habitat area of particular concern.	Could reduce net economic benefits if future harvest of *Sargassum* becomes excessive.

STRUCTURE OF TABLE 3 IN FUTURE DOCUMENTS

Council staff is working with NMFS and NOAA GC staff to determine how best to expand the use of tables to better contract differences between options. In addition, use of ranges will be limited to above and below the Council's specified point value. This will address a number of NEPA-related comments that have surfaced. The Council determined the delay to make such changes was not warranted at this time.

3.0 AFFECTED ENVIRONMENT

3.1 Description of the Stock Comprising the Management Unit and the Fishery

The following sections are modified from the proceedings of the dolphin/wahoo workshop (SAFMC, 1998a). Unless otherwise cited, the workshop report is the source for the material in these sections.

3.1.1 Description of Species and their Distribution

3.1.1.1 Dolphin

The common dolphin (*Coryphaena hippurus)* is an oceanic pelagic fish found worldwide in tropical and subtropical waters. The range for dolphin in the western Atlantic is from George's Bank, Nova Scotia to Rio de Janeiro, Brazil. They are also found throughout the Caribbean Sea and the Gulf of Mexico, and they are generally restricted to waters warmer than 20˚C (Oxenford, 1997). They support economically important fisheries from North Carolina through the Gulf of Mexico and within the Caribbean Sea, including the northeast coast of Brazil.

Pompano dolphin *(Coryphaena equiselis),* a more pelagic species, has been recorded off North Carolina, Florida, Bermuda, and in the central Atlantic, Gulf of Mexico, and Caribbean including off Puerto Rico. Pompano dolphin were found in waters which exceed 24˚C (Mather and Day, 1954).

The common dolphin (*Coryphaena hippurus*) and pompano dolphin *(Coryphaena equiselis)* will subsequently be referred to as dolphin. There is pronounced seasonal variation in abundance. Dolphin are caught off North and South Carolina from May through July. Dolphin caught off Florida's East Coast are caught mainly between April and June. February and March are the peak months off Puerto Rico's coast. Dolphin are caught in the Gulf of Mexico from April to September with peak catches in May through August (SAFMC, 1998a).

3.1.1.2 Wahoo

The wahoo (*Acanthocybium solandri*) is an oceanic pelagic fish found worldwide in tropical and subtropical waters. In the western Atlantic wahoo are found from New York through Columbia including Bermuda, the Bahamas, the Gulf of Mexico, and the Caribbean. Wahoo are present throughout the Caribbean area, especially along the north coast of western Cuba where it is abundant during the winter (from FAO species guide; FAO, 1978).

There is pronounced seasonal variation in abundance. They are caught off North and South Carolina primarily during the spring and summer (April-June and July-September), off Florida's east coast year-round, off Puerto Rico and the U.S. Virgin Islands year-round with peak catches between September and March, in the Gulf of Mexico year-round, in the eastern Caribbean between December and June, and in Bermuda between April and September (SAFMC, 1998a).

3.1.2 Reproductive Characteristics

3.1.2.1 Dolphin

Common dolphin are batch spawners and have a protracted spawning season. Size at first maturity ranges from 350 mm fork length (FL) (Florida) to 530 mm FL (Gulf of Mexico) for sexes combined. Males first mature at a larger size than females. Size at full maturity ranges from 550 mm FL (Florida) to 600 mm FL (Puerto Rico) for females (Table 4). Ripe pompano dolphin have been collected in the Atlantic at 205 mm standard length (SL) (Gibbs and Collette, 1959).

Table 4. Summary of reproductive characteristics reported for dolphin (*Coryphaena hippurus*) from the western central Atlantic (Source: Oxenford, 1997; references found in Oxenford, 1997).

Reproductive parameter	Sex	Florida Current			US Virgin Islands	Puerto Rico	Gulf of Mexico	Barbados	
		Beardsley (1967)	Schekter (1982)*[1]	Perez *et al.* (1992)	Perez *et al.* (1992)	Perez & Sadovy (1991), Perez *et al.* (1992)	Bentivoglio (1988)	Oxenford (1985)	Perez *et al.* (1992)
Size at first maturity (mmFL)	M	427	565	-	-	-	528	805	-
	F	350		-	-	400	490-520	667	-
Size class at 100% maturity (mmFL)	M	-	-	-	-	-	-	1178	-
	F	550	-	-	-	600	-	931	-
Approx. age at first maturity (mo.)	M	6-7	6.5	-	-	-	4	4	-
	F	6-7		-	-	-	3-4	4	-
Mature egg size range (mm diam.)	F	1-1.7	-	-	-	0.85-1.56	-	0.86-1.25	-
Mean mature egg size (mm diam.) & sample size (n=no.fish)	F	- -	-	1.03 n=3	1.08 n=2	1.10 n=25	-	0.97 n=69	1.07 n=2
Batch fecundity range & sample size (n=no.fish)	F	85,000-938,000 n=19	-	-	-	219,670-1,548,457 n=25	-	58,000-1,243,770 n=69	-
Batch fecundity-fork length relationship ($Y=aX^b$) Y is no. mature eggs X is mmFL	F	$Y\sim2.52x10^{-4}X^{3.12}$*[2]	-	-	-	$Y=6.03x10^{-7}X^{3.98}$	-	$Y=2.7x10^{-6}X^{3.67}$	-

*[1] Data are for laboratory reared F_1 generation of Florida broodstock

*[2] Relationship calculated by extrapolation of data from fecundity

The sex ratios in the catch tend to be female-biased although they vary with size of fish captured. The batch-fecundity-length relationship is strongly exponential ranging from 85,000 (approximately 400-600 mm FL) to 1.5 million (approximately 1300-1400 mm FL) eggs per batch.

3.1.2.2 Wahoo

Estimates of size at first maturity from North Carolina are 86 cm FL for males and 101 cm FL for females (Hogarth, 1976). Preliminary estimates from Bermuda are similar (males = 102 cm FL; females = 95 cm FL) (Murray, 1998). Fecundity estimates from North Carolina range from 560,000 eggs (for a 6.13 kg or 13.52 lb wahoo) to 45 million eggs (for a 39.5 kg or 87.10 lb wahoo) (Hogarth 1976).

Hogarth (1976) examined wahoo reproductive tissues and determined that the spawning season extends from June through August with peak spawning in June and July. In addition, wahoo caught off North Carolina in September and October were determined to be post-spawners.

3.1.3 Age and Growth

3.1.3.1 Dolphin

Dolphin grow rapidly and show average first year daily growth rates ranging from 4.2 mm FL (Gulf of Mexico) to 1.6 mm FL (North Carolina). The relationship between fork length and weight is presented in Figure 1. There are a number of estimates of L_∞ from the northern area and a value of 1,400 to 1,500 mm FL appears appropriate for this stock (SAFMC, 1998a). A summary of available length-weight relationships for dolphin from the western central Atlantic is presented in Table 5a (Oxenford, 1997).

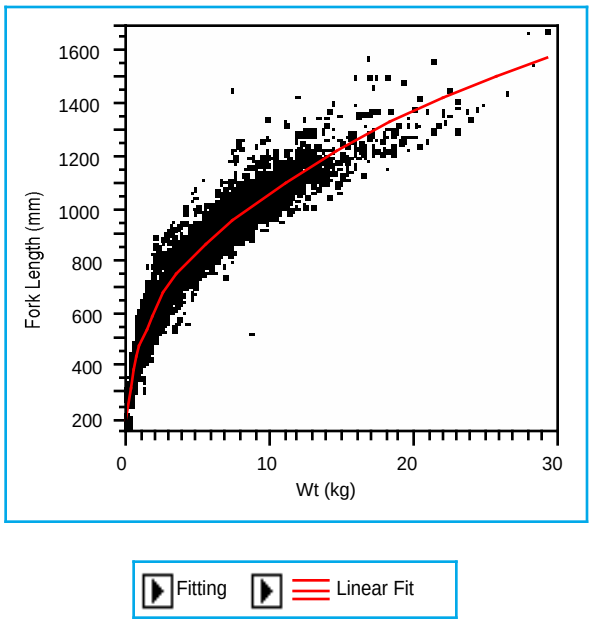


Figure 1. Dolphin length weight relationship (Source: Goodyear, 1999).

Thompson (1999) examined the relationship between dolphin weight and length based on recreational data from MRFSS, the Texas Creel Survey, and the Headboat Survey (N=32,215). The length weight relationship was found to be similar for the Atlantic and Gulf of Mexico and pooling the data provided the resulting relationship: the natural log of the whole weight equals the natural log of the fork length in centimeters minus 10.42 (ln weight = 2.71 ln FL-10.42).

Beardsley (1967) examined 511 dolphin from waters off south Florida ranging in size from 475 to 1,525 mm fork length (FL). Of the 1-year olds, the size range was 475 to 1,175 mm FL. Prager (2000) to provide values for use in empirical estimates of mortality rates for the first stock assessment for dolphin, took a von Bertalanffy growth function and fit it to the grouped length-at-age data of Beardsley (1967). Prager (2000) indicates the following growth function resulting from the analyses describes sizes at age reasonably well:

$$L_t = L_\infty(1 - \exp(-K(t - t_0)))$$ $$L_t = 1710\ (1- \exp(-0.583[t - 0.7]))$$

Table 5a. Summary of length-weight relationships for dolphin (*Coryphaena hippurus*) from the western central Atlantic (Source: Oxenford, 1997; references found in Oxenford, 1997).

Location	Sex	Range in length (mmFL)	Sample size (no.fish)	a	b	kg at 1000 mmFL	Data source
North Carolina	All	672-966	18	$2.00x10^{-9}$	3.22	9.21	Schuck (1951)*[1]
North	Males	275-1350	176	$0.50x10^{-7}$	2.75	8.89	Rose & Hassler (1968)
Carolina	Females	310-1275	325	$1.27x10^{-7}$	2.59	7.76	
Florida	Males	550-1300	19	$1.45x10^{-7}$	2.58	7.97	Beardsley (1967)*[2]
	Females	500-1225	40	$5.75x10^{-8}$	2.71	7.60	
Puerto	All	381-1479	852	$3.80x10^{-8}$	3.49	891?	Perez *et al.*(1992)*[3]
Rico	Males	490-1479	261	$1.78x10^{-8}$	3.62	1289?	
	Females	445-1310	591	$5.75x10^{-8}$	3.36	691?	
	All	358-1323	332	$1.41x10^{-8}$	2.92	8.11	Perez & Sadovy (1991)
	All	381-1479	170	$3.80x10^{-8}$	2.78	8.31	Rivera Betancourt (1994)
Cuba	All	500-1200	56	$3.21x10^{-5}$	2.67	7.02	Garcia-Arteaga *et al.* (1997)*[4]
Barbados	All	160-1365	365	$1.45x10^{-8}$	2.91	7.85	Oxenford (1985)
	Males	239-1365	123	$1.24x10^{-8}$	2.94	8.31	
	Females	160-1240	207	$2.22x10^{-8}$	2.84	7.58	

*[1] Relationship given in original text appears to be in error. Relationship given here was recalculated with data extrapolated from length-weight graph.
*[2]Relationships given in original text were wrong (confirmed by pers. comm. with author on 11.5.84.). Relationships given here are recalculated from extrapolation of data shown in the length-weight graph.
*[3]Relationships given in original text appear to be in error. Authors have been contacted on 9.10.97.
*[4]Relationship is for length in cm.

3.1.3.2 Wahoo

Wahoo appear to be very fast growing in their first year attaining a size of over 39 inches (Hogarth, 1976). The relationship between fork length and weight is presented in Figure 2. Estimates of L_∞ range from 2,210 mm FL (North Carolina) (Hogarth, 1976) to 1,560 mm FL (St. Lucia) (Murray, 1998). Estimates of k (annual) range from 0.152 (North Carolina) to 0.37 (St. Lucia).

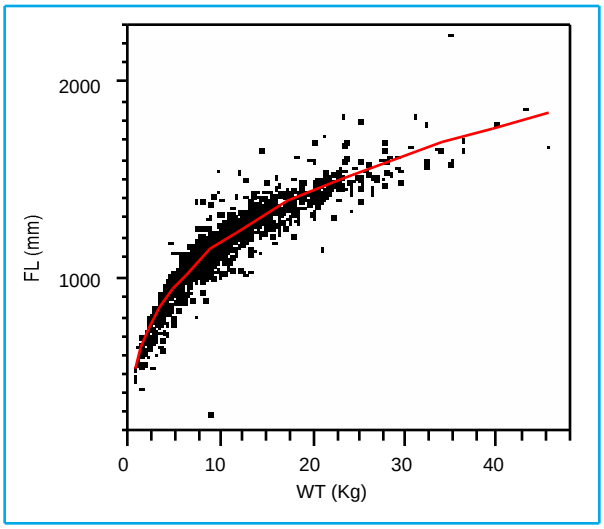


Figure 2. Wahoo length weight relationship (Source: Goodyear, 1999).

3.1.4 Mortality Rates and Longevity

3.1.4.1 Dolphin

Prager (2000) estimated natural mortality (M) for dolphin to be between 0.68 and 0.80. Prior to the exploratory stock assessment (Prager, 2000) one study reported total instantaneous mortality estimates derived from a Robsen-Chapman estimator of approximately 8.2 for dolphin from the Gulf of Mexico (Bentivolglio, 1988). Prager (2000) indicated that the estimate did not seem feasible for the Atlantic where Beardsley (1967) found one 4 year old dolphin in a sample of 511. If one assumes random sampling, then the probability of finding a fish that old in such a small sample was close to zero. Therefore, it is almost certain that the estimate is imprecise or inaccurate, that the vital rates in the Gulf differ greatly from the Atlantic or the vital rates have changed dramatically over time (Prager, 2000).

Absent direct estimates of mortality, two empirical methods of Hoenig (1983) and Pauly (1979) were applied to approximate mortality rates of dolphin in the Atlantic. Tables 5b and 5c present the estimates of total and natural mortality based on these methodologies. For the range of maximum ages reported in the three studies of 3 to 4 years, the Hoenig method provides estimates of total mortality rate Z from 1.42/yr declining to 1.06/yr (Tables 5b). Estimates of M by Pauly's method are specific to growth parameters and water temperatures. Over the range of mean water temperatures from 20°C to 28°C, M is estimated to be between 0.68/year and 0.80/year (Table 5c).

Table 5b. Estimates of instantaneous rate of total mortality and corresponding annual survival fraction; method Hoenig (1983) (Source: Prager, 2000).

Maximum age (years)	Total Mortality rate (Z)	Survival Fraction (S)
2.50	1.71	0.18
2.75	1.55	0.21
3.00	1.42	0.24
3.25	1.31	0.27
3.50	1.21	0.30
3.75	1.13	0.32
4.00	1.06	0.35
4.25	1.00	0.37
4.50	0.94	0.39
4.75	0.89	0.43
5.00	0.85	0.43

Table 5c. Estimates of instantaneous rate of annual natural mortality M as a function of growth parameters and mean water temperature; method of Pauly (1979) (Source: Prager, 2000).

Mean water temp (C°)	Natural Mortality (M) from Oxenford and Hunte (1983)	M from Beardsley (1967)	M from Rose and Hassler (1968)
20	2.254	0.681	0.262
22	2.355	0.712	0.273
24	2.452	0.741	0.285
26	2.545	0.769	0.295
28	2.634	0.796	0.306
30	2.719	0.822	0.316

3.1.4.2 Wahoo

The only mortality estimates available are from a study conducted in St. Lucia (Murray, 1998). The values are listed below (Table 5d) for five different years.

Table 5d. Estimates of total and annual mortality for wahoo (Source: Murray, 1998).

Mortality Model Used	Total Mortality (Z)	Annual Mortality (A)
Length based catch curve	1.17	68.96%
	1.52	78.13%
	1.45	76.54%
	1.75	82.62%
	2.34	90.37%

Longevity is believed to be at least 5 years based on work from North Carolina (Hogarth, 1976).

3.1.5 Movement Patterns and Stock Structure

3.1.5.1 Dolphin

The best available scientific information indicates there is one stock of common dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico. (However, this FMP only pertains to the Atlantic component of the stock - see Action 1 for more information.) Oxenford (1997) conducted a preliminary investigation of the common dolphin stock structure within the western central Atlantic and suggested that there are at least two separate unit stocks located in the northeast and southeast regions of the western central Atlantic. This hypothesis was based on: observed seasonality, months of peak abundance, and mean size of dolphin from commercial and sport fisheries, which suggested two different migratory circuits; a comparison of life history characteristics of dolphin from North Carolina, Florida, and Barbados, which showed marked differences in average first year growth rates, fecundity-length relationships, size and age at first maturity, and mean mature egg size; and on observed differences in allelic frequencies at the IDH-2 locus determined through electrophoresis.

One conclusion from the Dolphin Wahoo workshop was that the working hypothesis should be a two stock model for the Western Central Atlantic and that the northern stock should include dolphin from the Gulf of Mexico, the U.S. South Atlantic including Puerto Rico, the U.S. Virgin Islands, the Mid-Atlantic, and the New England coasts (SAFMC, 1998a).

A genetic study by Robyn S. Wingrove (pers. comm.) with the University of Charleston was conducted to test the hypothesis of Oxenford (1997) and investigate the possible presence of additional stocks in the Gulf of Mexico and western central Atlantic using Restriction Fragment Length Polymorphism (RFLP) analysis of the ND-1 region of the Mitochondrial DNA (mtDNA). Dolphin DNA samples collected in the western central Atlantic originated from the Carolinas, Georgia, Florida, the Gulf of Mexico, Puerto Rico, Bermuda, the Azores, Martinique, Barbados, Tobago, and Brazil. The ND-1 region of each specimen was amplified by Polymerase Chain Reaction (PCR) and digested with five different restriction endonucleases. The results from the analysis of the frequency distribution of composite mtDNA haplotypes and Analysis of Molecular Variance (AMOVA) found no significant differences between samples collected in the western central Atlantic. These analyses further validate that dolphin in the western central Atlantic comprises a single unit stock and a management unit including common dolphin from the Gulf of Mexico, the U.S. South Atlantic including Puerto Rico, the U.S. Virgin Islands, the Mid-Atlantic, and the New England coasts would be appropriate.

Estimates of biological parameters for dolphin from the northern area were endorsed by participants at the Dolphin Wahoo workshop and are presented in the following sections (SAFMC, 1998a).

3.1.5.2 Wahoo

There have been no investigations of wahoo stock structure. Given this, a working hypothesis could be a single stock model for the western central Atlantic, including the Gulf of Mexico, the U.S. South Atlantic including Puerto Rico, the U.S. Virgin Islands, the Mid-Atlantic, and the New England coasts.

3.1.6 Feeding, Food and Trophic Relationships

3.1.6.1 Dolphin

Dolphin are voracious, surface water, daytime predators. They eat a wide variety of fish species including: small oceanic pelagic species (e.g., flying fish, halfbeaks, man-o-war fish,

Sargassum fish, and rough triggerfish); juveniles of large oceanic pelagic species (e.g., tunas, billfish, jacks, and dolphin); and pelagic larvae of neritic, benthic species (e.g., flying gurnards, triggerfish, pufferfish, and grunts). They also eat invertebrates (e.g., cephalopods, mysids, and scyphozoans) suggesting that they are essentially non-selective, opportunistic foragers. Rose (1966) examined the stomach contents of 373 dolphin off North Carolina and found the following food items by relative weight: Exocoetidae - 24%, Scombridae - 22%, Carangidae - 12%, Invertebrates - 12%, Miscellaneous Fish Families - 11%, Monacanthidae - 7%, Coryphaenidae - 5%, Unidentified Fish - 4%, and Balistidae - 3%. An analysis of prey ranked as to importance in dolphin diets is presented in Table 6.

Predators (from Oxenford, 1997; references included in Oxenford, 1997)

The diets of other oceanic pelagic species indicate that dolphin, particularly juveniles, serve as prey for many oceanic fish. Their predators include large tuna (Parin, 1968; *Thunnus alalunga*: Murphy, 1914; *T. albacares*: Penrith, 1963, Dragovich and Potthoff, 1972, Takahashi and Mori, 1973, Matthews, *et al.*, 1977), sharks (Parin, 1968; *Hexanchus griseus*: Bigelow and Schroeder, 1948), marlin (Sund and Girigorie, 1966, Parin, 1968: *Makaira nigircans*: Farrington, 1949, Takahashi and Mori, 1942; *Tetrapturus albidus*: Wallace and Wallace, 1942, Nakamura, 1971, Nakamura and Rivas, 1972; *T. audax*: Abitia-Cardenas *et al.*, 1997), sailfish (*Istiophorus platypturus*: Beardsley *et al.*, 1972, Takahashi and Mori, 1973) and swordfish (*Xiphias gladius*: Gorbunova, 1969).

Table 6. Dietary importance (by rank) of the five main prey categories of dolphin (*Coryphaena hippurus*) from the western central Atlantic assessed by numerical abundance (Source: Oxenford, 1997; references found in Oxenford, 1997).

Location		**Southeastern & Gulf states of USA**	**North Carolina**		**Barbados**	
Data source		**Manooch et al. (1984)**	**Gibbs & Collette (1959)**	**Rose & Hassler (1974)**	**Lewis & Axelsen (1967)**	**Oxenford & Hunte**
(this workshop)						
No. dolphin		2219	46	396	70	397
Fish	Ammodytidae	.	3	.	.	.
	Balistidae	1	5	3	4	4
	Carangidae	5	.	2	.	.
	Coryphaenidae	.	.	4	.	.
	Dactylopteridae	.	.	.	1	1
	Exocoetidae	.	.	.	3	3
	Gempylidae	.	1	.	.	.
	Monacanthidae	.	.	.	2	.
	Nomeidae	.	.	.	5	.
	Ostraciidae	.	.	5	.	.
	Scombridae	.	2	.	.	.
	Syngnathidae	3	.	.	.	.
	Tetraodontidae	.	4	.	.	.
Invertebrates	Cephalopoda	.	.	.	.	5
	Decapoda	4	.	1	.	.
	Mysidacea	.	.	.	.	2
	Stomatopoda	2	.	.	.	.

3.1.6.2 Wahoo

Wahoo are essentially piscivorous. Based on work in North Carolina (Hogarth, 1976), fish accounted for 97.4% of all food organisms. These fish included mackerels, butterfishes, porcupine fishes, round herrings, scads, jacks, pompanos, and flying fishes. Invertebrates, squid, and the paper nautilus comprised 2.6% of the total food.

3.1.7 Status of the Stocks

3.1.7.1 Dolphin

Time-series data seems to indicate no decline in stock abundance nor a decrease in mean size of individual fish (SAFMC, 1998a). Some stock analysis was provided by the Mackerel Stock Assessment Panel (MSAP, 1992). Prager (2000) (Appendix B) conducted the first comprehensive exploratory stock assessment for dolphin based on landings from the U.S. Atlantic and Gulf of Mexico. The life history of dolphin and estimates generated by Prager (2000) suggest the species may be able to withstand a relatively high rate of exploitation. The abundance index developed for the assessment indicates an increasing trend in stock size, and the surplus production model based on the index, estimates the recent stock status to be above the biomass at MSY. However, Prager (2000) indicates that the positive indications are balanced by the uncertainty and numerous reasons for caution including: under excessive mortality rates, even a species resistant to exploitation may undergo geographically or temporally localized depletion or be exploited at suboptimal yield per recruit; the current stock structure is only based on limited evidence; and the estimates of vital rates are several decades old.

A preliminary stock assessment (Mahon and Oxenford, 1999) conducted for dolphin from Barbados has key implications for taking a precautionary approach in the management of dolphin and wahoo resources (SAFMC, 1998a):

A. There is a high risk of stock depletion with little warning given that the fishery may remain feasible at low stock levels because of the tendency of the fish to aggregate and the current trends for increasing fishing effort.
B. There is a potential for recruitment overfishing given that fish are economically valuable before size at first maturity and the high interannual variability in abundance apparently driven by environmental factors.
C. That a yield-per-recruit (YPR) approach to selecting a management target is probably inappropriate since even the more conservative $F_{0.1}$ values are likely to lead to a significant reduction in spawning stock biomass.
D. A precautionary approach to management which in the first instance attempts to maintain the status quo of the fishery is recommended. This will require that current catch levels not be exceeded and that recent conflict between sectors of the fishery (commercial longliners and recreational anglers) be resolved. Status quo might reflect trends (average catch and effort levels) in the fishery over the last five years (through 1997).

3.1.7.2 Wahoo

To date there has been no attempt at a comprehensive stock assessment for wahoo. Therefore, the status of the stocks is unknown at this time. Proxy MSY estimates were provided by the NMFS SEFSC and were used to specify the status determination criteria shown in Actions 7, 8, and 9.

3.2 Description of Fishing Activity

The fishery for dolphin and wahoo covered by this plan is prosecuted along the Atlantic coast predominately south of Virginia into the Caribbean Sea and the Gulf of Mexico. The fishery is seasonal with catches from the Atlantic occurring mainly between April and September, catches from the Caribbean primarily occurring January through June, and catches in the Gulf of Mexico mainly occurring between May and October (Table 7).

Table 7. Summary of locations and approximate seasonality of commercial and/or sport fisheries for dolphin (*Coryphaena hippurus*) within the western central Atlantic (Oxenford, 1997). References are found in Oxenford (1997).

Area	Location	Approximate seasonality	Selected References
Southeastern USA	North Carolina South Carolina Georgia East Florida	April-Sept	Ellis 1957 Iversen 1962 Beardsley 1967 Rose & Hassler 1969 Hassler & Hogarth 1977 Gentle 1977 Brusher & Palko 1985 Oxenford & Hunte 1986 Palko *et al.* 1989
Southern USA (Gulf of Mexico)	West Florida Alabama Mississippi Louisiana Texas	May-Oct	Baughman 1941 Springer & Pirson 1958 Fable 1981 Bentivoglio 1988 Palko *et al.* 1989
Central America (Caribbean coast)	Mexico	?	FAO 1996
Northern Caribbean	Bahamas Hispaniola Puerto Rico US Virgin Islands	Jan-June	Erdman 1956 Olsen & Wood 1982 Appeldoorn & Meyers 1993 Perez & Sadovy 1991 Perez *et al.* 1992 Rivera Betancourt 1994
Eastern Caribbean	Guadeloupe Martinique Dominica St. Lucia Barbados St. Vincent Grenada Tobago	Dec-June	Mahon *et al.* 1981 Sacchi *et al.* 1981 Murray 1985 Oxenford & Hunte 1986 Hunte 1987 Mahon *et al.* 1990 Mahon 1993 FAO 1996 Mohammed 1996
Southern Caribbean	Curacao	Dec-July	Zaneveld 1961
South America	Northeast Brazil	?	Monteiro *et al.* 1996
Atlantic	Bermuda	March-Dec	Oxenford & Hunte 1986

Dolphin support economically important fisheries from North Carolina through the Gulf of Mexico, and within the Caribbean Sea, including the northeast coast of Brazil (SAFMC, 1998a). Wahoo are known to support economically important fisheries in the U.S., Bermuda, and through the Caribbean to Tobago (SAFMC, 1998a).

3.2.1 Recreational Fishery

3.2.1.1 Atlantic

3.2.1.1.1 Dolphin

The recreational dolphin fishery in New England has been sporadic with the average landings from 1984-97 at 19,524 pounds (Table 8). The dolphin fishery in the Mid-Atlantic had average landings of 477,655 pounds for the 1984-97 period (Table 8). Recreational landings of dolphin in the South Atlantic have increased over time but have shown wide fluctuation in catches from year to year; landings for the South Atlantic peaked at just over 12 million pounds in 1995; average landings for 1984-1997 were 7,493,268 pounds (Table 8).

Comparing more recent average landings (1997-2000) to the 1994-97 average landings (Table 8) indicates that average recreational landings have increased in the South Atlantic by about 76,000 pounds, decreased in the Mid-Atlantic by about 106,000 pounds, and decreased in New England from 22,747 pounds to 3,020 pounds. Total recreational landings peaked at 13,092,212 pounds in 1995. Total recreational 2000 landings are preliminary but exceed the 1999 landings by about 2.4 million pounds. Average total recreational catch in both the 1994-97 and 1997-2000 periods was 10.3 million pounds.

South Atlantic recreational landings are shown in more detail in Table 9; data only provided through 1997. Florida and North Carolina account for the bulk of landings. Average landings in Florida for 1994-97 were 6,398,917 pounds and declined to 4,731,124 pounds for 1997-99. The trend was reversed in North Carolina with average landings increasing from 3,403,370 pounds to 4,243,769 pounds for the same time periods. Average landings increased in both South Carolina and Georgia for these same time periods (Table 9).

Recreational landings by region and mode within the Atlantic are shown in Tables 10-12; data only provided through 1997. Private/rental accounted for more landings than charter in the Mid-Atlantic and South Atlantic, whereas, charter accounted for more landings in New England. Recreational landings by state in the Mid-Atlantic are shown in Table 13. Landings have been variable and spread amongst the States of Maryland, New Jersey, New York, and Virginia. Over the 1997-99 time period, Virginia and Maryland accounted for the majority of landings. Landings from the recreational sector by state and mode within the Atlantic are presented in Tables 14-25. These tables provide more detail by State but follow the general trends described above.

The overall trend by mode within the South Atlantic is shown in Figures 3 and 4; data only provided through 1997. In North Carolina (Table 22) charter landings exceed private/rental whereas in Florida (Table 25) the private/rental catch greatly exceeds the charter catch. South Carolina's charter fleet has accounted for more of the recent landings (Table 23), but private/rental had much higher catches in the mid 1980s. The trend in Georgia (Table 24) is similar to South Carolina except that there were no landings recorded from the private/rental mode for 1995-1997.

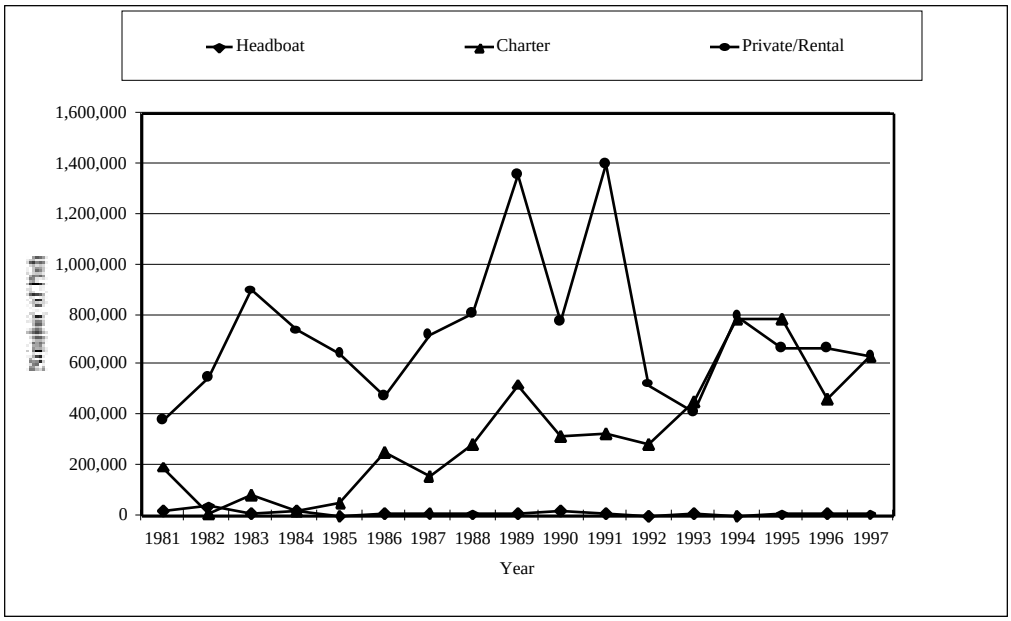


Figure 3. Recreational landings of dolphin in the South Atlantic in numbers by mode for 1981-1997 (Data Source: Goodyear, 1999).

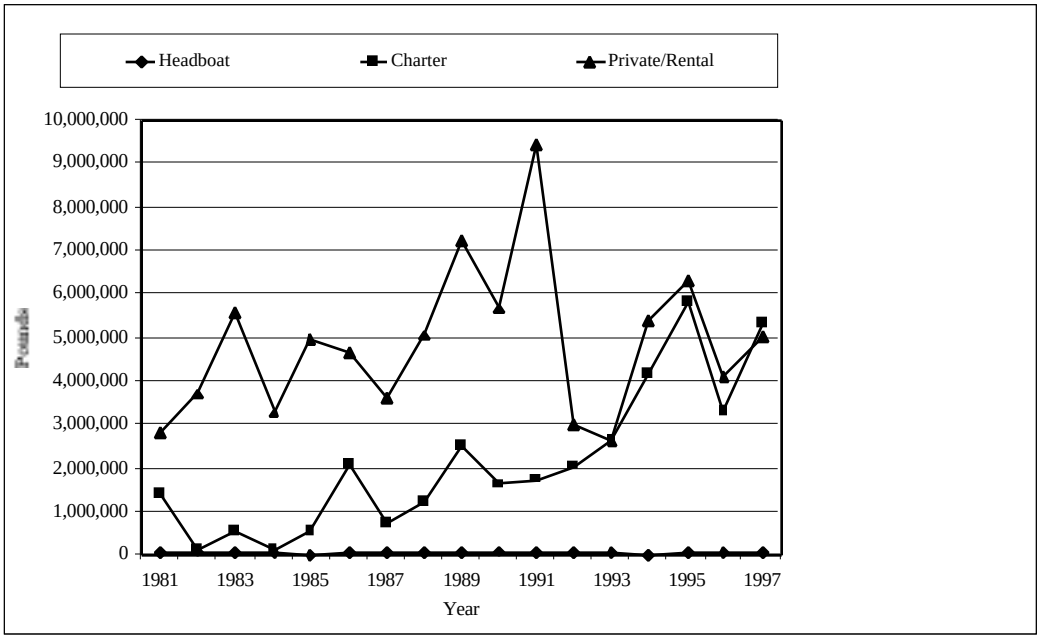


Figure 4. Recreational landings of dolphin (pounds) in the South Atlantic by mode for 1981-1997 (Data Source: Goodyear, 1999).

Table 8. Recreational and commercial landings of dolphin (pounds) from the South Atlantic, Mid-Atlantic, and New England for 1984-2000 (Source: Goodyear (1999) and data provided by NMFS in 2000 & 2002).

Year	South Atlantic		Mid-Atlantic		New England		Totals		
	Recreational	Commercial*	Recreational	Commercial	Recreational	Commercial	Recreational	Commercial	Grand Total
1984	3,475,817	426,960	0	1,700	0	400	3,475,817	429,060	3,904,877
1985	5,569,740	316,102	78,904	5,000	0	4,800	5,648,644	325,902	5,974,546
1986	6,834,766	532,078	193,127	4,200	0	200	7,027,893	536,478	7,564,371
1987	4,395,920	483,681	72,777	13,400	0	1,100	4,468,697	498,181	4,966,878
1988	6,334,041	481,207	166,468	26,600	1,501	17,800	6,502,010	525,607	7,027,617
1989	9,830,209	995,556	806,282	81,700	6,811	15,300	10,643,302	1,092,556	11,735,858
1990	7,430,519	961,088	349,224	69,106	10,101	14,233	7,789,844	1,044,427	8,834,271
1991	11,271,967	1,529,261	554,896	90,722	9,208	9,816	11,836,071	1,629,799	13,465,870
1992	5,192,816	605,072	692,209	72,946	837	8,361	5,885,862	686,379	6,572,241
1993	5,415,304	847,245	1,783,267	97,553	153,885	23,524	7,352,456	968,322	8,320,778
1994	9,100,818	1,114,114	393,450	123,646	6,312	14,793	9,500,580	1,252,553	10,753,133
1995	12,195,526	1,976,776	825,140	238,438	71,546	16,573	13,092,212	2,231,787	15,323,999
1996	7,434,015	1,147,694	563,485	59,341	4,644	9,647	8,002,144	1,216,682	9,218,826
1997	10,424,287	1,475,350	207,940	106,305	8,486	13,265	10,640,713	1,594,920	12,235,633
1998	7,263,852	727,282	429,292	87,545	0	11,813	7,693,144	826,640	8,519,784
1999	9,829,897	944,595	294,479	99,505	3,594	5,990	10,127,970	1,050,090	11,178,060
2000**	11,941,840	928,223	633,110	36,013	0	6,545	12,574,950	970,781	13,545,731
Avg. 84-97	7,493,268	920,870	477,655	70,761	19,524	10,701	7,990,446	1,002,332	8,992,778
Avg. 90-97	8,558,157	1,207,075	671,201	107,257	33,127	13,777	9,262,485	1,328,109	10,590,594
Avg. 94-97	9,788,662	1,428,484	497,504	131,933	22,747	13,570	10,308,912	1,573,986	11,882,898
Avg. 97-2000	9,864,969	1,018,863	391,205	82,342	3,020	9,403	10,259,194	1,110,608	11,369,802

*South Atlantic commercial landings 1984-2000 includes all of Monroe County, FL, landings of dolphin.
**2000 Data are preliminary. Recreational does not include headboat

Table 9. Recreational and commercial landings of dolphin (pounds) North Carolina, Florida, South Carolina and Georgia for 1984-1999 (Source: Goodyear (1999) and data provided by NMFS in 2000 & 2002).

Year	North Carolina		Florida*		South Carolina		Georgia		Total South Atlantic	
	Recreational	Commercial	Recreational	Commercial	Recreational	Commercial	Recreational	Commercial	Recreational	Commercial
1984	6,730	47,144	3,393,058	350,332	76,029	19,878	0	9,606	3,475,817	426,960
1985	446,745	42,348	3,887,256	241,676	1,229,824	17,974	5,915	14,104	5,569,740	316,102
1986	1,451,175	35,923	3,113,305	469,822	2,269,895	11,416	390	14,917	6,834,766	532,078
1987	764,391	70,516	3,617,409	385,698	12,626	19,372	1,493	8,095	4,395,920	483,681
1988	909,643	56,098	5,277,293	386,149	147,104	27,921	0	11,039	6,334,041	481,207
1989	1,905,274	98,899	7,821,178	821,279	103,757	67,463	0	7,915	9,830,209	995,556
1990	1,562,247	96,207	5,800,055	782,171	67,988	70,479	0	12,231	7,430,291	961,088
1991	1,552,804	140,837	9,580,978	1,279,631	130,115	94,604	7,992	14,189	11,271,890	1,529,261
1992	1,004,709	72,119	4,137,917	466,625	47,064	58,064	2,808	8,264	5,192,498	605,072
1993	2,362,142	149,043	2,580,573	594,210	351,549	91,355	120,725	12,637	5,414,984	847,245
1994	2,944,912	160,747	6,597,850	837,294	97,434	107,010	3,401	9,063	9,643,594	1,114,114
1995	3,558,751	355,644	8,552,429	1,306,215	81,019	287,509	2,426	27,408	12,194,620	1,976,776
1996	2,243,169	126,849	5,075,847	868,444	157,219	143,918	3,778	8,843	7,480,014	1,147,694
1997	4,866,647	229,783	5,369,543	949,805	181,840	283,739	1,130	12,023	10,419,160	1,475,350
1998	3,466,778	149,993	3,652,418	526,562	123,473	48,138	606	2,589	7,242,667	727,282
1999	4,397,882	209,860	5,171,410	643,822	193,630	76,827	17,196	9,566	9,780,115	940,075
Avg. 84 - 97	1,827,096	120,154	5,343,192	696,604	353,819	92,907	10,718	12,167	7,534,825	920,870
Avg. 94 - 97	3,403,370	218,256	6,398,917	990,440	129,378	205,544	2,684	14,334	9,934,347	1,428,484
Avg. 97 - 99	4,243,769	196,545	4,731,124	706,730	166,314	136,235	6,311	8,059	9,147,314	1,047,569

*Florida Commercial landings 1988-1999 include all of Monroe County, FL landings.
1997-1999 Recreational data from NMFS MRFSS Web Site. Note: South Atlantic totals from Table 9 are slightly different from South Atlantic totals in Table 8 because MRFSS by state summed versus by South Atlantic total.

Table 10. Recreational landings of dolphin (pounds) in New England by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charter		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-
1988	-	-	81	359	259	1,142	340	1,501
1989	-	-	1,339	6,811	-	-	1,339	6,811
1990	-	-	81	600	1,275	9,500	1,356	10,101
1991	-	-	156	721	1,833	8,487	1,989	9,208
1992	-	-	111	837	-	-	111	837
1993	-	-	8,709	53,739	7,098	100,146	15,807	153,885
1994	-	-	305	1,772	781	4,540	1,086	6,312
1995	-	-	8,146	71,546	-	-	8,146	71,546
1996	-	-	-	-	614	4,644	614	4,644
1997	-	-	829	8,486	-	-	829	8,486

Table 11. Recreational landings of dolphin (pounds) in Mid-Atlantic by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charter		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
81	-	-	-	-	-	-	-	-
82	-	-	-	-	1,586	1,049	1,586	1,049
83	-	-	2,302	26,904	1,632	23,686	3,935	50,590
84	-	-	-	-	-	-	-	-
85	-	-	12,577	12,697	15,193	66,208	27,770	78,904
86	-	-	2,597	10,521	25,712	182,606	28,309	193,127
87	-	-	2,273	12,765	11,908	60,012	14,181	72,777
88	-	-	3,756	21,928	22,996	144,540	26,752	166,468
89	-	-	30,446	146,264	111,425	660,018	141,871	806,282
90	-	-	11,552	91,693	78,106	257,531	89,658	349,224
91	-	-	20,892	158,678	94,273	396,218	115,166	554,896
92	-	-	35,216	179,332	110,545	512,877	145,761	692,209
93	-	-	150,675	1,358,188	89,742	425,080	240,417	1,783,267
94	-	-	49,296	274,976	30,903	118,475	80,199	393,450
95	-	-	34,248	385,176	36,668	439,964	70,916	825,140
96	-	-	33,705	205,033	56,560	358,452	90,265	563,485
97	-	-	24,456	66,338	19,117	141,602	43,573	207,940

Table 12. Recreational landings of dolphin (pounds) in the South Atlantic by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charter		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	23,056	76,103	197,342	1,392,254	381,410	2,848,551	601,808	4,316,908
1982	39,846	94,722	16,058	110,511	554,631	3,709,001	610,535	3,914,231
1983	10,551	42,136	84,558	568,519	896,783	5,583,383	991,892	6,194,038
1984	17,882	52,727	22,786	135,913	739,500	3,287,178	780,168	3,475,817
1985	5,319	33,587	56,571	580,496	646,186	4,955,658	708,076	5,569,740
1986	11,665	50,324	256,814	2,111,430	476,957	4,673,013	745,436	6,834,766
1987	12,900	49,034	156,330	739,834	717,309	3,607,051	886,539	4,395,920
1988	8,233	35,930	283,695	1,198,525	808,105	5,079,359	1,106,705	6,334,041
1989	13,961	54,751	525,336	2,519,018	1,355,989	7,238,291	1,900,598	9,830,209
1990	17,872	103,072	318,895	1,634,846	773,890	5,680,409	1,113,462	7,430,291
1991	9,949	75,748	330,434	1,752,745	1,403,623	9,443,396	1,744,006	11,271,890
1992	5,450	38,984	285,355	2,068,521	523,503	3,031,715	826,447	5,192,498
1993	10,199	50,742	459,379	2,631,453	413,859	2,664,395	909,841	5,414,984
1994	5,527	24,521	785,113	4,196,392	797,637	5,414,156	1,589,271	9,643,594
1995	6,775	52,000	781,432	5,848,770	667,007	6,291,777	1,456,784	12,194,620
1996	11,893	46,959	468,129	3,315,770	669,066	4,117,283	1,149,088	7,480,014
1997	7,473	39,295	634,597	5,360,610	634,760	5,019,254	1,276,830	10,419,160

Table 13. Recreational landings of dolphin (pounds) in the Mid-Atlantic by state for 1984-1999 (Source: Data provided by NMFS in 2000).

	Delaware	Maryland	New Jersey	New York	Virginia
1984	-	-	-	-	-
1985	-	11,854	18,486	5,964	42,601
1986	-	19,672	23,396	14,243	133,816
1987	-	8,159	-	32,583	32,035
1988	-	152,607	9,490	-	4,371
1989	21,124	125,378	147,952	437,883	73,946
1990	30,423	71,640	74,205	146,813	26,143
1991	28,734	135,346	210,650	34,435	145,731
1992	10,186	158,773	43,928	63,695	415,628
1993	821	1,087,649	77,522	209,476	407,799
1994	29,838	-	24,932	193,659	145,022
1995	90,578	82,547	150,565	37,878	463,572
1996	1,057	224,301	315,071	-	23,057
1997	1,409	54,936	10,619	9,371	131,606
1998	8,347	128,297	50,732	37,851	204,062
1999	-	100,215	9,217	35,853	149,190

Table 14. Recreational landings of dolphin (pounds) in Massachusetts by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-
1997	-	-	136	1,393	-	-	136	1,393

Table 15. Recreational landings of dolphin (pounds) in Rhode Island by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-
1988	-	-	81	359	259	1,142	340	1,501
1989	-	-	1,339	6,811	-	-	1,339	6,811
1990	-	-	81	600	1,275	9,500	1,356	10,101
1991	-	-	156	721	1,833	8,487	1,989	9,208
1992	-	-	-	-	-	-	-	-
1993	-	-	5,802	37,555	7,098	100,146	12,900	137,701
1994	-	-	305	1,772	781	4,540	1,086	6,312
1995	-	-	8,146	71,546	-	-	8,146	71,546
1996	-	-	-	-	614	4,644	614	4,644
1997	-	-	693	7,093	-	-	693	7,093

Table 16. Recreational landings of dolphin (pounds) in Connecticut by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-
1992	-	-	111	837	-	-	111	837
1993	-	-	2,907	16,184	-	-	2,907	16,184
1994	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-

Table 17. Recreational landings of dolphin (pounds) in New York by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	1,046	5,964	1,046	5,964
1986	-	-	487	2,541	2,243	11,703	2,730	14,243
1987	-	-	1,266	4,606	5,076	27,977	6,342	32,583
1988	-	-	-	-	-	-	-	-
1989	-	-	8,881	45,426	49,053	392,456	57,934	437,883
1990	-	-	207	357	50,588	146,456	50,796	146,813
1991	-	-	-	-	2,135	34,435	2,135	34,435
1992	-	-	1,199	6,088	11,349	57,606	12,548	63,695
1993	-	-	11,852	123,851	8,323	85,625	20,175	209,476
1994	-	-	29,763	169,290	4,334	24,368	34,097	193,659
1995	-	-	-	-	3,002	37,878	3,002	37,878
1996	-	-	-	-	-	-	-	-
1997	-	-	-	-	2,796	9,371	2,796	9,371

Table 18. Recreational landings of dolphin (pounds) in New Jersey by Mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	12,079	10,652	7,107	7,834	19,186	18,486
1986	-	-	-	-	4,484	23,396	4,484	23,396
1987	-	-	-	-	-	-	-	-
1988	-	-	1,875	9,490	-	-	1,875	9,490
1989	-	-	6,982	19,171	36,295	128,781	43,277	147,952
1990	-	-	-	-	16,528	74,205	16,528	74,205
1991	-	-	8,368	92,257	10,246	118,393	18,614	210,650
1992	-	-	-	-	11,509	43,928	11,509	43,928
1993	-	-	-	-	4,758	77,522	4,758	77,522
1994	-	-	-	-	18,386	24,932	18,386	24,932
1995	-	-	-	-	11,233	150,565	11,233	150,565
1996	-	-	5,030	12,800	45,560	302,271	50,591	315,071
1997	-	-	-	-	1,150	10,619	1,150	10,619

Table 19. Recreational landings of dolphin (pounds) in Delaware by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-
1989	-	-	869	9,315	1,068	11,808	1,937	21,124
1990	-	-	6,041	19,696	7,404	10,726	13,445	30,423
1991	-	-	231	3,282	4,798	25,452	5,029	28,734
1992	-	-	4,561	10,186	-	-	4,561	10,186
1993	-	-	209	821	-	-	209	821
1994	-	-	5,416	23,816	1,260	6,022	6,676	29,838
1995	-	-	4,764	90,578	-	-	4,764	90,578
1996	-	-	415	1,057	-	-	415	1,057
1997	-	-	97	898	152	511	250	1,409

Table 20. Recreational landings of dolphin (pounds) in Maryland by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	2,302	26,904	1,632	23,686	3,935	50,590
1984	-	-	-	-	-	-	-	-
1985	-	-	399	1,056	3,265	10,798	3,664	11,854
1986	-	-	-	-	3,499	19,672	3,499	19,672
1987	-	-	1,006	8,159	-	-	1,006	8,159
1988	-	-	1,881	12,438	21,193	140,169	23,074	152,607
1989	-	-	11,874	57,766	15,200	67,612	27,074	125,378
1990	-	-	5,303	71,640	-	-	5,303	71,640
1991	-	-	10,977	48,251	34,390	87,095	45,368	135,346
1992	-	-	24,875	115,465	9,768	43,308	34,643	158,773
1993	-	-	83,525	1,049,607	14,791	38,042	98,316	1,087,649
1994	-	-	-	-	-	-	-	-
1995	-	-	13,215	82,547	-	-	13,215	82,547
1996	-	-	22,118	168,120	11,000	56,181	33,118	224,301
1997	-	-	447	2,885	8,072	52,051	8,519	54,936

Table 21. Recreational landings of dolphin (pounds) in Virginia by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	1,586	1,049	1,586	1,049
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	99	989	3,775	41,612	3,874	42,601
1986	-	-	2,110	7,980	15,486	127,835	17,596	135,816
1987	-	-	-	-	6,832	32,035	6,832	32,035
1988	-	-	-	-	1,802	4,371	1,802	4,371
1989	-	-	1,839	14,586	9,810	59,361	11,649	73,946
1990	-	-	-	-	3,586	26,143	3,586	26,143
1991	-	-	1,316	14,888	42,704	130,843	44,020	145,731
1992	-	-	4,581	47,593	77,919	368,036	82,500	415,628
1993	-	-	55,088	183,909	61,870	223,890	116,959	407,799
1994	-	-	14,117	81,869	6,923	63,153	21,039	145,022
1995	-	-	16,269	212,052	22,433	251,520	38,702	463,572
1996	-	-	6,141	23,057	-	-	6,141	23,057
1997	-	-	23,912	62,555	6,946	69,051	30,858	131,606

Table 22. Recreational landings of dolphin (pounds) in North Carolina by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	219	1,400	195,529	1,379,419	-	-	195,748	1,380,819
1982	423	2,749	11,276	74,578	32,631	289,440	44,330	366,766
1983	136	1,617	44,753	336,120	13,673	226,084	58,563	563,821
1984	495	4,203	1,332	2,527	-	-	1,827	6,730
1985	373	2,386	25,248	308,928	11,961	135,431	37,582	446,745
1986	315	1,872	149,206	1,436,726	2,358	12,577	151,879	1,451,175
1987	504	2,542	81,049	401,389	72,713	360,460	154,266	764,391
1988	435	2,484	107,623	590,879	36,336	296,054	151,065	909,643
1989	1,373	6,610	157,696	1,034,364	94,264	864,300	253,333	1,905,274
1990	2,299	9,132	262,465	1,262,836	59,091	278,315	326,660	1,562,247
1991	3,746	17,049	214,745	996,030	72,948	539,725	291,439	1,552,804
1992	869	7,436	161,923	826,599	29,383	166,108	192,688	1,004,709
1993	3,197	14,043	328,844	1,834,800	105,556	511,514	438,946	2,362,142
1994	1,125	5,296	344,268	2,172,868	100,167	766,748	445,560	2,944,912
1995	1,640	9,888	420,158	2,833,552	77,157	713,234	500,525	3,558,751
1996	547	3,199	274,688	1,790,050	72,515	449,919	347,750	2,243,169
1997	1,053	6,778	419,094	3,914,029	120,185	945,840	540,331	4,866,647

Table 23. Recreational landings of dolphin (pounds) in South Carolina by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	2	31	-	-	-	-	2	31
1983	96	843	-	-	-	-	96	843
1984	607	4,272	2,074	15,921	7,824	55,836	10,505	76,029
1985	443	2,880	4,356	82,567	58,139	1,144,377	62,938	1,229,824
1986	261	910	423	7,521	87,350	2,261,465	88,034	2,269,895
1987	468	2,563	645	10,063	-	-	1,113	12,626
1988	1,125	4,868	8,054	42,097	23,485	100,140	32,664	147,104
1989	985	6,491	4,023	31,943	8,123	65,323	13,131	103,757
1990	1,614	10,988	4,864	29,964	4,269	27,036	10,748	67,988
1991	933	10,937	4,088	43,215	5,890	75,962	10,911	130,115
1992	330	2,519	4,203	35,806	935	8,739	5,469	47,064
1993	826	7,576	21,661	249,998	9,153	93,975	31,640	351,549
1994	686	5,228	6,932	92,205	-	-	7,618	97,434
1995	1,010	9,563	6,582	71,456	-	-	7,592	81,019
1996	753	6,101	12,119	125,207	3,489	25,911	16,361	157,219
1997	1,220	7,378	15,848	171,883	423	2,579	17,490	181,840

Table 24. Recreational landings of dolphin (pounds) in Georgia by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	815	12,852	815	12,852
1983	-	-	135	2,957	1,290	28,300	1,425	31,257
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	602	5,915	602	5,915
1986	-	-	-	-	708	390	708	390
1987	-	-	-	-	307	1,493	307	1,493
1988	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	580	7,992	580	7,992
1992	-	-	-	-	923	2,808	923	2,808
1993	-	-	754	9,028	10,666	111,697	11,420	120,725
1994	2	19	37	302	744	3,081	783	3,401
1995	50	459	348	1,967	-	-	398	2,426
1996	56	500	417	3,278	-	-	473	3,778
1997	103	524	87	606	-	-	190	1,130

Table 25. Recreational landings of dolphin (pounds) on the Florida East Coast by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	22,837	74,703	1,812	12,834	381,410	2,848,551	406,060	2,936,088
1982	39,421	91,942	4,782	35,933	521,185	3,406,709	565,388	3,534,582
1983	10,319	39,676	39,670	229,443	881,819	5,328,999	931,809	5,598,117
1984	16,780	44,252	19,380	117,465	731,676	3,231,342	767,836	3,393,058
1985	4,503	28,321	26,966	189,001	575,484	3,669,935	606,953	3,887,256
1986	11,089	47,542	107,185	667,183	386,541	2,398,581	504,814	3,113,305
1987	11,928	43,929	74,636	328,382	644,289	3,245,098	730,853	3,617,409
1988	6,673	28,579	168,018	565,549	748,284	4,683,165	922,975	5,277,293
1989	11,603	41,650	363,617	1,452,711	1,253,602	6,308,667	1,634,134	7,821,178
1990	13,959	82,951	51,565	342,046	710,530	5,375,059	776,054	5,800,055
1991	5,270	47,761	111,601	713,500	1,324,205	8,819,718	1,441,076	9,580,978
1992	4,251	29,029	119,230	1,206,116	492,262	2,854,061	627,367	4,137,917
1993	6,176	29,123	108,121	537,628	288,484	1,947,209	427,836	2,580,573
1994	3,714	13,978	433,876	1,931,017	696,725	4,644,326	1,135,310	6,597,850
1995	4,075	32,090	354,345	2,941,796	589,850	5,578,543	948,270	8,552,429
1996	10,537	37,158	180,905	1,397,235	593,063	3,641,453	784,505	5,075,847
1997	5,097	24,615	199,569	1,274,092	514,153	4,070,835	718,819	5,369,543

3.2.1.1.2 Wahoo

Wahoo are primarily caught using the same fishing methods as dolphin, i.e., trolling. The recreational fishery for wahoo mainly operates off North Carolina and the east coast of Florida. Annual recreational landings in the South Atlantic ranged from a low of 282,967 pounds in 1990 to a high of 2,470,098 pounds in 1986; landings in 1999 were 1,172,886 pounds and 991,559 in 2000 (Table 26). Average South Atlantic landings for the period 1994-1997 were 866,327 pounds and increased to 992,224 for 1997-2000 (Table 26). In the Mid-Atlantic, for the period 1994-1997, average landings were 16,239 pounds and increased to 76,433 pounds in the 1997-2000 period (Table 26). In New England there were only landings in 1993 (5,738 pounds) and 1998 (5,355 pounds) (Table 26).

Recreational landings by state and mode are shown in Tables 27-35. The charterboat sector in North Carolina landed the largest quantity of wahoo for the period 1994-1997, with an average annual landings of 363,386 pounds during this period (Table 32). Total recreational landings from North Carolina averaged 502,523 pounds for the same time period. The private/rental sector on Florida's East Coast accounted for the next highest average landings of 204,098 pounds during the period 1994-1997 (Table 35), then the private/rental fleet in North Carolina at 138,906 pounds (Table 32), and the charter fleet on the east coast of Florida averaging 132,349 pounds (Table 35) for the same period. Average annual recreational landings of wahoo for the period 1994-1997 for recreational fishermen in South Carolina were 24,844 pounds (Table 33).

Comparing more recent average landings (1997-2000) to the 1984-97 average landings indicates that recreational landings have increased in the South Atlantic by about 200,000 pounds. More recent average landings are also up in the Mid-Atlantic and in New England.

Table 26. Recreational and commercial landings of wahoo (pounds) in the South Atlantic, Mid-Atlantic and New England for 1984-2000 (Source: Goodyear (1999) and data provided by NMFS in 2000 & 2002).

Year	South Atlantic		Mid-Atlantic		New England		Totals		
	Recreational	Commercial*	Recreational	Commercial	Recreational	Commercial	Recreational	Commercial	Grand Total
1984	413,791	25,137	0	100	0	0	413,791	25,237	439,028
1985	423,073	28,426	14,442	200	0	0	437,515	28,626	466,141
1986	2,470,098	26,593	52,313	200	0	0	2,522,411	26,793	2,549,204
1987	797,015	51,403	13,310	400	0	1,200	810,325	53,003	863,328
1988	833,251	52,149	0	1,000	0	0	833,251	53,149	886,400
1989	708,463	43,949	25,026	800	0	0	733,489	44,749	778,238
1990	282,967	58,258	0	1,812	0	0	282,967	60,070	343,037
1991	532,908	62,329	2,198	829	0	103	535,106	63,261	598,367
1992	634,268	64,758	0	1,948	0	1,102	634,268	67,808	702,076
1993	604,996	74,053	0	2,911	5,738	0	610,734	76,964	687,698
1994	772,950	67,503	41,638	3,813	0	16,720	814,588	88,036	902,624
1995	969,818	102,277	11,439	7,119	0	110	981,257	109,506	1,090,763
1996	832,136	79,793	11,878	2,325	0	163	844,014	82,281	926,295
1997	890,402	91,481	0	2,301	0	75	890,402	93,857	984,259
1998	914,049	75,908	29,631	2,518	5,355	51	949,035	78,477	1,027,512
1999	1,172,886	94,655	232,781	4,473	0	0	1,405,667	99,128	1,504,795
2000*	991,559	59,898	43,318	3,125	0	0	1,034,877	63,023	1,097,900
Avg. 84-97	797,581	59,151	12,303	1,840	410	1,391	810,294	62,381	872,676
Avg. 94-97	866,327	85,264	16,239	3,890	0	4,267	882,565	93,420	975,985
Avg. 97-2000	992,224	80,486	76,433	3,104	1,339	32	1,069,995	83,621	1,153,617

*2000 South Atlantic does not include headboat data.

Table 27. Recreational landings of wahoo (pounds) in Rhode Island by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-
1993	-	-	-	-	149	5,738	149	5,738
1994	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-

Table 28. Recreational landings of wahoo (pounds) in New York by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-
1991	-	-	259	1,772	-	-	259	1,772
1992	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-

Table 29. Recreational landings of wahoo (pounds) in Delaware by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-
1991	-	-	62	426	-	-	62	426
1992	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-
1996	-	-	-	-	322	8,662	322	8,662
1997	-	-	-	-	-	-	-	-

Table 30. Recreational landings of wahoo (pounds) in Maryland by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	921	35,939	1,004	20,466	1,925	56,405
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-

Table 31. Recreational landings of wahoo (pounds) in Virginia by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	411	14,442	411	14,442
1986	-	-	399	24,162	464	28,151	863	52,313
1987	-	-	-	-	755	13,310	755	13,310
1988	-	-	-	-	-	-	-	-
1989	-	-	-	-	1,032	25,026	1,032	25,026
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-
1994	-	-	306	18,984	897	22,653	1,203	41,638
1995	-	-	635	11,439	-	-	635	11,439
1996	-	-	83	3,216	-	-	83	3,216
1997	-	-	-	-	-	-	-	-

Table 32. Recreational landings of wahoo (pounds) in North Carolina by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	11,614	175,137	2,941	44,351	14,555	219,488
1982	1	37	-	-	-	-	1	37
1983	2	41	3,074	65,405	-	-	3,076	65,446
1984	6	184	-	-	5,464	125,876	5,470	126,060
1985	-	-	1,068	44,838	3,570	138,375	4,637	183,213
1986	-	-	10,604	297,382	2,765	82,985	13,368	380,366
1987	12	584	6,421	208,765	2,581	28,042	9,014	237,392
1988	2	68	5,390	135,996	639	13,375	6,031	149,439
1989	-	-	3,262	99,875	4,914	120,296	8,176	220,171
1990	4	138	6,108	123,409	3,010	51,024	9,123	174,571
1991	-	-	3,825	83,552	1,581	27,320	5,406	110,872
1992	12	452	4,829	118,451	2,497	72,682	7,338	191,585
1993	2	69	7,642	163,903	2,549	66,657	10,193	230,629
1994	2	68	11,447	234,014	7,964	216,008	19,412	450,091
1995	11	382	20,802	417,182	6,523	134,629	27,337	552,193
1996	2	91	12,928	305,571	4,955	132,539	17,885	438,201
1997	18	388	21,320	496,775	3,361	72,446	24,699	569,608

Table 33. Recreational landings of wahoo (pounds) in South Carolina by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	1,827	32,216	1,827	32,216
1983	-	-	-	-	-	-	-	-
1984	2	61	439	19,354	-	-	441	19,415
1985	8	273	1,269	34,771	2,575	70,537	3,852	105,582
1986	1	38	375	17,296	14,150	682,624	14,526	699,957
1987	-	-	431	13,601	-	-	431	13,601
1988	7	239	119	2,419	1,643	33,944	1,769	36,602
1989	-	-	-	-	1,265	52,287	1,265	52,287
1990	3	104	-	-	442	8,665	445	8,769
1991	8	320	1,165	22,390	-	-	1,173	22,710
1992	7	264	1,653	32,422	-	-	1,660	32,685
1993	3	103	1,580	32,291	2,425	50,948	4,008	83,341
1994	4	137	1,947	40,591	-	-	1,951	40,728
1995	11	396	509	10,211	-	-	520	10,607
1996	9	390	814	16,694	-	-	823	17,084
1997	17	363	1,562	30,594	-	-	1,579	30,957

Table 34. Recreational landings of wahoo (pounds) in Georgia by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-
1995	2	81	-	-	-	-	2	81
1996	-	-	-	-	-	-	-	-
1997	3	64	-	-	-	-	3	64

Table 35. Recreational landings of wahoo (pounds) on the Florida East Coast by mode for 1981-1997 (Source: Goodyear, 1999).

	Headboat		Charterboat		Private/Rental		Total	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1981	110	3,716	1,175	28,617	-	-	1,285	32,333
1982	129	4,778	-	-	10,968	136,119	11,097	140,897
1983	159	3,273	5,077	178,303	28,069	613,511	33,305	795,087
1984	107	3,309	1,936	55,768	11,434	209,240	13,476	268,316
1985	88	2,902	1,013	32,605	2,548	98,772	3,649	134,279
1986	23,903	900,376	5,611	188,216	12,230	301,183	41,743	1,389,775
1987	58	2,130	10,394	254,178	11,845	289,715	22,297	546,023
1988	446	15,091	13,578	287,079	15,827	345,040	29,851	647,209
1989	77	2,356	3,151	56,790	8,511	376,860	11,739	436,005
1990	4,317	141,979	1,237	21,714	4,110	83,154	9,664	246,847
1991	40	1,056	5,868	127,404	13,547	270,844	19,455	399,304
1992	51	1,873	5,271	123,355	16,207	294,909	21,529	420,137
1993	49	1,504	5,341	94,946	10,824	222,101	16,214	318,551
1994	77	2,222	7,288	141,203	6,924	138,551	14,290	281,976
1995	115	3,316	10,276	127,454	16,603	259,332	28,086	406,653
1996	69	1,795	5,402	115,419	12,451	275,857	17,922	393,070
1997	119	1,420	6,754	145,320	7,712	142,650	14,585	289,391

3.2.2 Commercial Fishery

3.2.2.1 Atlantic

3.2.2.1.1 Dolphin

In the Atlantic, commercial fisheries for dolphin consist primarily of longline and hook and line (which includes hand line, troll, rod and reel and electric reel). The hook and line portion of the commercial fishery is conducted similarly to the recreational hook and line segment, which is described under the recreational fisheries section. The longline component of the fishery consists of longliners that primarily target highly migratory species but may also catch dolphin and longliners that target dolphin directly.

The commercial longline fishery for dolphin in the Atlantic consists of approximately 3 or 4 longline vessels that direct effort on dolphin on a regular basis off the coasts of North and South Carolina (NMFS, 1995 & 1996) and longliners who catch dolphin and wahoo but primarily target highly migratory species, mainly swordfish and shark. In the mid to late 1990s, there was an increase in longline landings of dolphin in the South Atlantic with the participation of swordfish and shark longliners who have been adapting their gear to simultaneously target dolphin. They also focus more effort on dolphin after shark and swordfish quotas have been met. This increased participation by these other longliners may alter the makeup of this fishery as those vessels that participated in the directed fishery for dolphin withdraw for a variety of reasons. According to reports by NMFS (1995 & 1996), there may be as many as 20 longline vessels that currently participate in this fishery.

The directed fishery begins the last part of April and continues for about 3 weeks initially off the coast of South Carolina then north to Morehead City, North Carolina where dolphin become more scattered and difficult to catch near the middle of July. Most fishing occurs on either side of the Gulf Stream where eddies spin-off with early concentrations on the western side (NMFS, 1995 & 1996).

Vessels in the directed longline fishery make sets during the daytime using gear that is from 2 to 6 miles in length. The mainline is often 700 pound monofilament with leaders of 400 pound monofilament. There are ordinarily a total of 75 to 80 hooks per mile with a maximum of 480 hooks total. The standard No. 5 circle hooks that are used for dolphin are smaller than those normally used for conventional longline fishing. Leaders of around 18 inches are also shorter than normal with one hook per leader. No drop lines are used in this fishery and haul back is immediate. Fish are located using hook and line gear along weed lines or temperature breaks. Gear may be set in a circular pattern to facilitate haulback and as many as six sets may be made daily. Trips may average 2 days in length (NMFS, 1995 & 1996).

Longline vessels in the shark and swordfish fisheries target dolphin simultaneously by attaching small leaders to their float buoys. There is usually only one leader per buoy with approximately 100-150 such rigs employed at one time. These dolphin rigs are retrieved at the same time as the main longline which is often set overnight (NMFS, 1995 & 1996).

The commercial dolphin fishery in New England has fluctuated with average landings for 1984-97 of 10,701 pounds (Table 8). Average landings over 1994-97 were up slightly to 13,570 pounds then back down to 9,403 over 1997-2000 (Tables 8 & 36). In the Mid-Atlantic, landings averaged 70,761 pounds for 1984-97, increased to 131,933 over 1994-97, and then decreased to 82,342 pounds over 1997-2000 (Table 8). South Atlantic landings averaged 920,870 pounds over 1984-97, increased to 1,428,484 over 1994-97, and then decreased to 1,018,863 pounds over 1997-2000 (Table 8).

Commercial landings of dolphin by region by gear are shown in Tables 36-38 and Figures 5-7. As mentioned earlier, longlines in the South Atlantic increased over 1994-97 (average = 429,754) but landings by hook and line were roughly double the longline landings at 992,147 pounds (Table 38).

South Atlantic commercial landings are shown by state in Table 9. Average landings were highest in Florida followed by North Carolina, South Carolina, and Georgia. For the most recent time period (1997-99) average landings were 706,730 pounds in Florida, 196,545 pounds in North Carolina, 136,235 pounds South Carolina, and 8,059 pounds in Georgia.

Table 36. Commercial landings of dolphin (pounds) in New England by gear type for 1984-2000 (Source: Goodyear, 1999, NMFS, 2000 & NMFS, 2002).

Year	Hook & Line*	Long Line	Other/Unknown	Combined gear
1984	NA	NA	NA	400
1985	NA	NA	NA	4,800
1986	0	0	0	200
1987	1,100	0	0	1,100
1988	NA	NA	NA	17,800
1989	NA	NA	NA	15,300
1990	NA	NA	NA	14,233
1991	NA	NA	NA	9,816
1992	NA	NA	NA	8,361
1993	NA	NA	NA	23,524
1994	8,771	5,012	1,010	14,793
1995	257	15,852	464	16,573
1996	103	9,198	346	9,647
1997	1,736	12,257	1,925	13,265
1998	NA	NA	NA	11,813
1999	NA	NA	NA	5,990
2000	NA	NA	NA	6,545
Average 94-97	2,717	10,580	936	13,570
Average 97-2000	NA	NA	NA	9,403

*Includes hand line, troll, rod & reel, and electric reel.

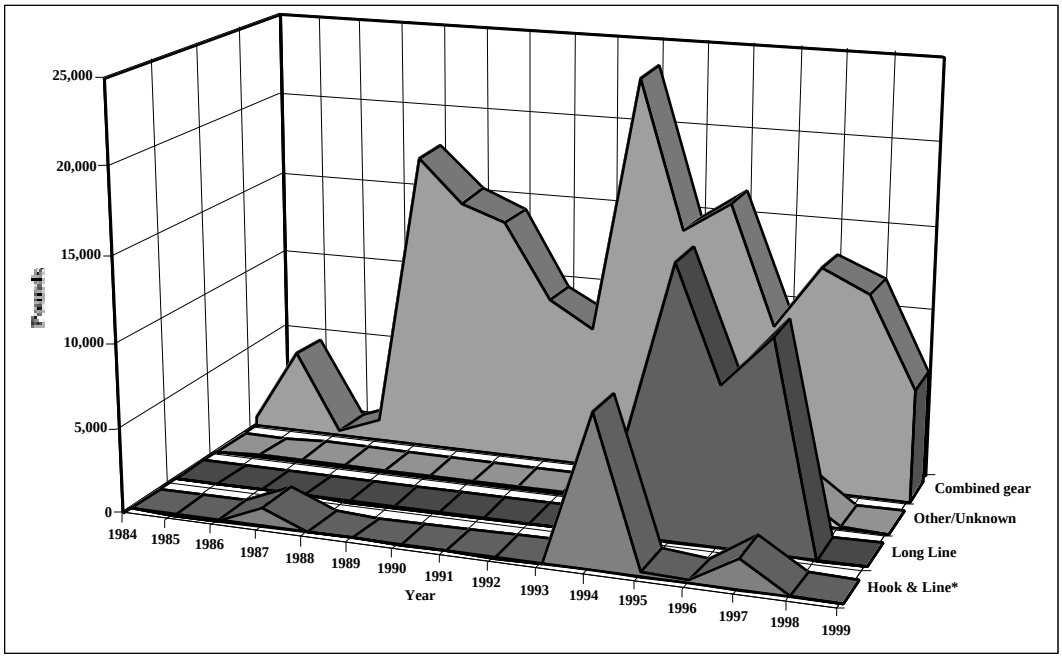


Figure 5. Commercial landings of dolphin (pounds) in New England by gear type for 1984-1999 (Source: Goodyear, 1999 & NMFS, 2000).

Table 37. Commercial landings of dolphin (pounds) in the Mid-Atlantic in pounds by gear type for 1984-2000 (Source: Goodyear, 1999, NMFS, 2000 & NMFS, 2002).

	Hook & Line*	Long Line	Other/Unknown	Combined gear
1984	NA	NA	NA	1,700
1985	NA	NA	NA	5,000
1986	NA	NA	NA	4,200
1987	NA	NA	NA	13,400
1988	NA	NA	NA	26,600
1989	NA	NA	NA	81,700
1990	NA	NA	NA	69,106
1991	NA	NA	NA	90,722
1992	NA	NA	NA	72,946
1993	NA	NA	NA	97,553
1994	2,526	120,245	874	123,646
1995	1,080	231,006	6,368	238,438
1996	248	58,844	248	59,341
1997	671	125,604	1,291	106,305
1998	NA	NA	NA	87,545
1999	1,853	96,599	1,053	99,505
2000	1,592	32,518	1,903	36,013
Avg. 94-97	1,131	133,925	2,195	131,933
Avg. 97-2000	NA	NA	NA	82,342

*Includes hand line, troll, rod & reel and electric reel.

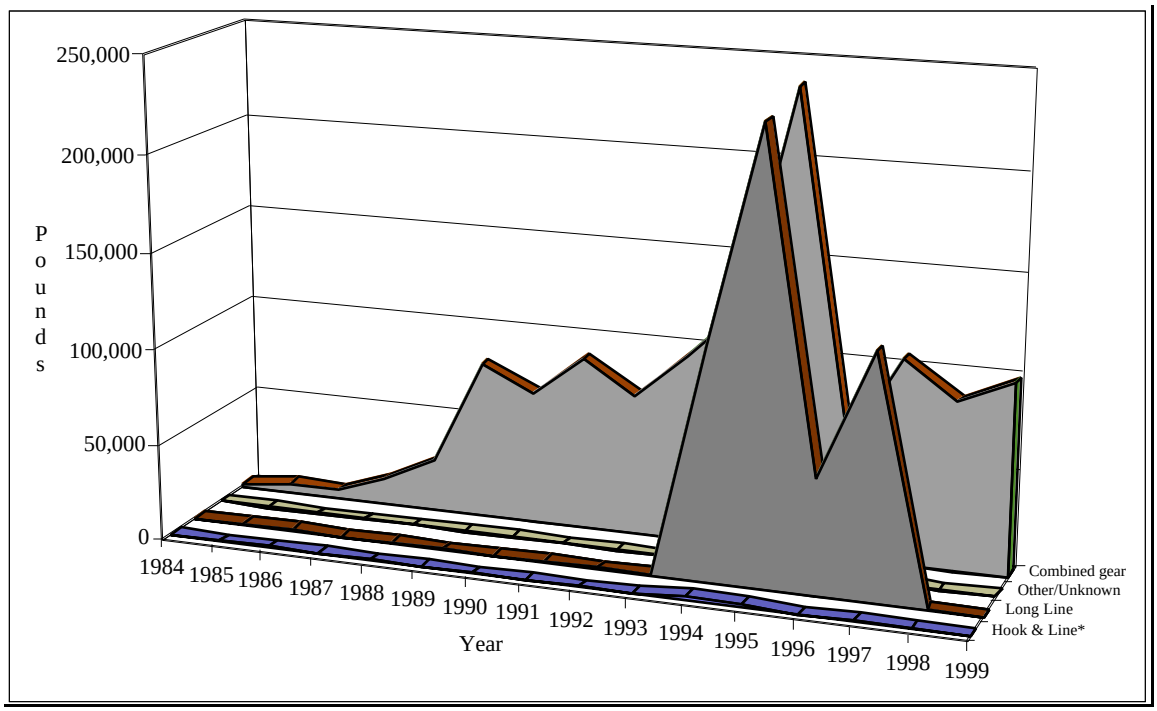


Figure 6. Commercial landings of dolphin (pounds) in the Mid-Atlantic by gear type for 1984-1999 (Source: Goodyear, 1999 & NMFS, 2000).

Table 38. Commercial landings of dolphin (pounds) in the South Atlantic by gear type for 1984-2000 (Source: Goodyear, 1999, NMFS, 2000 & NMFS, 2002).

Year	Hook & Line*	Long Line	Other	Combined gear
1984	NA	NA	NA	426,960
1985	NA	NA	NA	316,102
1986	NA	NA	NA	532,078
1987	NA	NA	NA	483,681
1988	NA	NA	NA	481,207
1989	NA	NA	NA	995,556
1990	NA	NA	NA	961,088
1991	NA	NA	NA	1,529,261
1992	NA	NA	NA	605,072
1993	NA	NA	NA	847,245
1994	848,562	254,240	11,312	1,114,114
1995	1,316,434	650,246	10,096	1,976,776
1996	864,054	275,883	7,757	1,147,694
1997	939,538	538,648	10,274	1,475,350
1998	NA	NA	NA	727,282
1999	647,293	238,903	58,399	944,595
2000	520,590	294,376	113,257	928,223
Average 94-97	992,147	429,754	9,860	1,428,484
Average 97-2000	NA	NA	NA	1,018,863

*Includes hand line, troll, rod & reel, and electric reel.

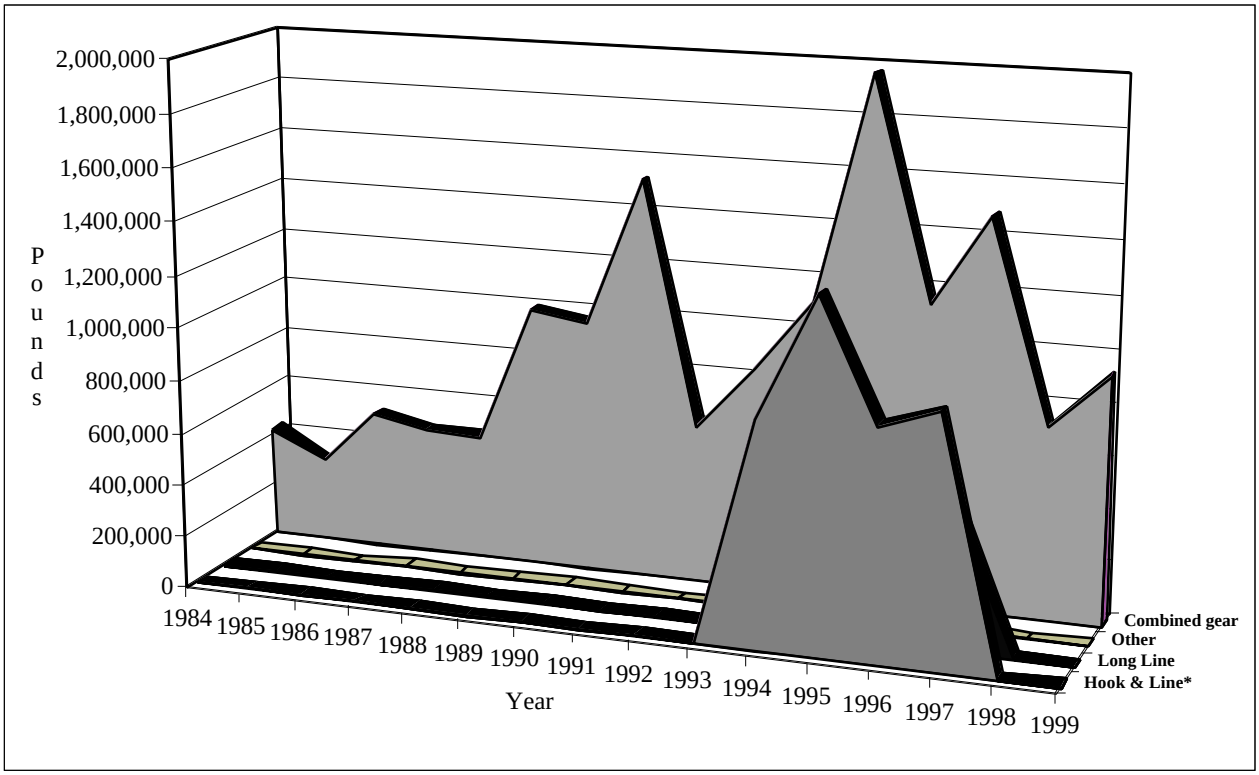


Figure 7. Commercial landings of dolphin (pounds) in the South Atlantic by gear type for 1984-1999 (Source: Goodyear, 1999, NMFS, 2000 & NMFS, 2002).

Mid-Atlantic commercial landings are shown by state in Table 39.

Table 39. Commercial landings of dolphin (pounds) in the Mid-Atlantic by state for 1984-1999 (Source: NMFS and Goodyear, 1999 & NMFS, 2000).

	Maryland	New Jersey	New York	Virginia
1984	600	200	400	500
1985	100	1,700	2,800	400
1986	500	1,200	2,200	300
1987	1,000	3,000	7,400	2,000
1988	1,900	6,200	16,000	2,500
1989	3,700	44,300	25,200	8,500
1990	6,809	30,884	28,645	2,478
1991	6,433	45,023	32,247	7,019
1992	4,204	38,717	25,732	4,293
1993	6,230	40,269	47,920	3,134
1994	10,363	68,542	37,436	7,304
1995	24,824	143,126	68,012	2,493
1996	4,727	34,282	13,321	7,012
1997	3,299	72,620	29,812	574
1998	14,958	40,412	30,972	1,043
1999	7,319	57,937	33,589	1,043

3.2.2.1.2 Wahoo

The commercial fishery for wahoo appears to be incidental to fishing for dolphin or other pelagic species. In New England landings while being sporadic, peaked at 16,720 pounds in 1994 and dropped off to 110 and 163 pounds for 1995 and 1996 respectively (Table 26). Landings for 1997 through 1999 have been 75 pounds or less. In the Mid-Atlantic annual commercial landings from 1984 through 1997 averaged 1,840 pounds. Landings increased to an average of 3,890 pounds in 1994 through 1997 and declined slightly to 3,104 pounds for 1997-2000 (Table 26). In the South Atlantic annual commercial landings ranged from 25,137 pounds in 1984 to 102,277 pounds in 1995 (Table 26). Average landings were 85,264 pounds in 1994-97 and declined slightly to 80,486 pounds in 1997-2000.

3.2.3 Economic Status of the Fishery

3.2.3.1 Commercial Fishery

Prior to the 1970s, most dolphin landings occurred in Florida; however, by the mid-70s there were significant landings in other areas within the South Atlantic region. During the late 1970s, landings increased in the northeast from Maine to Virginia (Thompson, 1999). Commercial landings of dolphin increased from 7% of total harvest in 1985 to about 19% by 1996 (Table 40). In 1995, commercial landings in the Atlantic exceeded 2.2 million pounds. This sector's landings exceeded one million pounds in 1989, and doubled in 1995. During the period 1997 to 1999 the proportion of commercial landings have dropped to around 11% of the total harvested in the Atlantic (Table 40).

Dolphin are caught off North and South Carolina mainly from May through July. Off Florida's east coast the main season occurs between April and June (Thompson, 1999).

Table 40. Proportion of total recreational and commercial dolphin landings by region. Data derived from Table 8.

Year	South Atlantic		Mid-Atlantic		New England	
	Recreational	Commercial*	Recreational	Commercial	Recreational	Commercial
1984	89.01%	10.93%	0.00%	0.04%	0.00%	0.01%
1985	93.22%	5.29%	1.32%	0.08%	0.00%	0.08%
1986	90.35%	7.03%	2.55%	0.06%	0.00%	0.00%
1987	88.50%	9.74%	1.47%	0.27%	0.00%	0.02%
1988	90.13%	6.85%	2.37%	0.38%	0.02%	0.25%
1989	83.76%	8.48%	6.87%	0.70%	0.06%	0.13%
1990	84.11%	10.88%	3.95%	0.78%	0.11%	0.16%
1991	83.71%	11.36%	4.12%	0.67%	0.07%	0.07%
1992	79.01%	9.21%	10.53%	1.11%	0.01%	0.13%
1993	65.08%	10.18%	21.43%	1.17%	1.85%	0.28%
1994	84.63%	10.36%	3.66%	1.15%	0.06%	0.14%
1995	79.58%	12.90%	5.38%	1.56%	0.47%	0.11%
1996	80.64%	12.45%	6.11%	0.64%	0.05%	0.10%
1997	85.20%	12.06%	1.70%	0.87%	0.07%	0.11%
1998	85.26%	8.54%	5.04%	1.03%	0.00%	0.14%
1999	87.94%	8.45%	2.63%	0.89%	0.03%	0.05%
2000	88.16%	6.85%	4.67%	0.27%	0.00%	0.05%
Avg. 84-97	83.33%	10.24%	5.31%	0.79%	0.22%	0.12%
Avg. 90-97	80.81%	11.40%	6.34%	1.01%	0.31%	0.13%
Avg. 94-97	82.38%	12.02%	4.19%	1.11%	0.19%	0.11%
Avg. 97-99	86.17%	9.86%	2.92%	0.92%	0.04%	0.10%

During the period 1994 to 1997, longline and hook and line gears (includes hand line, troll line, rod & reel, and electric reel) accounted for anywhere between 87-90% of the total commercial harvest (Tables 36 to 38). When data from all areas are combined, the longline catch accounted for 37% of the overall dolphin harvest in 1997 (Tables 36 to 38), and the hook and line category accounted for 50% of the total dolphin landings in that year (Tables 36 to 38). The hook and line category not only includes harvest by commercial gear but also bag limit caught fish that are sold by the recreational sector. Based on information from fishermen, the bulk of this recreational sale can be attributed to the for-hire sector.

Price Fluctuations in the Dolphin Fishery

Dolphin prices are similar to that of king mackerel. Price trend in the entire U.S. commercial dolphin fishery is depicted in Table 41a. Even though landings increased significantly during the early and mid 1980s, real prices continued to increase. This trend continued until 1989 when landings doubled from the previous year and prices declined. In the 1990s price reached an all time high in 1994 despite the increase in landings during this period. Rhodes (1998) speculated that this phenomenon was the result of unmet demand for other seafood products that could be substituted with dolphin products such as mahi-mahi steaks. This increasing price trend did not continue when landings reached 2.6 million pounds in 1995. Prices declined in 1995 reaching a seven year low in 1997. Rhodes (1998) also analyzed monthly price data and surmised that in the South Atlantic region, prices are at their lowest in the first half of the year, usually May to June.

It is difficult to determine what factors are responsible for the decrease in price in the years following 1995. Part of this effect may be due to increased landings that peaked in 1995 at 2.57 million pounds. Also, imports may have played a role in this price decline, however import data on dolphin are only available from 1997. Furthermore, The Fisheries Statistics & Economics Division of the National Marine Fisheries Service (NMFS) report only imports of frozen dolphin

fillets. A total of 15.75 million pounds of frozen dolphin fillets were imported at a value of $20.23 million dollars in 1997. In 1998 imports were 16.72 million pounds at a value of $23.95 million dollars. However, these figures may be underestimates of dolphin imports. Information from seafood distributors indicate that fresh, de-headed, and gutted dolphin, as well as other product forms, are also imported by U.S. buyers (Rhodes, 1998). Given the lack of historical and complete import data it is difficult to speculate on the influence of imports on domestic prices. A survey of U.S. buyers to collect data on all dolphin product forms imported into the U.S. by country of origin, time of year, and port of entry will provide some of the necessary information for market analysis.

Price Fluctuations in the Wahoo Fishery

In the United States fisheries for wahoo exist off North and South Carolina, primarily from April to September and off Florida's East Coast. The National Marine Fisheries Service first recorded landings of wahoo in the commercial catch in 1974 when they amounted to 1,000 pounds caught primarily off Florida. Landings during the period 1987 to 1993 (Table 41b) ranged between 160,000 to 370,000 pounds (Vondruska, 1999). Recently Louisiana has landed the most. In fact in 1997 more than 50% of total wahoo commercial landings came from Louisiana (Vondruska, 1999). Price per pound was less than $1.00 until 1985 (Table 41b). During the period from 1985 to 1994 real price fluctuated but remained below $1.23 per pound. From 1995 to 1997 the price per pound increased above $1.30 per pound.

Table 41a. Ex-vessel dolphin landings (thousand pounds), value (thousand dollars) and real price (1990 dollars) (Data Source: Vondruska, 1999).

Year	Landings	Real Value	Real Price (1990 dollars)
1979	111	88	0.79
1980	173	133	0.77
1981	132	116	0.88
1982	307	280	0.91
1983	321	298	0.93
1984	444	449	1.01
1985	422	504	1.19
1986	687	801	1.17
1987	648	879	1.36
1988	780	1,031	1.32
1989	1,561	1,766	1.13
1990	1,848	1,949	1.05
1991	2,430	2,771	1.14
1992	1,136	1,250	1.10
1993	1,242	1,505	1.21
1994	1,417	1,971	1.39
1995	2,570	3,214	1.25
1996	1,646	2,158	1.31
1997	1,995	2,086	1.05

Table 41b. Ex-vessel wahoo landings (thousand pounds) and real price (1990 dollars) (Data Source: Vondruska, 1999).

Year	Landings (1,000 pounds)	Real Price (1990 dollars)
1979	15	0.87
1980	23	0.83
1981	26	0.81
1982	30	0.83
1983	34	0.97
1984	30	1.00
1985	39	1.13
1986	52	1.23
1987	160	1.19
1988	312	1.12
1989	300	0.97
1990	203	1.21
1991	252	1.10
1992	365	1.05
1993	335	1.12
1994	249	1.15
1995	264	1.35
1996	231	1.31
1997	256	1.34

3.2.3.2 Recreational Fishery

The preceding section ("Description of Fishing Activity") provides a detailed account of the historical recreational catch of dolphin in the Atlantic by mode of fishing. In summary, the total 1999 recreational harvest accounted for 91% (10,127,970 pounds total recreational harvest and 1,050,090 pounds commercial harvest) of the total U.S. harvest in 1999 (Table 8). Most of this recreational activity occurs in the summer months, and charter boat and private boat modes (Tables 10 to 12) take the majority of the recreational catch of this species.

The size distribution of the catch from the recreational sector differs depending on the mode of fishing (Goodyear, 1999). Headboats harvest smaller fish compared to the other two modes. Just over 55% of the headboat catch are fish below 22 inches (550 mm) fork length. For the most part, the size distribution of fish harvested by private/rental boats and party/charter boats are fairly similar for both groups (Goodyear, 1999). Both size of fish caught and catch success rates are important determinants of the quality of the recreational experience, and thus the value of these recreational trips.

Information on the value of the dolphin recreational fishery in the Atlantic is not yet available. Apart from the economic value (consumer surplus) anglers derive from the resource, they generate significant economic impact through expenditures for recreational fishing which are important to coastal communities in the Atlantic. Data on economic impact of recreational fishing for dolphin are not available.

Like dolphin, the recreational landings of wahoo account for a larger proportion of the total harvest in the Gulf and Atlantic. In 1999 the total commercial harvest amounted to 99,159 pounds, compared to 1.41 million pounds harvested by recreational anglers (Table 26). Information on the value of the wahoo recreational fishery and data on economic impact of recreational fishing for wahoo are not available.

The charterboat sector in the South Atlantic and the Gulf of Mexico depend on dolphin as one of the main attractions for their clientele. Available data indicates that this species is less important to the headboat sector (Holland et al., 1999). Of all charterboat owners surveyed as part of a study to document the characteristics and economics of the for-hire sector in the State of Florida, 26% target dolphin. This species was much more important to the charter fleet operating in the Florida Keys and Florida's Atlantic Coast. Results from this study also revealed that 53% of charterboats in North Carolina and 60% of charterboats in South Carolina target dolphin (Holland et. al., 1999).

In their study Holland et al. (1999) measured capital investment, average annual expenses, and average revenue in the for-hire sector. A summary of this data is contained in Table 41c. On average it appears that investment in equipment is much higher in Florida compared to the rest of the South Atlantic.

In terms of fixed costs, it is unclear as to whether these expenditures were apportioned to charters and other revenue earning activities for the vessel. Some charterboats are full-time operations while others may only operate charters on a seasonal basis and could be commercial harvesters for part of the fishing year. For part-time operations the total annual fixed costs can be attributed to several activities including commercial fishing.

Table 41c. Summary of Capital Investment, Average Annual Expenses, and Average Annual Revenue on Charterboats. Data on Florida includes information for the entire State of Florida (Source: Holland et. al., 1999).

Item	Florida	North Carolina	South Carolina	Georgia	Average for NC, SC, GA
Average Capital Investment:					
Hull and Superstructure	$90,989				$39,445
Engine	$40,518				$14,586
Electronics	$5,568				$5,900
Other Equipment and Tackle	$5,878				$4,463
Average Annual Expenditures					
Wages and Salaries	$25,810				$17,298
Fuel and Oil	$8,224				$7,575
Engine	$6,334				$2,738
Maintenance and Repair	$5,720				$4,991
Docking Fees	$4,604				
Hull and Superstructure	$3,020				
Insurance	$2,970				
Other Equipment and Tackle	$2,404				
Advertising	$2,041				
Average Total Exp.	**$68,574**	**$46,888**	**$23,235**	**$41,688**	
Average Annual Revenue	**$68,816**	**$60,135**	**$26,304**	**$56,851**	

Crew wages may be underestimates in that they do not reflect the "tips" left by customers. Out of state anglers typically give the fish they catch to the crew members on these charter vessels in lieu of a tip. Crew members, and sometimes vessel owners, sell these fish. The frequency of this practice varies by state within the South Atlantic region and may be more common in Georgia and the Florida Keys. Income derived from bag limit caught fish is not reflected in these revenue estimates or crew salaries. As a result it could be misleading to use this information to determine profitability of the charterboat fleet in each state under current operating procedures. However, these data provide a first step in describing the economic characteristics of this sector.

3.2.4 Social Status of the Fishery

There is little data available that is directly applicable to dolphin and wahoo recreational and commercial fishing communities in the U.S. Atlantic. The data that are available are only partial for some communities and then, in many cases, only some sectors in those communities (commercial, charter, and/or recreational). Until complete and comparative social research is carried out in these regions, the following overview must be considered the best available data on the social characteristics of these fishing communities. However, the community profiles that are included below should be viewed as representative of fishing communities throughout the various geographic regions of the dolphin wahoo fishery. All of the communities profiled count dolphin and wahoo as a fishery that is exploited at least for a portion of the year and at least among one or more user groups.

This lack of complete data should not be seen as necessarily detrimental to the analysis of possible social impacts accruing from this proposed fishery management plan. Rather, the data that are available allows for reasonable predictions of social outcomes due to management measures. What social impacts that occur in one community can then be reasonably expected to occur in other communities that are either somewhat larger or smaller, older or less historical, and with somewhat different demographic, cultural, and economic mixes. This is stated as an acceptable procedure in the CFR Sec.1502.22 when one must proceed with less than complete data.

In order to better understand how a fishing community is defined according to the MSFCMA, the following discussion has been included. **This following section has been drawn directly from the SAFE Report (SAFMC, 1999), Section 3.2 (references are included in the SAFE Report; Table and Figure numbering is from the SAFE Report).**

> *"With the addition of National Standard 8, FMPs must now identify and consider the impacts upon fishing communities to assure their sustainable participation and minimize adverse economic impacts [MSFCMA section 301 (a) (8)].*
>
> *The proposed guidelines for this new standard state: "... fishing communities are considered geographic areas encompassing a specific locale where residents are dependent on fishery resources or are engaged in the harvesting or processing of those resources. The geographic area is not necessarily limited to the boundaries of a particular city or town. No minimum size for a community is specified, and the degree to which the community is 'substantially engaged in' or 'substantially dependent on' the fishery resources must be defined within the context of the geographical area of the FMP. Those residents in the area engaged in the fisheries include not only those actively working in the harvesting or processing sectors, but also "fishery-support services or industries," such as boat yards, ice suppliers, or tackle shops, and other fishery-dependent industries, such as ecotourism, marine education, and recreational diving." [Federal Register Volume 62, Number 149 (August 4, 1997)]*

"The term 'sustained participation' does not mandate maintenance of any particular level or distribution of participation in one or more fisheries or fishing activities. Changes are inevitable in fisheries, whether they relate to species targeted, gear utilized, or the mix of seasonal fisheries during the year. This standard implies the maintenance of continued access to fishery resources in general by the community. As a result, national standard 8 does not ensure that fishermen would be able to continue to use a particular gear type, to target a particular species, or to fish during a particular time of the year." [Federal Register Volume 62, Number 149 (August 4, 1997)]

"The term 'fishing community' means a community that is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities. A fishing community is a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries-dependent services and industries (for example, boatyards, ice suppliers, tackle shops)." [Federal Register Volume 62, Number 149 (August 4, 1997)]

In order to determine a community's "substantial dependence" or "sustained participation" on fishing, those communities must first be identified. Presently, the NMFS has not identified fishing communities, nor their dependence upon fishing in the South Atlantic. Moreover, there are no ongoing data collection programs to gather the necessary information that would allow for the identification of fishing communities in the South Atlantic or other regions. Also, there are no future plans to implement any such data collection program that would determine dependence upon fishing in order to provide the Councils with important information necessary for social and economic impact analysis of fishing communities. This leaves the councils with existing data collected through other agencies, not always specific to fisheries management, i.e., census data, regional economic census, and previous research on specific fisheries. Although this data can be useful, it is often not specific enough to identify or provide a clear representation of a community and its dependence upon fishing. One reason for this difficulty is that fishermen in a specific fishery often do not reside within one particular municipality that can easily be identified as a fishing community or one that is substantially dependent upon fishing. Also, that information is often not provided at the municipality level, but more often at the county level.

Commercial fishermen may have a domicile (home) in one community and dock their boat in another. They may sell their fish in either place or an entirely different location. Recreational fishermen often do not live on the coast, but drive from inland counties and may launch their boats or fish from several different sites. For these reasons, identifying a "fishing community" becomes problematic in that such a community does not fit the normal geographic boundaries or fall within the metes and bounds that would surround a normal incorporated municipality.

The impacts of fisheries management may be minimal in a single community, but, when taken overall may be substantial to an entire county or several county area. Those same measures may have a small impact on a large metropolitan area, but, to a neighborhood where most fishing families live or most fishing activity originates it could be substantial. Therefore, a "fishing community" may encompass a single municipality, a county, several counties or one neighborhood within a major metropolitan area depending upon a variety of demographic, social, economic and ecological factors that one must consider."

3.2.4.1 Overview of Potentially Impacted Fishing Communities – U.S. Atlantic Region

It is important to note that when discussing fishing communities, a holistic view should be incorporated, that is, all the fishing sectors in the community should be accounted for, as they are interdependent to varying degrees.

The following descriptions of fishing communities are not in any sense complete. In earlier versions of this FMP, a general description of fishing communities in the South Atlantic was included. This section has not been retained in this section because it is out-of-date and not directly applicable to the dolphin wahoo fishery. However, this material can be found in Appendix G. The following are descriptions of fishing communities that at this time best represent the different socioeconomic sectors of recreational (charter, headboat and private vessels) and commercial fishers. When the new Year 2000 Census Bureau figures are released these descriptions will be updated [Note: data are available but have not been analyzed.]. Where possible, after or separately each community description, additional newer information on the different fishery sectors has been added. One additional caveat should be noted: all the following communities in some way harvest dolphin and/or wahoo. Therefore, each of these communities may be impacted positively or negatively by the FMP. What follows does not represent all potentially impacted communities and until more research is done, the extent of the impacts will be unknown.

The communities have been grouped by state in order to allow for more ease in accessing the information.

3.2.4.1.1 Overview of Fishing Communities by State

Until very recently, prior to the publication of New England's Fishing Communities (Hall-Arber et.al., 2002) there had been no readily available information that addressed fishing communities in New England. However, this publication does not address fishing communities as they relate to dolphin or wahoo fishing in New England. This reflects the fact that these fisheries constitute a miniscule percentage of all landings, recreational or commercial.

For the Mid-Atlantic, there are limited data on fishing communities, but it too does not reflect detailed participation in the dolphin wahoo fishery. Only one fishing community in Virginia – Wachapreague – has been studied and noted to register a dolphin wahoo fishery. For this reason the community profile is included in its entirety. The same is true for the communities of Wanchese and Hatteras in North Carolina. What follows is a brief description and/or listing of identified fishing communities of the Mid-Atlantic and South Atlantic. This listing has been included in order to help those who might conduct future social impact assessments identify where potential social impacts may be felt from the implementation of this fishery management plan. It is important to note that the data from the Census is from 1990 (unless otherwise noted), and as of this writing, cannot be updated because the Census Bureau has not released more than general population figures.

NEW YORK

New York's commercial fisheries are concentrated on Long Island, which extends from Brooklyn, a borough of New York City, to the far eastern ports of Montauk and Greenport. There are also small, but historically and culturally important, fisheries for migratory species on the Hudson River and other rivers. The Great Lakes fisheries are entirely recreational and beyond the scope of this report. In 1998, almost 55 million pounds, worth over 84 million dollars ex-vessel, and of course much more when multiplied by values created as seafood is processed, distributed, and sold to consumers, were landed in New York and recorded by the NMFS.

Freeport/Point Lookout
Oceanside
Montauk
Greenport
Orient/Orient Point
Shelter Island
Fishers Island
Southold
Cochogue
Mattituck
Three Mile Harbor
Amagansett,
Shinnecock/Hampton Bays
Mt. Sinai

Total commercial landings of dolphin in the state of New York between 1990 and 2000 equaled 341,517 pounds. Total commercial landings of wahoo for the state of New York equaled 11,014 pounds (NMFS personal communication, 2002). Table 13 shows recreational dolphin landings ranging between 0 and 437,883 pounds from 1984 through 1999. Table 28 shows recreational landings of 259 wahoo weighing 1,772 pounds in 1991.

NEW JERSEY

New Jersey is the most densely populated and one of the most industrialized and urbanized states in the nation. Although small in area, it also has a long coastline, about 100 miles, as well as two major tidal rivers, the Hudson and Delaware, and numerous estuaries inside its barrier islands and embayments. Much like New York, its fisheries are found in both urban and rural settings…

…The major fishing ports of New Jersey, from north to south, are Belford, a diversified commercial port with a marketing cooperative; Atlantic Highlands, a charter-boat and party-boat center; Highlands, a small lobstering and clamming port; Shark River (Neptune/Belmar), another small lobstering and recreational fishing port; Brielle, a charter-boat and party-boat recreational fishing center; Point Pleasant Beach, a diversified commercial and recreational port with a marketing cooperative and significant surf clam/ocean quahog activity; Barnegat Light (Long Beach Island), combining recreational and commercial fishing with a strong tradition of deep-water longlining but now diversified; Atlantic City, a surf clam/ocean quahog port; Sea Isle City, a small, diversified port; Wildwood and Cape May, both commercial and recreational, with significant surf clam and ocean quahog, scalloping, finfish dragging, and other fisheries (the largest port in the state and the site of several large seafood packing and processing firms); and Port Norris, once the center of oystering but now mostly the site of crabbing and finfishing plus oyster and clam processing plants. Small-scale clamming, crabbing, and other kinds of fishing take place from numerous other sites around the 100 miles of New Jersey's coast, and substantial seafood processing can be found in various inland communities.

Total commercial landings of dolphin for the state of New Jersey totaled 551,426 pounds from 1990 to 2000. Total commercial landings for the state of New Jersey for wahoo totaled 15,482 pounds from 1990 to 2000 (NMFS, personal communication, 2002). Table 13 shows recreational dolphin landings ranging between 0 and 315,071 pounds from 1984 through 1999. There have been no recorded recreational landings of wahoo.

DELAWARE

The state of Delaware mostly borders on the Delaware Bay and its tributaries. Consequently, its inshore and EEZ ocean fisheries are minor. Its fisheries are "bayman" or "waterman" fisheries. According to a member of the Mid-Atlantic Fishery Management Council and a Sea Grant marine advisory agent in Delaware, gill-netting predominates, and there are no large vessels using gear like otter trawls. According to an official at the state Division of Fish and Wildlife in Dover, there are 120 licensed commercial gill-netters in the state and they all work inshore.

Because of the genuine lack of commercial fishing communities focused on offshore fisheries that would include dolphin and/or wahoo, it will only be noted here that total commercial landings of dolphin for the State of Delaware totaled less than 1000 pounds from 1998 to 2000. No records are given for the State of Delaware for commercial wahoo landings (NMFS, personal communication, 2002).

Recreational fishing predominates in Delaware. A survey has not been done in many years, but the Sea Grant marine advisory agent estimated about 80 recreational marinas in the state. He said that probably 30 to 35 of the ones that are in the coastal bays are community marinas, i.e., open only to residents. A quick search on the Internet produced a listing (but most likely not complete) of current for-hire vessels out of Delaware marinas. Many of the boats listed at the web pages of the Delaware marinas include dolphin and wahoo as targeted fish for offshore charters (see, for example, http://www.oldinlet.com). Table 13 shows dolphin landings ranging between 0 and 90,578 pounds from 1984 through 1999. Table 29 shows landings from 1990 through 1996 ranging between 62 and 322 fish weighing between 426 and 8,662 pounds.

MARYLAND

Maryland has two distinct fishing regions: the seaward coast of the Delmarva Peninsula and the Chesapeake Bay. Ocean City, on the sea coast, is the major port for ocean fisheries of the EEZ and of Mid-Atlantic Fishery Management Council concern.

Recreational fishing for dolphin and wahoo in Maryland does exist, but it is not known to what extent. One event, the White Marlin Open, billed as the largest billfishing tournament in the world, has tournament categories for dolphin and wahoo, indicating not only the presence of these fish in Maryland's recreational fishing profile, but also that they are a valued fish in the recreational repertoire.

Total commercial landings of dolphin for the State of Maryland totaled 86,965 pounds from 1990 to 2000. Total landings for the State of Maryland for wahoo totaled 4,395 pounds of wahoo from 1990 to 2000 (NMFS, personal communication, 2002). Table 13 shows recreational dolphin landings ranging between 0 and 1,087,649 pounds from 1984 through 1999. Table 30 shows recreational landings in only 1983 when 1,925 wahoo weighing 56,405 pounds were landed.

VIRGINIA

Virginia has one of the largest amounts of fish landings in the United States, largely because of the menhaden which are landed and processed in Reedville, Northumberland County, on the western shore of the Chesapeake Bay. Virginia is also known for its waterman fisheries for oysters, blue crabs, etc., mainly in the Chesapeake Bay and its tributaries but also in numerous small bays along the Atlantic coast of the southern Delmarva Peninsula. There are six major ports where large, ocean-going fishing vessels unload their catches: Hampton, Newport News, Virginia Beach, Seaford, and Chincoteague,. In the U.S. census, the first three are largely within the Metropolitan Statistical Area of Norfolk-Virginia Beach-Newport News. These

"Hampton Roads" ports are within a major tourist region, anchored by Chincoteague, Williamsburg, and Virginia Beach. The military is also a large presence, as are numerous heavy and high tech industries. Chincoteague is one of several ports where local seafood businesses depend on migratory fishing vessels from other regions, such as North Carolina or Massachusetts, for landings. The highest value product of the ocean fisheries is the sea scallop; hard clams (quahogs), blue crabs, and oysters are the equivalent in the bays and estuaries. "Shark fishing" for spiny and smooth dogfish and by-catches of angler (monkfish) have emerged in recent years as important fisheries in some ports. Again, a cursory search of the Internet revealed that both dolphin and wahoo are valued recreational fishing targets, both in the for-hire sector and for tournament fishing.

Total commercial landings of dolphin for the State of Virginia totaled 86,965 pounds from 1990 to 1995 (NMFS website does not list landings for other more recent years). Total landings for the state of Virginia for wahoo totaled 1,603 pounds of wahoo from 1990 to 2000 (NMFS, personal communication, 2002). Table 13 shows recreational dolphin landings ranging between 0 and 463,572 pounds from 1984 through 1999. Table 31 shows recreational landings from 1985 through 1997 ranging from 0 wahoo to 1,203 wahoo weighing 41,638 pounds.

The following data on Wachapreague, VA has been excerpted from McCay and Cieri (2000). This community has been included because it is noted that recreational fishermen in this community often target dolphin fish and wahoo.

"Field Observations and Interviews, Wachapreague, VA, July 1999

The one packing house in Wachapreague is owned by a married couple who had a business in another town before coming here 4 to 5 years ago. They have 6 or 7 boats now that go out 20 to 30 miles for croaker, spot, shark (dogfish), conch, and hard and soft crabs. There once was a clam house here as well. The 1998 NMFS landings for Wachapreague were small, mainly gill-netting for horseshoe crabs and pot-fishing for conch and blue crabs.

Captains and crew on the boats are mostly local. In July, 1999 they were fishing for shark (dogfish). Boats come in from North Carolina to Massachusetts. Currently this business wholesales exclusively and sends it product to other wholesalers by common carrier. Plans call for a retail market in the future.

The boats shift from longlining to gillnetting to conch or crab potting. There are usually three crew per boat, all in their 30s and 40s. There are no female fishers in the area.

Other Observations on Wachapreague

In November 1999 Dr. Peter Fricke, of the Sustainable Fisheries Division of the National Marine Fisheries Service, researched the status of Wachapreague as a "fishing community" under the definition of the Magnuson-Stevens Act. His brief study, done by consulting U.S. Census and state and federal fisheries data and making phone calls to port agents and other knowledgeable persons, shows what can and should be done for individual ports when and if they are identified as critical for particular FMPs. With his permission, we reproduce his report on Wachapreague which was prepared in response to review of the spiny dogfish FMP of the New England and Mid-Atlantic Fishery Management Councils. The level of detail provided here was not possible for our study but should be provided in specific FMPs.

Wachapreague, VA is a small rural, non-farming community on the Atlantic Ocean side of the Eastern Shore of the Chesapeake Bay. It lies in Accomack County and is approximately 60 miles North of Norfolk, VA and the same distance South of Salisbury, MD.

Wachapreague provides a sheltered harbor behind a series of barrier islands lying offshore to the East, and is close to U.S 13, a major highway connecting Norfolk and the Carolinas with eastern Maryland, Delaware and Philadelphia. At the time of the 1990 Census, Accomack County had a population of 31,703 and Wachapreague had 313 residents (the 2000 Census gives the county population at 38.305 and Wachapreague's population at 236). The town is incorporated, and has three marinas that provide local moorage. Two of these marinas are privately owned, and in addition to moorings each provides a launching ramp, a bait and tackle shop, and a restaurant. The town owns and operates the third marina, which also has a launching ramp. A fish packing house is located next to the seawall, which provides dockage for four vessels owned by the packinghouse. Other businesses in the community include a grocery and a hotel. Respondents report that employment and commercial activity in the community peak in the summer months. Most businesses are reported to rely on the participants in recreational fisheries for their principal earnings, and the commercial fisheries for a year-round trading base.

Wachapreague, VA at a Glance (1990):

Item	*Number*	*Employment or value*
*Population**	*313 persons*	
*Households**	*159 households*	
*Pop. Aged >64**	*41%*	
*Workforce**	*106 persons*	
*Live and work in community**	*32 persons*	
*Household income**		
Transfer income	*40 percent*	
Earned income	*60 percent*	
Fishery businesses		
Marinas	*3*	*5 persons FTE***
Bait & tackle	*2*	*4 persons FTE*
Boat ramps	*3*	*1 person FTE*
Restaurants	*3*	*12 persons FTE*
Hotel	*1*	*8 persons FTE*
Fish dealers	*2*	*3 persons FTE*
Packinghouse	*1*	*8 persons FTE*
Grocery	*1*	*3 persons FTE*
Commercial boats(all)	*25 approx.*	*(75 persons seasonally)*
Homeported	*5*	*15 persons FTE*
Transients:		
Other VA.	*14*	
Out-of -State	*6 approx.*	
Charter boats (all)	*15 approx.*	*(35 persons seasonally)*
Homeported	*7*	*9 persons FTE*
Transients	*8 approx.*	
Recreational boats		
Year-round	*40-50 approx.*	
Commercial fish landings (all)	*362,167 pounds (100%)*	*$110,104 (100%)*
Dogfish	*236,000 pounds (65%)*	*$44,480 (41%)*

** 1989 Bureau of Census data. All other information is for 1997.*
*** FTE ~ full time equivalent employees; estimate of year round employment*

Once known as the "flounder capital of the world," Wachapreague continues to be actively involved in recreational fisheries. The marinas provide some 100 slips between them,

with between 40 and 50 private recreational fishing boats moored for the full season. Other transient boats use the marina slips, but the greatest use of the facilities is reported to be by trailerable boats launched from the ramps by fishermen travelling from the Norfolk area, Maryland and Delaware. It was reported that, during the summer flounder season (mid-April to mid-September), parking spaces in the community are non-existent at weekends and on holidays because of street parking by boat trailers and towing vehicles. Seven charter boats were reported to be based in Wachapreague year-round, and another eight to ten charter boats, from as far away as Florida, operated from Wachapreague during the flounder season. The charter and party boats homeported in Wachapreague hold Federal permits for Atlantic tuna angling (5), Atlantic tuna general (1), black sea bass (1), NE Multispecies groundfish (1), scup (1), squid-mackerel-butterfish (1), and summer flounder (1).

Principal inshore recreational fisheries are for summer flounder (fluke), croaker (hardhead) and spot. Striped bass (rockfish), red drum, black drum and sea trout (weakfish) are also reported to be taken inshore. The offshore recreational fishery (mid-June to mid-September) is for bluefin tuna, yellowfin tuna, dolphin (dorado; mahi-mahi), wahoo, white marlin, blue marlin and sharks. The marinas and local sportfishing organizations sponsored nine recreational fishing tournaments in 1997.

Wachapreague Recreational Fishing Tournaments, 1997

Month	***Tournament***
April	*Wachapreague Marina Spring Flounder Tournament*
April	*Capt. Zed's Wachapreague Spring Flounder Tournament*
June	*MSSA Tuna-ment*
June	*Annual Greater Atlantic Bluefish Tournament*
July	*Eastern Shore Marlin Club Tournament*
August	*"Chick-charter" Ladies Tuna Tournament*
August	*Wachapreague Fall Flounder Tournament*
August	*Fish for Hope Charity Tournament*
September	*Eastern Shore Marlin Club Fall Tournament*

In 1997, spiny dogfish comprised 65.2 percent of commercial landings by weight and 40.7 percent by value, of all reported landings at Wachapreague. Other landings are made, such as conch, which are trucked by fishermen to other ports and sold there to dealers. These landings will appear in the port-of-sale's landing data and will not be attributed to Wachapreague. Moreover, landings from fishing operations within the three-mile territorial sea or for fish, such as conch, for which Federal permits are not required, do not always

appear in the NMFS weighout data. This information is reported to the Commonwealth of Virginia's VMRC as a condition of state permits.

Two dealers holding Federal permits operate in Wachapreague. One dealer operates the packinghouse, the second offloads from vessels into trucks for direct delivery to retail establishments or processors in other communities. The packinghouse in Wachapreague holds a range of Federal permits for local fisheries that require them, and most reports of landings are provided by this facility to NMFS. In addition to packing the landings of the vessels fishing in the territorial sea and exclusive economic zone, the Wachapreague packing house also is reported to pack finfish and crab landings from Chesapeake Bay fisheries which are trucked to the facility across the peninsula. The packinghouse is family operated and employs 8 to 10 staff on a seasonal basis. The packed products are shipped to seafood processors by tractor-trailer. It is reported that a dedicated tractor-trailer hauls dogfish, during the season, to processing plants in Massachusetts.

Wachapreague is an established community, and recognizes its roots in fisheries and agriculture with an annual community fair and exhibits of old photographs and memorabilia. A preponderance of the County and Wachapreague's residents (79 percent) lived in Accomack County in 1985. However, 70 percent of Wachapreague's residents lived in the same house in 1985 as they did in 1990, in contrast to 60 percent of Accomack County residents. The depth of the roots of the community can be seen in the 1990 Census data.

Wachapreague has an elderly population compared to Accomack county; 41.5 percent of Wachapreague's residents were over the age of 65 years and only 16.2 percent of the residents under 25 years of age in 1990. In Accomack County residents over 65 years of age formed 18.5 percent of the population, while those under 25 years of age comprised 31.7 percent at the time of the 1990 Census. The residents of Wachapreague are white; in 1990 no members of minority groups lived in the community. In contrast, the white residents of Accomack County formed 65 percent of the county's population in 1990.

The gender balance of the populations of Wachapreague and Accomack County was similar; 47.5 percent male and 52.5 percent female. However, household composition differed markedly between Wachapreague and Accomack County in 1990, due to the distinctive population age structures. In Wachapreague most residents lived in two-person households (46.5 percent of 159 households) and 34.6 percent of the households had one resident. In Accomack County, 38.7 percent of the 12,646 households had three or more persons living together, 34.1 percent of the residents lived in two-person households while 27.2 percent lived alone.

Of the 313 persons resident in Wachapreague in 1990, 106 were employed in the work force. Of those employed, 32 persons (30.2 percent) worked in the community. In fact 77.4 percent of Wachapreague's work force were working in Accomack County or Wachapreague itself, while 17 percent worked in Northampton County or the Norfolk/Hampton Roads area to the South. Six persons (5.6 percent of the work force) were employed out of state, in Maryland. In Accomack County as a whole, in contrast, only 13 percent of the work force (13,643 persons) worked in their communities of residence, while 84.5 percent worked within the County. Some 882 persons (6.4 percent of the workforce) commuted south to Northampton County or Norfolk/Hampton Roads, and 1,229 persons (9 percent) worked out of state in Maryland. The employment patterns of commuters in part reflects Wachapreague's location in the southern third of Accomack county and the availability of unskilled and semi-skilled work in the poultry farms and packing houses of the Delmarva Peninsula.

The educational attainments of the residents of Wachapreague and Accomack County as a whole differed. Of the residents over 25 years of age in Wachapreague (n=262), one-

third had not completed high school graduation requirements compared to two-fifths of County residents over 25 years of age (n=21,643). In Wachapreague, 14.1 percent had acquired a tertiary education qualification compared to 13.4 percent of residents of Accomack County over 25 years of age.

While three of Wachapreague's 313 residents lived on farms, no one declared income from farming in 1990. The 1990 census shows that 8 persons were employed in farming, forestry or fishing industries and 5 in farming, forestry or fishing occupations. Employment in transportation was 12 persons. The census also indicates that 58.5 percent of the Wachapreague work force was in the private-for-profit sector and 21.6 percent was self-employed. Information provided by respondents comports with this census data. Since the majority of fishermen are paid on a "share" basis, they are deemed, for tax purposes, to be self-employed. Employment on the four local commercial vessels would be between 12 and 16 persons, and the local charter fleet of seven vessels would provide seasonal employment for between 14 and 18 persons. Year-round employment at the private marinas was estimated to be 8 persons, with seasonal employment up to 15 persons. The packinghouse was estimated to employ 8 to 10 persons year round, with additional staff hired as necessary. Obviously, County residents would fill some of these jobs, since only 32 Wachapreague residents were reported to work in the community.

The median income of Wachapreague households in 1989 was $19, 917, while that of Accomack County households was $20,431. The older population in Wachapreague introduced significant differences in the income patterns between community households and County households. Of the 159 households in Wachapreague 59.1 percent (94 households) reported earned income in 1989, compared to 74.3 percent of Accomack County households. In Wachapreague, 36.4 percent of the households received retirement income and 56 percent of households received Social Security payments. In contrast, only 18 percent of Accomack County households received retirement income while 37.3 percent of County households received Social Security payments.

To summarize, Wachapreague demonstrated in 1990 the profile of a rural town with an older, retired population with some 41 percent of residents receiving income in the form of transfer payments from retirement funds and/or Social Security. Of the employed residents of the town, only one-third works within the community. Thus approximately 70 percent of the working population earned income from sources other than the community's businesses. The businesses of the town are fishery-oriented, with respondents suggesting that direct employment and earnings in the recreational and commercial fishery sectors are split 2:1 between the two sectors. Since the recreational fishery is highly seasonal, peak employment in Wachapreague may exceed 100 jobs at the height of the summer season.

The dependence of some 20 percent of community households for income earned from fishing related activities indicates that this is a fishery dependent community economically. As noted it is estimated that two-thirds of this income is related to recreational fisheries and one-third to commercial fisheries. The proportion of long-term residents, fishing related community events and activities, and the number of retirees, indicate that the social and cultural needs of the population are satisfied by this water-front community and that fishing, both commercial and recreational, is substantially engaged in by the residents of the community.

With regard to the dogfish fishery, the packinghouse and its vessels employ some 20 persons. Any changes in the dogfish fishery would directly impact these persons and this business. Alternative employment might be available in an expansion of the services related to the recreational fishery and in charter-boat operations in the long-term, but more likely

displaced packing house employees would need to find work in the poultry processing and trucking businesses of Accomack County and the Delmarva Peninsula. For the watermen affected by any changes in the dogfish fishery, the future is less bright. Dogfish make up 65.2 percent, by weight, of the catches landed in Wachapreague, and thus a major portion of the local vessels seasonal round of fishing. The recreational fishery is largely a small-boat and trailer fishery, and future opportunities to enter the seasonal charter fisheries would require a significant upward demand in charter boat services. In a worst case scenario of loss of the dogfish fishery due to stock failure or management action, the community would probably lose a significant portion of its community-based winter employment, and would have to rely on seasonal recreational fishery-related employment and businesses.

NORTH CAROLINA

The following two community profiles describe an example each of a recreational community and a commercial community.

Recreational Fishing

The following section is from McCay and Cieri (2000) and focuses primarily on the recreational harvest of dolphin and wahoo.

Field Observations and Interviews, Dare County, North Carolina
Summer 1998, July 1999

Hatteras

Hatteras and Its Fishery
(Note: This part is based on field research done by Doug Wilson in 1998 for the Highly Migratory Species social impact assessment, Wilson and McCay 1998).

Hatteras Village is a rural community at the southern end of Hatteras Island on North Carolina's Outer Banks, part of Hatteras Township (pop. 2,675 in 1990). Hatteras Island is the "classic example" of a dynamic barrier island, which is bordered by the Atlantic on the east and Pamlico Sound on the west. Noted for it's vast marine resources, the area is also an important point of departure for marine vessels, and has historically been considered a strategic location on the coast of North America during war.

Geographic isolation adds to the local character of Hatteras. Respondents said that it is a place where people feel safe. Some people leave their houses unlocked. It feels safer because it is an isolated island community. A ferry leaves Hatteras to go to neighboring Ocracoke Island. Usage of the ferry is very heavy in the summer when you can bet get cars backed up for a half a mile. The village is quite and insular and "made up of a lot of people who came here to get away from something."

In the 18th century, Hatteras established itself as a seaport community, where activities included whaling and exporting/ importing. However, due to the dynamics of the barrier island geography, Hatteras Inlet was closed in 1764, only to be opened up again during a large storm in 1846. Since World War II the economy of the Hatteras community has depended on charter and commercial fishing as the major sources of local income; tourism also serves as an important economic activity.

Seasonal variation in the local economy of Hatteras is due to the presence of three "seasons". In the spring, revenue begins to pick up during weekend and holiday tourism; it is during this period of time (April to May) that approximately 30 boats from the commercial fleet become active in charter fishing. The second season, approximately June through August,

begins when schools let out for the year and family vacations are frequent. The third "season" is the fall, when fishing, surfing and windsurfing are the dominant activities.

In Hatteras, 57% of employees are private for profit wage and salary workers. Tourism and recreation are major industries in Hatteras in terms of employment. Commercial fishing is also a major occupation on Hatteras Island, where there are approximately 500 to 600 part and full time commercial fishermen; recreational fishing is a source of seasonal employment. According to the 1990 Census, twenty-one percent of employed persons work for the local (8%), state (7%) or federal (6%) government; these public sector jobs include ferry workers. Self-employed workers make up 16% of the employed work force.

When combined, managerial, professional, technician, and administrative jobs account for nearly half of the occupations reported in the 1990 Census. Farming, forestry and fishing jobs are held by 6% of those employed in Hatteras.

Fishing Related Businesses

In Hatteras there are five seafood wholesalers and one retail market; there are three marinas. Businesses in surrounding communities such as Manteo and Buxton also add to the marine economy. Hatteras Village is almost totally dependent on fishing. While non-fishing tourists, especially windsurfers, are attracted to beaches elsewhere on the island, Hatteras Village's own beaches are less appealing. Tourists come to Hatteras because they want to fish. Our oldest respondent (in 1998) told us that when he was growing up the only thing to do was fish. He remembers one morning, fifty years ago, counting some 260 boats going out of the harbor. They were gillneting for trout and croakers and "caught a lot more fish than is being caught now." The recreational and charter fishing industry's history is just as proud. The wall of one charter boat office is covered with captioned pictures displaying the history of the Albatross Fleet. In 1937, the four sons of a commercial fisherman went into the charter business. Their first sailfish was caught in 1940. Tarpon and dolphin began in 1940. They hired a publicist to spread the word about big game fishing in Hatteras. They caught their first marlin in 1951. In 1952, the first blue marlin was caught by a lady. In 1962, The Albatross III caught a world record, 810 lb blue marlin. The headline on a yellowing copy of a 1958 New York City newspaper article proclaims the shocking news of an "Angler Deliberately Releasing a Blue Marlin!" (Hurley 1958). The angler was Jack Cleveland of Greenwich CT fishing on the Albatross.

Marinas and Charters

As we did for Point Pleasant/Brielle, New Jersey, we offer some detail on the sports-fishing component of Hatteras, which is otherwise not treated in this study. It is based on field research done in 1998 by Douglas Wilson (Wilson and McCay 1998).

A charter boat captain related in 1998 that newcomers are amazed at how good the fishing is. Ditton et al. (1998) did a survey of both private and charter boat anglers in Hatteras in the winter of 1997. Their results support the captain's assertion. They found that of 644 anglers, 46 percent agreed with the statement "I caught more fish than I expected on this trip" and 42 percent agreed that they "could not imaging a better fishing trip." The winter season is bluefin tuna. In early spring they get puppy drum on the beach, and offshore yellowfin tuna, dolphin, wahoo and marlin. Sailfish come in June. In the summer with the warm water they get "all fish": flounder, cobia, speckled trout, drum, wahoo, marlin and sailfish. In the fall are flounders, king mackerel and rockfish.

The marinas are 100 percent fishing related. Over the course of the year most people come to fish with their boats, both trailer boats and over water boats. A marina owner estimates that half of the parties are all men and about half families. The families go to the beach, the shops, and amusements such as go cart tracks. The winter bluefin tuna fishing brings a greater percentage of the trips to the charter fleet In their census of fishing trips during the bulk of the 1997 winter season, Ditton et al. (1998) found only 27 percent of bluefin tuna fishing trips were in private boats and the rest in charter boats. Ditton et al. (1998) found 51 charter boats in Hatteras in January.

Make up charters, where marinas organize the parties, are becoming more and more common. A captain estimated that his marina did 140 make up charters in the past year. The majority of the charter customers are after a good experience with offshore fishing. One captain, who has been chartering for many years, believes that the motivations of the charter customers are changing. He describes the current group as people who want to get way from city jobs and have fun with something really different. A lot of them are outdoorsmen in other areas. The fishing puts them in touch with wild creatures. The "game hogs," meaning those primarily interested in getting a lot of "meat," have dwindled. He sees the customers as will to accept limits when they are imposed. Often they are more willing to accept limits than people who have fished all their lives. Meat, however, is still an important motivation for all anglers except for billfish anglers. In fact, another captain, who does about a quarter of his business on billfish, sees the growing catch and release ethic as having reduced angler interest in marlins.

Captains say it is very hard to find a year round mate. The college students who work in the summer can make more money when they graduate. It's a good lifestyle for a college student, but to find someone year round they have to like to fish. These are more skilled fishers and they want their own boats. One captain said that "of the boats that are fishing year round, you can bet that the mates that they have are looking for a boat to fish in the future." He estimates that about one in five mates are married and supporting a family.

Changes in fishing affect charter bookings almost instantly. Within a couple of weeks after a fish species is gone the marinas will start to get cancellations. Charter customers show little loyalty to North Carolina as a place to fish. Ditton et al. (1998) found that less than a majority of charter boat anglers (44 percent) opposed restricting NC fishing to benefit other parts of the coast, while a majority of the private anglers (57 percent) opposed the measure. They also found that anglers from NC were more likely to oppose the measure.

Because Hatteras attracts top sport fishers from around the world, the issues of minimum sizes and trophy fish take on special significance. One captain, by his account and that of others, attracts people who come specifically to fish for world records. They are interested in setting records by catching smaller bluefin tuna on fly rods. In 1997 fishing for fish between 27" and 73" was closed on March 2nd. Between, March 5th to March 18th, he had four different groups of people coming to fish for bluefin tuna for world records; and they all canceled because they could not keep a world record fish even if they caught it. Few anglers want to release bluefin tuna. Ditton et al. (1998) found that 60 percent opposed catch and release only for bluefin tuna. Keeping trophy fish "means a lot to someone who has paid a thousand dollars to go out fishing" the marina owner said.

The "charter business is not native sons any more" said one respondent. A captain estimated that where the village had 15 charter boats ten years ago there are now 40. These are the charter boats that stay here all year round. Transient charters come for the "cream of the crop," particularly the bluefin season. Ditton et al. (1998) found 51 charter boats in the village during the 1997 bluefin season. There is tension between the local charter boats and

the transient charters because of increased competition for both fish and customers. One new charter boat is a state-of-the-art luxury boat with fish finding electronics, a stereo, a microwave and air conditioning. The locals argue that he could get $1500 a day but instead charges but a little more than the going rate. He has announced that he intends to take business from people. However, they say that the charter fleet has not reached a saturation point and that the customers are still happy. The charter captains say they generally work well together. There is also tension with private recreational fishers who following the charter boats to see where they fish.

Another long-time, local fisherman is running two party boats. He is finding more and more ways to make the party boat a family excursion. He does pirate trips and other special off shore trips. He also does birding trips.

Tournaments

The Hatteras Village Civic Association holds three tournaments a year. Tournaments attract people for the prize money and the social events that surround them. The biggest in the area is the Big Rock tournament the first week in June. The present tournament is three days and many boats fish out of Hatteras. One marina manager, interviewed just after a tournament in May, reported that the tournament attracted 9 boats. This was an increase of a third over the year round boats. Also in May is a tournament at another marina and one at a private club. Tournaments are in May because it is otherwise a slow month. There is also a king mackerel tournament in the fall,

Recreational billfishing in Hatteras is described by respondents as totally catch and release. The only exception, and it is an important one, is large tournaments. There are seven such tournaments in North Carolina that are too large and if these tournaments were not allowed to kill fish it would have a negative impact on all businesses related to recreational fishing. The biggest tournament directly affecting Hatteras is the Big Rock in Morehead City. Many boats in this tournament fish out of Hatteras. The blue marlins being killed in tournaments are 110 inches. Respondents disagree about the affect of a 113 inch size limit on these tournaments, but 113" inches is tending toward a rare event. It would make it possible that a tournaments would not catch any fish. The tournament at the private club in Hatteras is a total release tournament and has been for five years. However, it is for a trophy only. The organizer says that they lost a few people when they shifted to total release, but they picked up even more. In his estimation, more people don't want to kill than do. The scales at the club are rusted out, they couldn't weigh fish in any case…

Fishing Association and Small-Boat Mixed-Fishery Concerns

The only active commercial fishing organization is the Hatteras-Ocracoke Auxiliary of the North Carolina Fishermen's Association, which has been organized since 1992. In the current Hatteras fleet there are 35 or so small gill net boats dependent on a very diverse fishery. What disturbs them the most is the possibility of limited entry systems. They fish five or six species a year but do not always fish the same ones every year. What scares them is that they will not be fishing sometime when landings are counted for some system based on current participation.

Field Observations and Interviews, Hatteras, NC, July 1999

Commercial fishing in Hatteras is said to be much like that of Ocracoke in terms of the size and number of boats (30' to 45'). They mostly trawl for shrimp in the summer and "drop net in the ocean for trout" in the winter. A distinction of Hatteras is that its crabbers are said

to be more conservative than those on the west banks of North Carolina: Hatteras crabbers have little more than 300 pots apiece whereas on the western banks crabbers do not run less than 1,000 pots apiece. According to one of our informants, the more diversified nature of fishing in the Hatteras area accounts for the difference: "Our diversity allows us to fish fewer pots."

There are three major sites for fishing boats in Hatteras: two marinas and the docks off Altoona Lane. The docks on Altoona Lane are said to service 20 to 25 crabbers and fishermen, using small boats, up to 35', as well as a couple of larger boats, including a 47' boat used for dogfish by a local fisherman who was fishing up off Massachusetts during our visit. One of the managers of a seafood house here said of the fishermen "They're doing everything they can do to make it. They'll probably be left standing because they do so many different things while inland they only do one or two things." He also said it has been hard to get people to work on the boats or in his fish house because of various regulations.

One of the businesses we interviewed has been in place since 1982. It has experienced a major decline in business from 1994 to 1999, an almost 50% decline. The owner blames this on regulations, in a subtle process: "They take one thing away, then another and another, and finally it all makes a big impact." He says that he's "a believer in the cycle of fish. However, the fishery managers disagree". Still, he insists, "Our fish are coming back now like in '80 and '81. Things like the weather patterns make a big difference in whether there are fish around or not."

He said that he used to go to fisheries meetings all the time but doesn't anymore because "they already have their minds made up." And he has taken to giving money to politicians rather than to fishermen's associations. He feels that the sportsfishermen have more money, and that's why they are winning out. He did say that a state senator from North Carolina has been a champion of the commercial fishermen.

As far as the local community is concerned, he said that it has turned against commercial fishermen in the last 5 or 6 years, primarily because of the ascendancy of tourism. "I'm fighting to stay here, to keep the business viable, what with the mortgage, taxes, all those things." While there obviously have been efforts to preserve wetlands within Hatteras, especially in outlying areas and near the Altoona Lane docks, some large, expensive houses and condominiums have been built on or next to wetland parcels. As he puts it, "There are 20 slips here, and they're probably worth $1,200,000." He sees that pressure is coming to change this area into a residential and/or tourist area. "I don't blame the community. It's changing, but we don't want to change with them," he said.

Another dock in Hatteras is owned by a company based in Wanchese, NC. It is a very small dock, and the dock manager is the major fisherman. He dogfishes in the winter. He leases his boat because, he says, it's too risky to buy it, especially "since we're losin' it" with regards to management of the dogfish fishery. The gillnets they use for dogfish are very expensive. He believes they could have doubled their dogfish catch if they regeared, but won't regear because of the pending regulation. They would have regeared a year ago, but they told them the regulation was coming last year, preventing them from buying new gear then. He said if they had known it wasn't coming until later this year, they would have regeared then, but now it's too late to make it profitable. "They can't put you right out of business, but they'll chisel away at you 'till you can't help but get out of it." "They try to preserve species in the same waters, even when they aren't compatible, even when they eat each other".

This man gillnets for dogfish in the winter. He has 1,300 yards of 4 inch mesh net for croaker. He only sets the small nets twice. He said most fishers in this area do both large and small mesh netting. In the winter they small mesh for croaker and grey trout, but these

species are so plentiful then that the fish houses won't buy from the small time fishers. He said that they aren't getting any trout this year anyway; "trout this year are almost non-existent."

He says that the way that the inlet has been changing has greatly reduced their ability to catch fish in the inlet. The deep water channel has shifted parallel to the shore, making it unlikely that fish would travel past the sand bars, into the channel. They usually set the pound nets just off the edge of the deep water channel, and a few stop nets in the channel. They have seen fewer fish since the shift.

The weather had been too windy for the past four weeks. The currents are too strong for the bottom fish. No one had packed here for the past two weeks. There is generally a lull this time of the year(July). "But the longhaulers will pick up soon."

The fishermen's hangout, or where they gather when there are more around, tends to be Oden's dock or Sonny's Restaurant

COMMERCIAL FISHING

The following description has been excerpted from the Ecopolicy Center's report that describes communities that exploit the HMS fisheries (1998).

Wanchese Community Profile

Wanchese is located on the southern part of Roanoke Island, located in the northern Outer Banks. This small fishing village is said to have "changed as little as those who have lived here for generations" (Cutchin, 1997). Although ultimately unsuccessful, the first American colony was Roanoke Island; today, a local theater group's re-enactment of this historical event is a popular tourist attraction (CNCSS, 1993). The village actually received its name from a Native American leader named Wanchese who greeted these first English settlers in 1584; Wanchese was officially named when the federal postal system was established in 1886 (Cutchin, 1997).

Throughout the nineteenth century, the commercial fishing industry expanded, due in part to the involvement of the first postmaster (CNCSS, 1993). This postmaster owned or financed most of the commercial fishing boats in Wanchese; he also established a system of credit for the fishermen at his store, which was paid off when they brought in their catches. During that time, almost all of the residents of Wanchese were commercial fishermen. Today the village still revolves around fishing, but has expanded to include processing plants. Though traditionally a commercial fishing community, recent growth in tourism and recreational fishing has sparked competition between the new and the old for a restricted resource.

Wanchese's first fish house was begun in 1936 by the grandfather of the current generation that still runs two fish houses in the community, one of which related this history. His son fished the first trawler in Wanchese in the 1950s. He took a little 65' wooden boat and converted it into a fishing trawler. The grandfather stayed and helped packing boats but he was a gillnetter at heart and would rather be catching fish. In those days they were fishing more in Pamlico and Abermarle Sounds than in the ocean. They beached fished for sea mollusks, trout, croakers, spots, striped bass, and bluefish. In the Sounds they fished croakers, butterfish, Spanish mackerel, spots, and pigfishes. With the trawler they began flounder fishing in the winter. Then they would go offshore and catch some sea bass later in the year. They bought another similar boat and then a WWI converted subchaser. The subchaser was the first boat to try scalloping. The owner of a third fish house built the first flynet in 1971.

Demographic Profile

Population

The 1990 Census population for Wanchese to be 1,374 residents; however, this count is not entirely accurate since the Census includes Nags Head and Roanoke Island with Wanchese (CNCSS, 1993). This population consisted of 51% men and 49% women. Population estimates since 1990 were not readily available for Wanchese.

The relative absence of seasonal change in population for Wanchese departs from the normal pattern of seasonal variation found in the surrounding communities. Since commercial fishing is central to the economy of Wanchese, it does not see the shifts in population that occur due to tourism in the summer months (CNCSS, 1993).

Racial and Ethnic Composition

In 1990, the population of Wanchese primarily consisted of White residents (98%), although a little over 1% of its residents were American Indian. The ethnic composition of Wanchese is primarily European ancestry; nearly 29% of the residents of Wanchese claim United States ancestry.

Age Structure

Forty-six percent of the population of Wanchese are between the ages of 15 and 44 years old. The even age structure is shown by the nearly equal percentage of young and old - 26% below 15 years and 27% above 45 years.

Marriage

In Wanchese, 18% of the population over 15 has never been married. Nearly 69% of the population is currently married. Less than 5% are widowed; approximately 8% are divorced.

Household Composition

According to the 1990 Census, there are 503 households in Wanchese which have an average of 2.69 persons per house. Nearly 63% of these are married couple family households. Of the family households without married couples, three percent are family households with male householders and eleven percent are family households with female householders. The remaining 24% of households are non-family households. Table 5.7 gives additional household information for Wanchese.

Table 5.7. HOUSEHOLD COMPOSITION, WANCHESE, NC (Source: U.S. Bureau of the Census).

Total Number of Households	*503*
Average Number of Persons per Household	*2.69*
Percent of Married-couple Family Households	*62.6*
Percent with own children under	*18 36.0*
Percent of Male Householder Family Households	*2.6*
Percent with own children under	*18 2.6*
Percent of Female Householder Family Households	*10.9*
Percent with own children under	*18 6.0*
Percent of Non-family Households	*23.9*
Percent of Householders Sixty-five or older	*14.3*

There are 583 housing units in Wanchese, of which 88% are occupied. Of the vacant housing units, 14% are vacant due to seasonal usage. Table 5.8 shows additional housing information from the 1990 Census.

TABLE 5.8 HOUSING INFORMATION WANCHESE, NC (Source: U.S. Bureau of the Census).

Total Housing Units	*583*
Owner-occupied Units	*384*
Median Value	*$75,200*
Renter-occupied Units	*129*
Median Contract Rent	*$320*
Vacant Housing Units	*70*
Housing Units Vacant for Seasonal Use	*10*

Educational Trends

In Wanchese, sixty-seven percent of the population 25 and over are high school graduates, according to the 1990 Census. Educational attainment for Wanchese residents is shown in Table 5.9.

The only educational facility located in Wanchese is the private Wanchese Christian Academy, founded by the Wanchese Assembly of God members in the 1970s (CNCSS, 1993). Public schooling is found at the Dare County schools in Manteo; this school system has elementary, middle and high school facilities. The College of Albemarle has a satellite campus in Manteo; secondary education offered by the college at this site includes a boat-building course (CNCSS, 1993).

TABLE 5.9 EDUCATIONAL ATTAINMENT (PERSONS 25 YEARS AND OLDER) WANCHESE, NC (Source: U.S. Bureau of the Census).

	# of Persons 25 years and older	*% of Population*
Less than 9th grade	*85*	*10.8*
9th to 12th grade, no diploma	*172*	*21.8*
High school graduate (includes equivalency)	*259*	*32.9*
Some college, no degree	*170*	*21.6*
Associate degree	*40*	*5.1*
Bachelor's degree	*32*	*4.1*
Graduate or professional degree	*29*	*3.7*

Fishing Associations

Fishing related associations include the Oregon Inlet Users Association and the North Carolina Fisheries Association. The former is involved with supporting the plans for jetties at Oregon Inlet; they are responsible for organizing both the Wanchese Seafood Festival and the Blessing of the Fleet. The latter is a trade organization of seafood dealers and commercial fishermen from the state; two members of the 18 member Board of Directors are from Wanchese (CNCSS, 1993).

Economic Characteristics

Income The 1989 per capita income for Wanchese was $10,830. This is below the state per capita income ($12,885) and the per capita income for Hatteras ($12,796).

Employment Trends Of the 984 Wanchese residents 16 years old and over, 85% participate in the civilian labor force. The unemployment rate is 10.0% of the civilian labor force; of this unemployment rate, 2% consists of male unemployment and 8% is female unemployment. Of the employed work force in Wanchese, approximately 57% are men and 43% are women. The number of working women has been on the rise, due in part to the increase in opportunities for women outside the home created by tourist businesses in the beach communities surrounding Wanchese (CNCSS, 1993).

According to the 1990 Census, 61% of the working population in Wanchese is employed in private for profit jobs. Jobs in the private sector are largely related to the area's commercial fisheries (CNCSS, 1993). Most of these workers are self-employed; the Census figures show that nearly 19% are self-employed workers. Government jobs are considered desirable due to the security and consistency in contrast with the fishing industry (CNCSS,1993); figures from the 1990 Census show that nearly 17% of the workers are employed with the local, state or federal government.

Employment by Industry Nearly 20% of the employed persons over 16 in Wanchese are working in the agriculture, forestry and fisheries industries; this is the highest rating industrial sector for employment. These industries are followed by retail trade (19%) and professional and related services (16%) in terms of employment of Wanchese residents. Farming, forestry and fishing occupations are held by nearly 19% of the Wanchese employed population. Other prevalent occupations are technician and administrators (25%) and managers and professional (17%). Table 5.10 shows the role of industry as an employer in Wanchese. Unlike the surrounding communities, Wanchese has very little seasonal variation in employment resulting from tourism; what seasonal fluctuations do exist are caused by the availability of the fisheries resources and are countered by the flexibility and opportunistic nature of the Wanchese fishermen (CNCSS, 1993). This flexibility is now being threatened; this is addressed below. However, the tourism industries in the surrounding communities do provide seasonal employment opportunities to residents of Wanchese.

TABLE 5.10 EMPLOYMENT BY INDUSTRY (EMPLOYED PERSONS 16 YEARS AND OVER) WANCHESE, NC Source: U.S. Bureau of the Census

Sector	*# Employed*	*% Employed*
Agriculture, forestry, and fisheries	*137*	*19.7*
Mining	*0*	*0*
Construction	*35*	*5.0*
Manufacturing, nondurable goods	*9*	*1.3*
Manufacturing, durable goods	*57*	*8.2*
Transportation	*17*	*2.4*
Communications and other public utilities	*9*	*1.3*
Wholesale trade	*46*	*6.6*
Retail trade	*133*	*19.1*
Finance, insurance, and real estate	*23*	*3.3*
Business and repair services	*25*	*3.6*
Personal services	*27*	*3.9*
Entertainment and recreation services	*20*	*2.9*
Professional and related services	*112*	*16.1*
Public administration	*46*	*6.6*
Total	*696*	*100*

Fishing Related Businesses *There are approximately 117 small businesses in Wanchese, 44 of which are commercial or charter fishing businesses (CNCSS, 1993). Some of the more prominent local businesses are described below. Support industries, such as boat builders and seafood packers, are also of great importance to the commercial fisheries.*

There are three major fish houses in Wanchese. One, which specializes in scallop and flounder, has fourteen boats which include trawlers, scallop boats and smaller boats for gill netting as well as two scallop boats in Alaska (CNCSS, 1993). They have three packaging and processing houses, a fish-packing house and a processing and freezing operation; These are located in North Carolina, Virginia and Massachusetts. Seafood is distributed locally and nationally by truck and internationally by air freight. The second, which specializes in hooked fish, is an important seafood distributer; this company is the most affected by this FMP. While only operating one boat, this company buys regularly from 35 local and over 70 non-local boats. The third, which specializes in bulk fish, packs the fish from its own two vessels; transportation of their product is set up through an agreement with the Wanchese Fish Company (CNCSS, 1993).

The Wanchese Seafood Industrial Park was constructed in 1980 by the state; it is operated by the North Carolina Department of Commerce. According to the brochure put out by North Carolina Power in 1995, the park has, among other features, "30 acres of leasable land," "a 15-acre deep water harbor," and "1,500 feet of commercial-style concrete docks." There are currently seven seafood related businesses located at the park (CNCSS, 1993).

Part of the Wanchese Seafood Industrial Park project were plans for inlet stabilization. Originally, the seafood park that now takes up half of the newly expanded Wanchese harbor was voted down by the people in the community. The reason they finally put it in was because of the issue of a jetty for Oregon Inlet, which is the most direct route for Wanchese boats to get to open ocean. The state argued that if they were going to spend a hundred million dollars on a jetty the federal government should dredge the harbor, as part of the agreement of the Mateo (Shallowbag) Bay Project (CNCSS, 1993). At that time, the harbor was half as wide as it is now. They dredged it out and piled the spill in the area which is now occupied by the park. They put a cement dock in as well. The state essentially came back to the Wanchese community and said if you want a jetty at Oregon Inlet, you have to have the seafood park first. At first they revolted and then acquiesced because of the importance of the Inlet. They had been trying to get the jetty since the 1950s. Ironically, they still haven't gotten it jetted. The industrial park is also the scene of the annual blessing of the fleet, which is put on by the Oregon Inlet Users Association.

FISHERIES PROFILE

Wanchese as a Multispecies Fishery

A central fact about fishing in Wanches's is the large number of commercially important species that they catch. Many respondents emphasized how they have to be versatile to survive, particularly because they face quick changes in water temperatures. They suggest that Wanchese is much more of a mixed fishery than in the north where people can fish the same species year round. Among the highly migratory species they fish for swordfish, shark, and tuna. Yellowfin tuna is particularly important but they also catch bigeye and bluefin tuna. Because of the weather, summer is the time that they tunas and swordfish are accessible to the medium sized boats that can both gillnet and longline, and late summer is a slow time for everything else. A captain of one of these medium size boats, however, said that he would prefer to stick with shark fishing year round because of the danger of going for tuna and swordfish farther off shore. They gillnet for dogfish, bluefish, Spanish mackerel, trout, and

croakers. The latter two are important in the winter and the Spanish mackerel is important in the spring and fall. They bottom fish for bass and grouper. There are a number of gillnet boats that switch over to charter fishing in the summer. Large trawl boats fish for squid in the summer and a smorgasbord of weakfish, croaker, and flounder in the winter. Squid requires them to travel north. There are now less than fifteen of these trawl boats that stay at Wanchese. The biggest shark months are April to June but their quota is in January and July. Medium sized boats go north to fish for shark. Large longliners fish for swordfish, tuna and dolphin.

Market considerations are crucial in deciding what to fish. Traditionally, when January comes the larger longliners go shark fishing until the season would close and then try to fish for tuna or swordfish. They use many of these fish to service the restaurants in the local area with a fresh product and they are able to market it better because they pack it fish themselves rather than buying it. Because of this market they would stay fishing for swordfish and mainly tuna until the fall. If the shark season were open at that time, they would want to shark fish September and October. The season, however, is in January and July. Shark trip limits have also made shark fishing less economical for larger boats. Many steam north to fish shark off New York.

The combination of this shifting multispecies fishery and management leads to a complaint voiced by nearly every Wanchese fisher and fish dealer. Wanchese fishers are used to jumping from species to species, but management causes everyone to jumps at the same time. As one respondent put it "this may be good for a specific species at a specific time but it is not good for the whole system." The price of the fish dives when fishers have to shift their effort all to the same species. Some marginal fishers get driven out when these shifts happen. A respondent associated this observation with the fact that there used to be 7-8 Black fishers, and now there are only two. This effect is especially felt when the fishing is good. Another respondent, a fish dealer, said "We had a tremendous amount of fish this winter, one of the busiest winters in a long time. The price of fish was cheaper all winter because everyone was fishing on the same thing. [My] personal trawlers scalloped and floundered. When floundering closed, we had to flynet, fishing for the same fish as gill netters in small boats. We caught a lot, but got nothing for it. I have 350,000 lbs of croakers left, that were caught in March, frozen."

The multispecies nature of the fishery led one respondent to suggest that the loss of the shark quota did not have a major impact in Wanchese because of the number of alternatives. The switch from longlines to gillnets takes a substantial investment at first, but it is then just a day or two to change the gear. Others disagreed, arguing that this initial investment is a hefty one if you are going to do it right. A net reel costs $3000 and will last three or four years. Nets often need to be replaced every year. One gillnet captain spent $6000 on nets last year. A longline tackle supplier explained that shifting between longline gear can also be expensive. Tuna longline gear can be shifted to shark longline gear fairly cheaply, they need different hooks, leads and buoys. This is not true the other way round because shark fishing tends to damage the mainline.

The major fish houses tend to specialize, one of them in hook fisheries. This house reports that shark (including dogfish) is now 40 percent where it was 25 percent in the recent past. Tuna is now 40 percent where it was 50 percent. Swordfish is now 10 percent where it was 15 percent. The remainders are bluefin tuna and dolphin. This house packs between seventy and one hundred different boats through the course of a year. They pack about thirty-five or forty on a full time basis when they are in this area. They develop an ongoing relationship with these boats. When they are in this area, they will come to that dock and their

fish is unloaded even if it is not the species that the house does most of its business in. They also provide dockage fee of charge.

The fish house owner reported that he is paying between $3.25 and $4.25 for a pound of swordfish that this time of year should be getting $6.00. He attributes the main cause of dropping prices to an increase in imports. The dollar is strong, and the domestic market is the key one for swordfish. The European market is growing but the Japanese eat very little swordfish. Swordfish is caught in Brazil, Argentina, and Africa. The owner says "Just in the last month there has been hundreds of pounds of fish being produced in Africa. We are on a limit, the season was closed 93 the first of April. You would think that the supply of fish would be way down, therefore the price would be way up, but the price is $2-3/lb less than it was ten years ago." The houses have tried to make up for lost business and low prices by expanding overseas themselves and bringing the fish to Wanchese. They try to fly and truck the fish in but it has not worked well. The swordfish boycott is also having a strong effect because the restaurants and retail markets that are complying with the boycott are the upper end market. High quality is the American fleet's key market advantage over the imports.

The closeness of the kinship and other historical networks in the community allows for flexible cooperation that matches the flexibility of the fishery. For example, one fish house provides freight for all the houses on a flexible, contingency basis. Another house has two tractor trailers and if that house has less than 10,000 lbs one day they take their freight on the first house's trucks. Another uses this service when he has under 5,000 lbs, because he has one small truck. The house that provides the freight service used to have seven trucks, however, now they have four.

Issues of Crew and Ownership

Hiring and managing crew is getting increasingly difficult. This is especially true for the larger boats that need people who can stay out longer. There is a lot of turnover in fishing crews, particularly when boats have to shift fisheries and the revenue drops. It used to be that job alternatives, carpentry and building for the tourist industry are common examples, did not pay as well as fishing. This is often no longer the case. Including the captain, gillnet boats take two or three people, smaller longliners take three people, the larger longliners try to have four but sometimes fish with three. Many respondents reported seeing a trend where those people who are available for this work were transients or people who cannot find employment elsewhere. There have been problems with alcohol, drugs dependability and crew creating trouble in the general community. Several respondents reported that they had or knew of boats that were not fishing specifically because they could not find crew to hire. Wanchese is a conservative, rural community where major fishing business decisions have hinged on interpretations of how the Sabbath should best be honored. Some boat owners are very disturbed at the prospect of dealing with drunkenness, drugs and theft in crew. This goes beyond simply management headaches, people in Wanchese want, as they have in the past, to give jobs to people who are going to contribute to stable community that reflects their values. One boat owner said "this is what makes me want to quit. I can handle dealing with regulations, I can't deal with the crew. You have to deal with people you wouldn't want to associate with. The good people are just giving it up and trying to find shore jobs." Successful fishers from prominent fishing families are discouraging their children from going into fishing.

Many captains and boat owners are searching for alternatives. Fishing is an industry that allows people to make a good living based on skills and knowledge that do not come from formal education. As one respondent put it, "a guy who's making $1000 a week fishing with

no education is not going to get a job on land for $1000 a week." Selling boats is difficult. There are few buyers. Searching for buyers and listing the boat for sale makes it even more difficult to find and keep crew. People are leaving fishing for carpentry and building for the tourist industry. Many go into running charter boats.

Bluefin tuna management has also had an impact. It is very difficult for a Wanchese fisher to legally land and sell bluefin tuna because of the ratios that attach to the incidental permit. This has led to widespread discards (see also the Panama City profile). "There's more put back dead than are brought to the dock - that's a crime against nature" a fish dealer said.

FISHERIES MANAGEMENT ISSUES

Other Comments Offered by Respondents

On the shark rebuilding schedule, one shark fisher commented that he would like to see ITQS or some other form of limited entry place on the shark industry before there is any future increase in the quota. Otherwise he fears a doubling of the fleet to match any doubling of the quota. If limited entry were in place then he could see a benefit of stopping all fishing for two years to rebuild the stock quickly.

Another fisher was very concerned about the effect of management politics, particularly the increased tension between the commercial and recreational communities, on the community and the people in it. "It's getting worse because of the propaganda... I've never wanted to admit it until now, I won't be fishing in a couple years. One, if you really care about what you are doing, it consumes you. Even though you have groups and organizations, everybody don't represent everybody's interests. You can't be at every meeting. When you look at the schedules of the meetings, you've got to do one or the other. This is a community and it is dividing us and it will get worse."

The Charter Boat Industry in North Carolina

There are now some data describing the charter and headboat industry in North Carolina. The estimated number of charter boats in North Carolina in 1999 was 207 (Table 42a). The study (Holland et. al., 1999) used a sample size of 19.3%, or 40 boats. The following tables describe the number of boats by sector and port, ages of operators and educational attainment.

Table 42a. North Carolina charter and headboats (Source: Holland et. al., 1999)

City	Number of Charter Boats *	Number of Headboats
Atlantic Beach	26	2
Carolina Beach	15	2
Hatteras	38	0
Manteo	12	0
Moorhead City	19	2
Ocracoke	11	0
Raleigh	5	0
Swansboro	6	3
Wanchese	6	0
Oregon Inlet	27	0
Pirates Cove	11	0
Other	32	5

NOTE: Only location with three or more charter boats are listed with residuals aggregated into the "Other" category.

The mean age for charter boat operators in North Carolina is 50.3 years (Table 42b) and the mean number of years of education was 13.51 (Table 42c).

Table 42b. North Carolina charter and headboats: age of operators (Source: Holland et. al., 1999).

	N	%
30 or younger	0	0.0
31-40	3	8.6
41-50	18	51.4
51-60	11	31.4
61 and older	3	8.6
Total	35	100

Table 42c. North Carolina charter and headboats: years of education (Source: Holland et. al., 1999).

	N	%
11 or less	2	5.7
12	19	54.3
13-15	6	17.1
16	4	11.4
17 or more	4	11.4
Total	35	100
Mean		13.51

The sample of North Carolina charter boat operators showed no one divorced, 7.5 percent single, and 92.5 were currently married. The great majority of operators shared a household with 2-3 other persons (87.6%). Table 42d. shows the percentage of household income derived from the charter business.

Table 42d. North Carolina charter and headboats: household income from charter boat business (Source: Holland et. al., 1999).

Percent	N	% of Sample
0-9%	7	17.9
10-29%	9	23.1
30-49%	1	2.6
50-69%	6	15.4
70-99%	2	5.1
100%	14	35.9
Total	39	100
Mean		61%

North Carolina's charter boat operators have a an average of 19.6 years in the business, with 58 % having been in the business for 16 years or more. Furthermore, 72% of the North Carolina operators run their business fulltime.

The Charter Boat Industry in South Carolina

There are currently no new fishing community profiles available for South Carolina. Older descriptions of the various fisheries (commercial, recreational) in the state are contained in Appendix G. However, additional and up-to-date information has been collected on charter and headboat operations in the state. These are summarized below from Holland, et al. (1999).

There are an estimated 174 charter boats operating in South Carolina, with Hilton Head, Charleston, Murrells Inlet, Mt. Pleasant, and Little River as the cities of having the most number of boats.

Demographics The majority of charter boat operators in South Carolina are between the ages of 40 and 60, with the mean age being 50 years. The majority have at least 12 years of formal education, with the mean being 15.3 years. 53% are married, and 33 % divorced. According to Holland, et al, "Household size generally corresponded with marital status…in…South Carolina…half of the households consisted of one individual, likely reflecting the proportion of divorced operators in the sample (1999:3-18)."

Almost 40 percent of the operators in South Carolina derive 50% or more of their household income from chartering. South Carolina charter boat operators have less experience in the business than their counterparts in North Carolina or Georgia, with only 14.3% operating their business for 16 years or more. 35.7% have been in the business five or less years, and 30.6% have been in the business six to fifteen years. Furthermore, more South Carolina operators claim to operate part-time (58.6%) than fulltime (41.4%).

The Charter Boat Industry in Georgia

Like South Carolina, there are currently no new fishing community profiles available for Georgia. Older descriptions of the various fisheries (commercial, recreational) in the state are contained in Appendix G. However, additional and up-to-date information has been collected on charter and headboat operations in the state. These are summarized below from Holland, et al. (1999).

There are an estimated 56 charter boats operating in Georgia, with Brunswick, St. Simons Island and Savannah as the cities of having the most number of boats. This relatively low number of boats is due to the geographically smaller coastline of Georgia compared with the other South Atlantic states.

Demographics The majority of charter boat operators in Georgia are between the ages of 41 and 50, with the mean age being 47 years. The majority have at least 12 years of formal education, and 38.5% have at least 16 years. The mean is 14 years. 86.7% are married, and 13% are divorced.

Almost 41.3 percent of the operators in South Carolina derive 50% or more of their household income from chartering. Georgia's charter boat operators have a good deal of experience in the business, with 83.3% operating their business for 16 years or more. Furthermore, 68% of the operators claim to operate fulltime (Holland et al., 1999:3-19).

Headboat Operators in North Carolina, South Carolina and Georgia

There are fewer overall headboat operators in the South Atlantic region than charter boat operators. Their average age is almost 39 years, the majority (60%) have a high school education, and all of those surveyed were married. All but one headboat operator worked fulltime, and all derived the majority of their income from this business.

FLORIDA

Charter Boat Operators in the Florida Atlantic, Keys and Gulf Areas

Florida has the most charter boat operators of all the states in the study by Holland et al. (1999). The estimated populations are as follows: Florida Atlantic – 413 boats; Florida Keys – 230 boats; and Florida Gulf – 615 boats. Table 42e shows a breakdown of charter and headboats in Florida.

The mean age (46 years)for charter boat operators in Florida was comparable to the mean ages in the other states reviewed. More than half (66.5%) of all operators were older than 41 years.

Educational levels are fairly high, with 95% having graduated from high school, and 34% having some college education. 16% of respondents were divorced, 63.4% were married, and 21.5% were single. For all the regions of Florida, 61% indicated that 100 percent of their income comes from chartering.

3.2.4.1.2 Overview of Mixed Commercial and Recreational Fishing Communities

FLORIDA

Florida East Coast

As in most of coastal Florida today, most fishing communities are now mixed, in that there are both recreational and commercial fisheries present. The case of Islamorada is an example of this mixed type of community. The following case has been excerpted from the Ecopolicy Center's report on communities in the HMS fisheries (1998).

"ISLAMORADA COMMUNITY PROFILE

Islamorada calls itself the Sportfishing Capital of the World. The name was adopted in the 1950s by this small community because of the simultaneous proximity to the Florida Bay, the Everglades, bonefish flats, coral mountains and the Gulf Stream. One respondent claimed that "at one time or another they get just about every fish in the hemisphere." The history of fishing here dates back to the Large Key Fishing Club and Zane Grey. Presidents Bush, Truman, and Wilson, athletes, such as Ted Williams, and many movie stars have all fished here. Islamorada is famous for light tackle technique and many different rods have been developed. One respondent said "there would be nothing here if it were not for fishing. There are no beaches. There would be no grocery stores, nothing, not even utility companies."

DEMOGRAPHIC PROFILE

Population

According to the 1990 Census, the population of Islamorada is 1,293. There are more males (54%) than (46%) females.

Racial and Ethnic Composition

The racial composition is 95% White, 0.9% Black, and 3.8% other races. The highest incidence of a single ethnicity is found in residents with German ancestry, which make up 15%of the population.

Age Structure

Forty-four percent of the population are between the ages of 15 and 44 years. The population of those under 15 and those over 44 are approximately the same, suggesting an even age structure.

Marriage

Fifty-nine percent of people 15 years and older are married, 17% never married, and 17% are divorced.

Household Composition

According to the 1990 Census, Islamorada has 672 households, with an average of 1.86 persons per household. Out of this total, 52% are family households, and 48% are non-family households. Table 7.5 shows additional household information for Islamorada from the 1990 Census.

Table 42e. Number of Florida charter and headboats by region and city (Source: Holland et. al., 1999).

Region and City	Charter Boats N	Head Boats N
Atlantic Coast		
Cape Canaveral	15	2
Daytona Beach	11	1
Fernandina Beach	11	0
Ft. Lauderdale	55	2
Ft. Pierce	11	1
Jacksonville + J. Bch	11	1
Jupiter	11	3
Key Biscayne	11	0
Melbourne + M. Bch	17	0
Miami	55	5
Miami Beach	16	3
New Smyrna + N. S. Bch	13	0
Pompano Bch	22	3
St. Augustine	18	3
Stuart	18	3
Vero + Vero Beach	16	0
Palm Bch + W Palm Bch	14	1
Other	87	14
Florida Keys		
Islamorada	36	5
Key Largo	15	2
Key West	105	4
Marathon	44	4
Other	30	1
Peninsula Gulf		
Boca Grande	14	0
Clearwater	25	7
Ft.Meyers + Ft. Meyers Bch + Lee County	51	8
Madeira Beach	12	0
Marco Island	19	1
Naples	76	1
Palmetto	16	0
Sarasota	42	2
St. Petersburg + St. P. Bch +Tampa	32	2
Other	145	14
Panhandle Gulf		
Destin	73	8
Panama City + Panama City Bch	48	7
Pensacola	36	1
Other	26	2

*Only locations with ten or more charter boats are listed, residuals aggregated in "Other."

TABLE 7.5 HOUSEHOLD COMPOSITION, ISLAMORADA, FL (Source: U.S. Bureau of the Census).

Total Number of Households	*672*
Average Number of Persons per Household	*1.86*
Percent of Married-couple Family Households	*43.8*
Percent with own children under	*18 98*
Percent of Male Householder Family Households	*2.5*
Percent with own children under	*18 0*
Percent of Female Householder Family Households	*5.4*
Percent with own children under	*18 3.3*
Percent of Non-family Households	*48.4*
Percent of Householders Sixty-five or older	*24.3*

In Islamorada there are 966 housing units. Of the 646 occupied housing units, approximately 60% are owner-occupied and 40% are renter-occupied. Seventy-two percent of total vacant units are vacant for seasonal, recreational, or occasional use. Table 7.6 shows additional information for housing units from the 1990 Census.

TABLE 7.6 HOUSEHOLD INFORMATION, ISLAMORADA, FL (Source: U.S. Bureau of the Census).

Total Housing Units	*966*
Owner-occupied Units	*394*
Median Value	*$138,400*
Renter-occupied Units	*252*
Median Contract Rent	*$456*
Vacant Housing Units	*320*
Housing Units Vacant for Seasonal Use	*231*

Education Trends

Twenty-two percent of the 25 years and older population component are high school graduates, with just as many that did not graduate high school. Thirty percent of the population has some college but no college degree. Additional information from the 1990 Census on educational attainment is displayed in Table 7.7. The Florida Keys Chamber of Commerce assert that the educational facilities in the Upper Keys are known for their high standards. There is one elementary schools and one high school in Islamorada.

TABLE 7.7 EDUCATIONAL ATTAINMENT (PERSONS 25 YEARS AND OLDER), ISLAMORADA, FL Source: U.S. Source of Census

	Number of Persons 25 Years and Over	*% of Population*
Less than 9th grade	*104*	*9.6*
9th to 12th grade, no diploma	*137*	*12.6*
High school graduate (includes equivalency)	*222*	*20.4*
Some college, no degree	*322*	*29.6*
Associate degree	*53*	*4.9*
Bachelor's degree	*134*	*12.3*
Graduate or professional degree	*115*	*10.6*

Economic Characteristics

Most of the county's growth since 1950 has been in the unincorporated area. Many people that moved into the region were retirees. By 1980, more people of Hispanic origin moved into the area and commuted throughout the region for jobs. In mid 1970's local effort began to establish a tourist economy. By the 1980's, the tourist economy attracted a service oriented labor force (White, B. 1995).

Employment Of the residents 16 years and older, approximately 73% participate in the civilian labor force. The unemployment rate for Islamorada is 1.2% of the civilian labor force; this is significantly lower than the state unemployment rate (5.8%). The predominant occupations by employment are technical and administrative occupations (31%) and managerial and professional occupations (26%).

Employment by Industry The five most dominant industries in terms of employment for Islamorada are retail trade (39.4%), personal services (12.5%), professional and related services (8.0%), transportation (7.2%), and agriculture, forestry and fisheries (6.8%). Table 7.8 gives additional information from the 1990 Census about employment of Islamorada residents by industry.

TABLE 7.8 EMPLOYMENT BY INDUSTRY (EMPLOYED PERSONS 16 YEARS AND OVER) ISLAMORADA, FL, (Source: U.S. Bureau of the Census).

Sector	*# Employed*	*% Employed*
Agriculture, forestry, and fisheries	*57*	*6.8*
Mining	*0*	*0*
Construction	*32*	*3.8*
Manufacturing, nondurable goods	*15*	*1.8*
Manufacturing, durable goods	*23*	*2.8*
Transportation	*60*	*7.2*
Communications and other public utilities	*26*	*3.1*
Wholesale trade	*24*	*2.9*
Retail trade	*329*	*39.4*
Finance, insurance, and real estate	*48*	*5.7*
Business and repair services	*18*	*2.2*
Personal services	*104*	*12.5*
Entertainment and recreation services	*27*	*3.2*
Professional and related services	*67*	*8.0*
Public administration	*5*	*0.6*
Total	*835*	*100*

Fishing Related Business

There are a total of eleven marinas in Islamorada. Powerboat rentals are another tourist business with seven in the area. Other water related tourist businesses are boat tours, cruises, kayak, wave runner and sailboat rentals, ten snorkel and dive shops, eight boat dockage, lifts and repair shops, and four fishing supply shops. There are 26 lodgings in Islamorada, consisting of motels, bed and breakfast, resorts and inns, ranging from budget to luxury (Islamorada Chamber of Commerce). Local activities include fishing tournaments, golf and tennis clubs, bowling, museums and galleries, wild bird center and a theater of the sea where tourists can swim with dolphins, Indian Key and Lignumvitae historical and botanical tours, and a fossil reef state geological site. Route U.S. 1 is lined with shops, signs, boutiques, cottages, and multi-million dollar resorts. The islands also offer 18 specialty and general shops (Islamorada Chamber of Commerce).

FISHERIES PROFILE

Recreational Fishing

Recreational activities in the Keys consist of trophy fishing, catch and release, spear fishing, and fishing for food. The traditional past times for the area are reef, shore, and bridge fishing. The recreational fishing industry is increasing. More recently, there has been a growing interest in the guided fishing industry that promotes catch and release. (Bohnsack and Co-worker, 1994).

According to the Florida Bureau of Vessel Titling and Registration, Monroe County has a total of 23,079 registered boats, with 18,731 pleasure and 4,260 commercial boats as of 1996. Respondents reported that fishing for billfish is nearly entirely catch and release. They feel that catch and release, bag and size limits, and other recreational measures are working. Florida's ban on inshore net fishing was also a success, sea trout are plentiful because of the net ban, as are bonefish, pompano, and Spanish mackerel. They are concerned with other commercial fishing activities, particularly drift gill nets and long lining for dolphin. A

respondent said "One commercial person can make a living at the expense of thousands of others."

The largest resort in Islamadora began as a fishing marina and sportfishing is a big part of their marketing. Fishing is now just one aspect of the "resort experience" and people come to the resort and discover fishing. While charter captains report that they can see drops in bookings within a month of reports of bad fishing, the resort has never seen droppings in vacancy rates from such reports. The resort has two sets of boats offshore and "back country," the local term for the Florida Bay area. There are 19 "6 pack boats" which are charter vessels and 1 party boat. The resort arranges pickup charters. Boats that go offshore do fish for marlin, but this is not a big fishery nor do people regularly want to catch them. Charter captains report that marlin were never a big catch, they would get 15-20 in a summer in the early 1980s, now they get one. In the winter they fish for sailfish, black fin tuna, and bonito. Dolphin come in May.

Tournaments are an important marketing device and billfish species are used in the ads. He Holiday Isle Sailfish Tournament is a big one that is specifically marketed to tourists. During tournaments occupancy rates are 100 percent. They advertise in sportfishing magazines, direct mail and through local media. The majority of boats in Islamadora tournaments are Florida boats, but there are some out of state participants. Some of the tournaments generate donations to charity. The Holiday Isle Dolphin Tournament, for example, gave $2500 this year to the American Cancer Society. The Tourist Development Council is a Keys-wide para-statal organization that is supported by a bed tax. They have a large marketing budget and they give grants and sponsorship to tournaments. The will also help with marketing expertise. The Council has three sections: the Fishing Umbrella supports tournaments; the District Advisory Council supports general tourist events; and a third section supports cultural events.

A new, very large, tackle shop is an addition to a national chain. They are surpassing a business plan that they felt was ambitious in the first place. This shop employs 57 people. The shop has a number of local suppliers that includes manufacturers of lures and jewelry as well as local distributors of fishing products. They are going to begin a fishing school next year that will employ 6 teachers and teach 24 people at a time for 3-4 days. They will teach fly casting, different types of fish, how to find fish etc. Their customers are 80 percent tourists.

According to a marine extension agent from the Monroe County Cooperative Extension Service, fishing is doing better as a result of regulations. Despite the marine extension agent's sentiment, the charter captains are pessimistic about the future. They feel that the overall fishing picture is not good. For 3 years the dolphin have been slow in July and August, four years ago it was very good. Last year they experienced their first loss of customers in the late summer as a result of depressed dolphin catches. Customers read the fishing press and drops in catch will start to have an affect on charter bookings with about a month lag. They are getting a lot of Europeans who want amberjack and sharks. They used to be able to catch hammerhead but these are now "dinosaurs." They have lost customers to places like Costa Rica because they want to catch marlins. Additionally, good mates are hard to find. There is no "recruitment stock." Young kids do not grow up thinking they will be charter boat captains. The future looks bleak. They fear that the whole Keys could "become like St. Petersburg, all rich retirees and the marinas all private boats."

Commercial Fishing

There are only two small longline boats that dock in Islamadora (see the Pompano Beach profile for a description of this fleet). Monroe County commercial landings data for the Islamadora area show 10,647 lbs of dolphin, 4,136 lbs of shark, 711 lbs of tilefish and no swordfish (Center for Economic and Management Research 1995). The Keys overall have important commercial fisheries. Major fisheries are shellfish such as shrimp, stone crab and lobster, having an annual dockside value of about $45 million in the Keys area. Florida Keys National Marine Sanctuary proposed a "no take" zone policy in the next 10 years, which will put many commercial fishermen out of business (Sheldone 1996). King and Spanish mackerel recovered after 15 years of protection by the state and federal regulatory agencies. Finfish fishery consisting of snapper, grouper, and mackerel do about $9 million annually in dockside value. There are also snapper resources such as yellowtail, gray and mutton snapper. (Gregory 1996).

FISHING MANAGEMENT ISSUES

Comments Raised by Respondents

Another local problem is the taxidermy scam (described in the Pompano Beach profile) that is a concern, but the community strongly frowns on landing sailfish. Some people land them and say that they died because they were tail hooked. When this happens people will grumble, especially if they do it 2-3 times a season. People will always start asking questions.

There is a general concern in Islamorada that it would be devastating to the community if the fish stocks are depleted. There are a lot of concerns with habitat such as the loss of grass beds, destruction of mangrove shoreline, water quality, algae blooms, and coral reefs dying from ozone depletion and too much sunlight. Flat fishing depends on knowing the tides because of water pollution, since local water conditions deteriorate when dirty water from the Gulf and Florida Bay comes through the Keys. Twenty years ago, one responded related, there was a lot of clear water with grass, now the grass is not seen due to sewage and pollution. They are concerned with runoff from the lower part of the peninsula including phosphates and exhaust. There is also a concern over loss of fish in the area due to the use of certain gear types, and an increasing number of fishermen.

EAST FLORIDA - POMPANO BEACH COMMUNITY PROFILE

Pompano Beach is small city directly adjacent to Ft. Lauderdale FL. It is very much a part of the dense urban complex which extends along the coast north of Miami. The Ft. Lauderdale area is known as the "Yachting Capital of the World" and the "Venice of America " because of the vast canal system which extends throughout Broward County and create 165 miles of waterfront in the region. Pompano Beach is also a globally important manufacturing center for commercial longlining equipment.

DEMOGRAPHIC CHARACTERISTICS

Population

The 1990 population Pompano Beach was 72,411 and the population estimates for 1993 and 1996 are 74,876, and 74,583 residents, respectively. There are more females (52 %) than males.

Racial and Ethnic Composition

The racial composition of Pompano Beach is approximately 70% White, 29% Black, and less than 1% other races. The highest ethnic group of a single ancestry is Hispanic, which comprises approximately 20% of the population; populations corresponding to all other ethnic groups in the 1990 Census occur at a rate of less than 10% of the population each.

Age Structure

Approximately 40% of the population are between age 15 and 44, according to the 1990 Census. Forty-five percent of the population is over age 44, while only 15% are under age 15; this suggests an aging population.

Marriage

In the 1990 Census, 53% of the population 15 years and older were married. Of those not currently married, 25% were never married, 11% were widowed and 11% divorced.

Household Composition

According to the 1990 Census, Pompano Beach has 31,891 households, with an average of persons per household. There are 58% are family households and 42% are non-family households. Table 7.9 gives additional information on households in Pompano Beach.

TABLE 7.9 HOUSEHOLD COMPOSITION, POMPANO BEACH, FL Source: U.S. Bureau of the Census

Total Number of Households	*31,891*
Average Number of Persons per Household	*2.17*
Percent of Married-couple Family Households	*44.7*
Percent with own children under 18	*10.9*
Percent of Male Householder Family Households	*3.5*
Percent with own children under 18	*1.2*
Percent of Female Householder Family Households	*9.8*
Percent with own children under 18	*4.6*
Percent of Non-family Households	*42.1*
Percent of Householders Sixty-five or older	*37.7*

According to the 1990 Census, there are 42,719 housing units; approximately 25% are vacant. Of the 32,157 occupied housing units, 63% are owner-occupied and 37% are renter-occupied. Seventy-three percent of the vacant housing units are vacant due to seasonal use. Table 7.10 gives additional information regarding housing units.

TABLE 7.10 HOUSING STRUCTURES POMPANO BEACH, FL Source: U.S. Bureau of the Census

Total Housing Units	*42,719*
Owner-occupied Units	*20,343*
Median Value	*$99,300*
Renter-occupied Units	*11,814*
Median Contract Rent	*$470*
Vacant Housing Units	*10,562*
Housing Units Vacant for Seasonal Use	*7,635*

Education Trends

According to the 1990 Census, 73.7% of the residents of Pompano Beach 25 years and older are high school graduates. Table 7.11 gives additional information on educational attainment.

TABLE 7.11EDUCATIONAL ATTAINMENT (PERSONS 25 YEARS AND OLDER), POMPANO BEACH, FL (Source: U.S. Bureau of the Census).

	Persons	*% of Population 25 Years and Over*
Less than 9th grade	*5,331*	*9.8*
9th to 12th grade, no diploma	*9,029*	*16.5*
High school graduate (includes equivalency)	*16,759*	*30.7*
Some college, no degree	*10,115*	*18.5*
Associate degree	*3,380*	*6.2*
Bachelor's degree	*6,855*	*12.5*
Graduate or professional degree	*3,191*	*5.8*

Economic Characteristics

Income

The per capita income for Pompano Beach in 1989 was $17,382; this is higher than the state per capita income ($14,698) but lower than the per capita income for Islamorada ($24,651).

Employment Of the residents 16 years and older, nearly 56% participate in the civilian labor force. The unemployment rate for Pompano Beach is 6.3% of the civilian labor force; this is only slightly higher than the state unemployment rate (5.8%).

Employment by Industry

Of the 15 main industries in Pompano Beach, the five most dominant in terms of employment are: professional and related services (19.8%), retail trade (18.6%), construction (10.4%), finance, insurance, and real estate (9.3%), and business and repair services (6.5%). Agriculture, forestry and fisheries industries employed 3.0% of the population for the 1990 Census. Table 7.12 gives additional information on the industries in Pompano according to the 1990 Census.

TABLE 7.12 EMPLOYMENT BY INDUSTRY (EMPLOYED PERSONS 16 YEARS AND OVER)POMPANO BEACH, FL Source: U.S. Bureau of the Census

Sector	*# Employed*	*% Employed*
Agriculture, forestry, and fisheries	*958*	*3.0*
Mining	*28*	*< 0.1*
Construction	*3,303*	*10.4*
Manufacturing, nondurable goods	*796*	*2.5*
Manufacturing, durable goods	*1,921*	*6.0*
Transportation	*1,260*	*4.0*
Communications and other public utilities	*823*	*2.6*
Wholesale trade	*1,729*	*5.4*
Retail trade	*5,936*	*18.6*
Finance, insurance, and real estate	*2,962*	*9.3*
Business and repair services	*2,067*	*6.5*
Personal services	*1,935*	*6.1*
Entertainment and recreation services	*732*	*2.3*
Professional and related services	*6,305*	*19.8*
Public administration	*1,101*	*3.5*
Total	*31,856*	*100*

FISHERIES PROFILE

Recreational Fishing

The week we visited Pompano Beach they were celebrating the "50 th Year of Yachting" in Ft. Lauderdale. A local yacht manufacturer reported that he sells 58' yachts worth 3,000,000 dollars and he estimates that 85% of the boats he sells are used for fishing. "These people" he says "are very serious about fishing." People in the area have been making boats since the 40s. Recreational fishing is a very important activity in Pompano Beach. According to Florida's Bureau of Vessel Titling and Registry, in 1996-97 Broward County had 44,151 registered boats, with 41,393 pleasure and 2,043 commercial boats. In contrast to many Florida communities, a substantial amount of the recreational industry is supported by local people in addition to tourists. One indicator of this is a large number of small, local fishing tournaments that respondents estimate attract about 75 percent local people and 25 percent tourists. Tournaments generate money for charity, the 1998 Pompano Beach Ladies Tournament raised $33,500 for charity. Many of these tournaments target billfish, but these are sailfish rather than marlin.

Sailfish are very important for promoting tourism in the Pompano Beach area. Tournaments play an important role in attracting tourists, especially in the otherwise "dead" month of May. Local activities include an Annual Sea Food Festival in April, and a Rodeo tournament. In 1996 the Rodeo has increased to 722 angler entrees with 221 boats. The Rodeo tournament, a popular event among the tourists and locals, is held every year. It started in 1965 to encourage tourists to stay in the area longer. Today the Rodeo is known internationally and the non-profit activity supports marine conservation and educational programs. It has grown since 1966 when there were 79 anglers on 47 boats that entered the tournament. By 1994 there were 667 anglers on 261 boats establishing a tournament industry standard. There were 95 winners that year with more than $60,000 cash given out among them (Hardie 1995).

While most tournaments are non-profit, there have been, and are, several attempts to set up for-profit tournaments is a competitive business. The Salt Water Anglers Association tried for four years to have a local tournament circuit in which a series of tournaments would to a set of grand prizes. It was difficult to get sponsors for a 40 boat tournament. Several respondents indicated that the issue of luck versus skill is crucial to a tournaments success. The problem with the local inshore tournaments is that if the fishery requires skill the same people are always going to win. People want to enter tournaments that are more luck-based.

Catch and release of billfish is actively promoted among recreational fishers by such organizations as the Billfish Foundation and the International Game Fish Association, where it has been policy for 15 years. The Miami Billfish Tournament was the first to decide to go with just catch and release. The idea had been that people would cheat when prizes were as high as $10,000. They went to 100 percent release by doing lie detector tests and observers. Several respondents reported that people have begun to accept catch and release as normal practice even in tournaments.

Commercial Fishing

Pompano Beach has a small longline fleet, remnant of a much larger fleet, that mainly targets tuna and swordfish. There is also some shark fishing farther north along the coast. The boats that dock in Pompano Beach are five small (40-50'), short trip year round longline boats, and six or seven seasonal longline boats. There are some larger boats in nearby Dania. December through April is the most intensive local fishing. The resident fleet stay and are joined by many boats from the north come down to fish for the winter. From April through the end of June the larger sized boats found in fish in the South Atlantic bight and land most of their catch at Charleston SC. The smaller boats fish year round in the Gulf of Florida. If swordfish is closed fall is mainly used for maintenance. The longline fleet deals with two fish houses in Pompano Beach and one in Dania.

Commercial fishers in Pompano Beach are proud of the role they have played in the development of the longline industry. They relate that monofilament longline was created and perfected in Pompano Beach. A group of charter boat captains, the "Mosquito Fleet," began experimenting with longlines and various fish attraction devices in the 1970s. Three of these people opened what one respondent claims was the fish house to specialize in pelagic fish. A related company built the first distant water swordfish fleet in the South.

By the early 1980s the fleet was developing and the geographical range of operations was increasing. They sold the smaller boats and the captains were moving into 68' boats that could move north and follow the fish. They moved from short trips to week long trips. By 1983 they were fishing on George's Bank and would be gone for 2-3 weeks. The Pompano Beach longliners began to invest in even larger boats in the mid-80s. This meant, however, that the best captains were gone for longer and longer times. Family problems, divorces and dislocations began to be issues in the fleet.

By the late 1980s, the eight largest boats in the Pompano fleet had been sent to Hawaii. Even with this increased range the fleet was feeling pressure from several sources. The better captains began to get out of the business because they had to travel so much. The mates that took over were less skilled and this increased the amount of time that the home offices had to spend on absentee management. Trade agreements were increasing competition with imported fish. ICCAT restrictions were becoming tighter and, several respondents feel, the US fleet was being restricted more, or at least more effectively, than its foreign competition. With Bahamian independence the fleet lost access to waters near the Bahamas which had been very important for the smaller (~50') longline boats. More recently, the swordfish boycott has depressed prices for the higher quality swordfish that is bread and butter of the smaller boats. A captain told us that they do catch smaller swordfish. The smaller boats catch some swordfish under 30 lb, and a 41 lb size limit would mean throwing back substantial amounts of fish and considerable loss in income. The development of the Pompano Beach area for yachting and recreational fishing has, made dockage and access to the water more expensive. Swordfish closures have reduced income by shifting effort to less valuable species. One fish dealer reports that before the closures his business was 88 percent swordfish and 12 percent tuna, now he does 59 percent swordfish, 12 percent tuna and 29 percent dolphin. Bluefin tuna landings rank third in East Florida ports for 1996 in Pompano Beach, with 835 pounds. There were 5,126 swordfish caught ranking third and 71sharks ranking sixth.

All commercial respondents reported increased difficulty in getting quality crew. The small boats take two crew plus the captain. Owner operators often try to have at least one crew member that they keep with them. Then they try to find anyone they can for particular trips. Respondents reported that as recently as four years ago crew used to line up for work. Now captains have to shop around and the quality is lower. A fish dealer estimates that about half the captains he deals with are married, with an average age of 35, but some are much older. While about half of them are what the dealer describes as "societies poor souls." They are unskilled, recalcitrant individuals who don't want welfare and don't like authority. They go to sea and then get some money and live in a hotel. The other half , who often come from fishing families, want to be captains. There are also some crew who are captains up north and come down and crew for the winter. There is also the occasional college student on winter break.

The end result of all of these factors has been a very substantial reduction of the Pompano Beach longline fleet. For example, the company that sent the eight boats to Hawaii, and owned ten other longliners as well, now owns only two boats. They say that they own these boats only because the grandchildren want to stay attached to the commercial fishery. This company has successfully developed other aspects of their business. Pompano Beach's remaining fleet is considered, both by its owners and suppliers as being in major trouble. Respondents blame both regulations and absence of swordfish from the Straits of Florida. There are few alternative fisheries. Snapper, king mackerel, and red crab are all closed, limited entry fisheries. Dolphin, however, is a profitable alternative during the spring swordfish closure.

Fishers, and other businesses related to commercial longlining in Pompano Beach, are increasingly turning their attention overseas. The best captains are still the ones that go the farthest, but now it is often to work on foreign boats in foreign waters. One longline equipment supplier reported that only 15% of his business is domestic. He has seen sales of longline equipment in Chile double three times since the early 1990s. When he first went to Uruguay in 1990 they had one boat, now they have 10, Brazil's 3-4 longline boats are now 30-40. Another supplier began his business specifically because of the opportunity he saw in the export of longline gear. The East Coast of the US is 30% of his business. He does not see Americans investing in new fixed equipment but people are still replacing equipment when they have to. He describes the East Coast US longline fleet as currently the least technically sophisticated of all the fleets he supplies.

There is a Florida Commercial Fishermen's Association that is not involved very much in pelagic fisheries. Some longliners are members of the Blue Water Fishermen's Association.

FISHERIES MANAGEMENT ISSUES

Additional Comments Offered by Respondents

Several members of the recreational industry expressed concern about a practice of some charter boat captains. When a customer catches a billfish, they ask them if they want to kill it and have it mounted. The idea is that when the customer has already killed the fish he or she is less likely to back out of the deal upon discovering the cost of the mount. When the customer leaves, however, they throw the fish away and the customer gets a fiberglass replica. The contract is written in such a way that this is technically legal and nothing can be done even if the customer finds out.

There is a great deal of tension between the recreational and commercial fishing groups. Both sides acknowledge a problem with over fished stocks but each often blames the other side. Regulatory discards (having to throw saleable fish back dead in order to comply with regulations) are very demoralizing. They are seen by many as an affront to fishing as a way of life.

3.3 Habitat and Environmental Requirements

3.3.1 Description and Status of Essential Fish Habitat for Dolphin and Wahoo in the Atlantic

As required by the Final Rule for Essential Fish Habitat, the Council is designating EFH for dolphin and wahoo. The Council is also designating EFH-HAPCs as encouraged by the final rule. The following builds on material presented in the South Atlantic Council's Habitat Plan (SAFMC, 1998b) to elaborate on the ecological role of dolphin and wahoo (by life stage) in the habitats described. A general description of species and distribution; reproductive characteristics; age and growth; mortality and longevity; movement patterns and stock structure; and feeding, food, and trophic relationships is presented in Section 3.1.

Available information indicates dolphin (common and pompano) and wahoo use basically the same pelagic habitats. Both species are caught using the same gears by the same fisheries and there is very limited information on habitat use by life stage. Therefore, the Council has determined the most appropriate designation of EFH and EFH-HAPCs for all life stages of dolphin and wahoo is to group them together into an assemblage as provided by the EFH Final Rule. Once additional research is conducted to identify habitat preferences, species and habitat distribution, and species abundance by life stage, the present EFH definitions will be refined and additional EFH-HAPCs, if identified, will be considered for designation. In addition, the following describes, where possible, specific geographic locations, boundaries, and locational maps, where definable, for dolphin and wahoo EFH and EFH-HAPCs. These detailed descriptions support the designations of EFH and EFH-HAPCs presented in Actions 22 and 23 in Section 4.0.

Environmental Requirements at Different Life Stages

The following presents known environmental conditions for dolphin and wahoo at different life stages in the Atlantic.

<u>Dolphin</u>

Eggs - Ditty et al. (1994) concluded that in water temperatures between 25º and 30º C, dolphin eggs would hatch in 26 to 38 hours. Ditty et al. (1994) believed that all spawning occurred in oceanic waters over or beyond the continental shelf. The average station depth for capture in their study was 1,198 m.

Larvae - Ditty et al. (1994) found larvae abundant throughout the year in the Gulf of Mexico, but small larvae were found primarily during warm months. Peak abundances were from April to November. They found larvae primarily in water temperatures greater than 24º C and salinities greater than 33 ppt. Few larvae were collected at salinities less than 25 ppt. They also found that the catch of dolphin larvae increased with the increasing concentration of *Sargassum*. Shcherbachev (1973) found larvae to feed on crustaceans, mainly copepods. He noted that larval dolphin start feeding on larval fish when they reach 20 mm standard length.

Juveniles - Juvenile dolphin inhabit the entire Atlantic. Juvenile dolphin are closely associated with floating objects and *Sargassum* (Gibbs and Collette, 1959; Beardsley, 1967; and Rose and Hassler, 1974). Manooch et al. (1984) found fish to make up the largest portion of juvenile dolphin's diet, but invertebrates also were an important part.

Adults - Beardsley (1967) found that female dolphin mature at 350 mm fork length and are mature by 550 mm. Males begin to mature at a larger size around 400 to 450 mm (Beardsley, 1967). Both sexes reach sexual maturity in their first year of life (Beardsley, 1967). In the

Atlantic, Gibbs and Collette (1959) gave the 20º C isotherm as the limit of the dolphin's normal range. Beardsley (1967) found increased numbers of adults in late spring and summer when water temperatures were 26º to 28º C. Adults generally prefer oceanic salinities, although captive dolphins tolerated salinities ranging from 16 to 26 ppt and temperatures from 15º to 29.4º C (Hassler and Hogarth, 1977). The diet of adult dolphin mainly includes fish (Gibbs and Collette, 1959; Shcherbachev, 1973; Rose and Hassler, 1974; Manooch et al., 1984; Massuti et al., 1998), although squid and crustaceans are also taken. Rose and Hassler (1974) found that five fish families accounted for 74% of the prey weight. These were Exocoetidae (26%), Scombridae (22%), Carangidae (12%), Balistidae (9%), and Coryphaenidae (5%). *Sargassum* was also present in 28% of the stomachs examined and occurred most frequently in the stomachs of small female dolphin. *Sargassum* was found in stomach contents by Rose and Hassler (1974) and Manooch et al. (1984). *Sargassum* is ingested incidentally while dolphin are feeding on the fish that make up the *Sargassum* community. Larger males seem to prefer open ocean habitat while females and smaller males remain associated with *Sargassum* and floating debris. Rose and Hassler (1974) postulated that males were more active feeders than females of similar length. They further theorized that since males are substantially heavier than females of similar age, a greater amount of food is required to sustain body metabolism and this requirement for additional food causes more voracious feeding. The open ocean habitat provides larger prey for the larger male dolphin. Rose and Hassler (1974) used catch records from charter boats as the basis for this hypothesis.

Spawning - Adults reach sexual maturity within their first year of life and spawning take place year-round in waters warmer than 24º C in the Atlantic (Beardsley, 1967). Peak spawning seems to take place in the spring and early fall (Beardsley, 1967). Like most fish, fecundity in dolphins increases with increasing size (Beardsley, 1967). Beardsley (1967) estimated that female dolphins produce 240,000 to 3 million eggs annually.

Wahoo

Eggs - No data currently exist on the habitat used by wahoo eggs in the Atlantic. Adult wahoo spawn near Cuba in the Straits of Florida and Straits of Yucatan (Wollam, 1969). Wollam (1969) also found larvae in these same areas. It is therefore postulated that wahoo eggs occupy these same habitats.

Larvae - Wollam (1969) captured twelve larvae ranging from 4.5 to 10.0 mm standard length in the Straits of Yucatan and Florida. All of these larvae were taken in water depths greater than 400 m, except one larvae which was captured in 32 m of water. All larvae were captured between May and October, and none of the larvae were captured in surface waters. The larvae were caught in obliquely towed nets and Wollam (1969) stated that the larvae have a preference for waters below 100 m.

Juveniles - No data exist on the habitat of juvenile wahoo. It is assumed that juveniles inhabit waters with temperatures of 22º to 30º C and are associated with *Sargassum*. Juvenile wahoo are reported to travel in small schools (Hogarth, 1976).

Adults - Adult wahoo in the Atlantic are pelagic in nature and generally associated with *Sargassum* (Manooch and Hogarth, 1983). Rathjen and Squire (1960) recorded wahoo in similar temperature ranges of 22º to 28º C and from May to October off the coast of North Carolina. Adults feed mainly (over 95%) on fish (Hogarth, 1976; Manooch and Hogarth, 1983). Squids

and crustaceans make up the remaining portion of their diet. Representative species found by Manooch and Hogarth (1983) were round herring (*Etrumeus teres*), Atlantic flyingfish (*Cypselurus melanurus*), frigate mackerel (*Auxis thazard*), butterfish (*Peprilus triacanthus*), porcupinefish (*Diodon hystrix*), juvenile carangids, and balistids. Round herring, Atlantic flyingfish, and frigate mackerel belong to the fast swimming pelagic community. The others belong to families that are associated with *Sargassum*. Manooch and Hogarth (1983) found that wahoo do not usually eat small food items, nor do they feed readily at the surface. They also found no apparent relationship between size of the wahoo and the size of the prey. They theorized that the wahoo is able to use its sharp teeth to render large fish into consumable sizes.

Spawning - Both females and males mature within the first year of life (Hogarth, 1976). Males spawn when reaching a size of 860 mm total length and females when they reach 1,000 mm total length (Hogarth, 1976). Wollam (1969) stated that wahoo have a long spawning season that lasts from May to October with a peak in June and occurs near Cuba in the Straits of Florida and Straits of Yucatan. Fecundity is size dependent in wahoo and was found by Hogarth (1976) to be 8.7 million eggs in a 1,365 mm total length female. He further estimated that a 1,550 mm female would produce 12.8 million eggs, a 1,645 mm female would produce 33.2 million eggs, and a 1,753 mm female would produce 45.3 million eggs.

3.3.1.1 Sargassum Habitat

3.3.1.1.1 Description of Sargassum Habitat

Within warm waters of the western North Atlantic, pelagic brown algae *Sargassum natans* and *S. fluitans* (Phaeophyta: Phaeophyceae: Fucales: Sargassaceae) form a dynamic structural habitat. These holopelagic species are believed to have evolved from benthic ancestors at least 40 million years ago. Evidence supporting this contention include: 1) lack of sexual reproduction characteristic of benthic species, 2) absence of a basal holdfast, 3) endemic faunal elements (10 invertebrates and 2 vertebrates), 4) greater buoyancy than benthic forms, and 5) late Eocene to early Miocene fossil remains from the Carpathian basin of the Tethys Sea (Winge, 1923; Parr, 1939; Friedrich, 1969; Butler et al., 1983; Stoner and Greening, 1984, Luning, 1990). *Sargassum natans* is much more abundant than *S. fluitans*, comprising up to 90% of the total drift macroalgae in the Sargasso Sea. Limited quantities of several benthic species, including *S. filipendula*, *S. hystrix, S. polycertium, S. platycarpum* and *S. pteropleuron*, detached from coastal areas during storms, are also frequently encountered adrift. However, the drifting fragments of these benthic species soon perish (Hoyt, 1918; Winge, 1923; Parr, 1939; Butler et al., 1983).

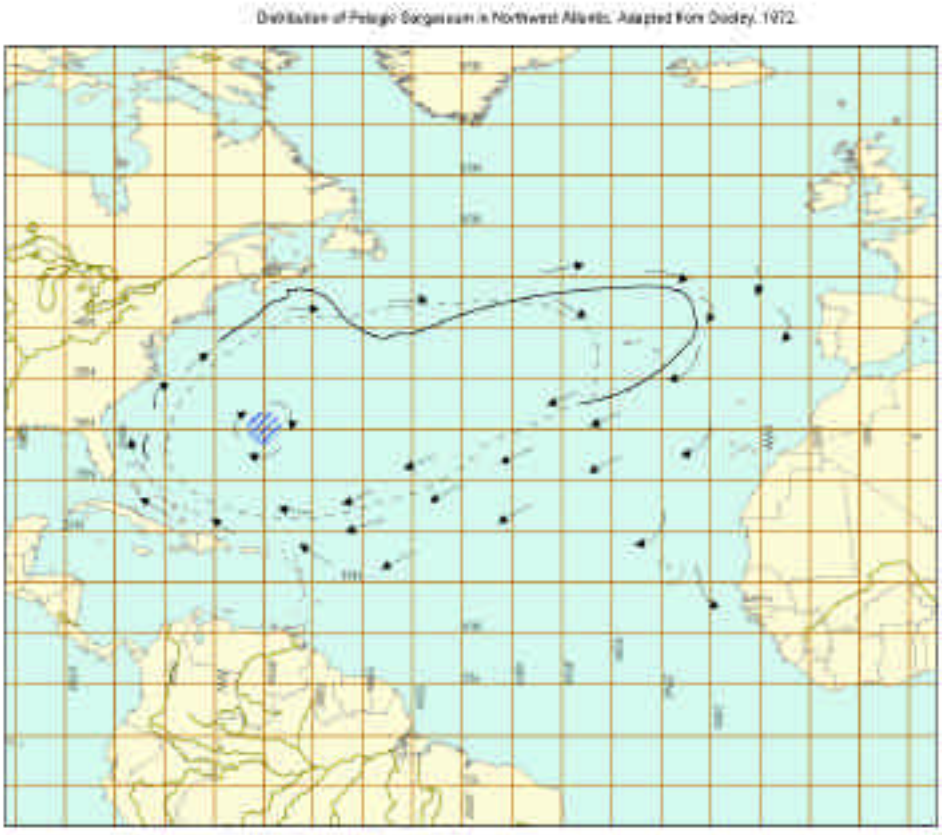
The pelagic species are golden to brownish in color and typically 20 to 80 cm in diameter. Both species are sterile and propagation is by vegetative fragmentation. The plants exhibit complex branching of the thallus, lush foliage of lancolate to linear serrate phylloids and numerous berry-like pneumatocysts. Perhaps the most conspicuous features are the pneumatocysts. These small vesicles function as floats and keep the plants positively buoyant. Gas within these bladders is predominately oxygen with limited amounts of nitrogen and carbon dioxide. The volume of oxygen within the pneumatocysts fluctuates diurnally in response, not to diurnal cycles of photosynthesis, but to changes in the partial pressure of oxygen in the surrounding medium (Woodcock, 1950; Hurka, 1971). There are generally a large number of pneumatocysts on a healthy plant: up to 80% of the bladders can be removed and the plants will remain positively buoyant (Zaitsev, 1971). Under calm sea states the algae are at the surface with less than 0.3% of their total mass exposed above the air - water interface. Experiments indicate that an exposure to dry air of 7-10 minutes will kill phylloids, whereas, pneumatocysts

and thallomes can tolerate exposures of 20-30 minutes and 40 minutes, respectively. Wetting of exposed parts with seawater at 1 minute intervals, however, is enough to prevent tissue damage (Zaitsev, 1971). In nature, such stress is likely encountered only during the calmest seas or when the algae is cast ashore. Illustrations and descriptions of *S. natans* and *S. fluitans* are given in Hoyt (1918), Winge (1923), Parr (1939), Taylor (1960), Prescott (1968), Humm (1979), Littler et al. (1989) and Schneider and Searles (1991).

Most pelagic *Sargassum* circulates between 20° N and 40° N latitudes and 30° W longitude and the western edge of the Florida Current/Gulf Stream (Figure 8a). The greatest concentrations are found within the North Atlantic Central Gyre in the Sargasso Sea (Winge, 1923; Parr, 1939; Ryther, 1956; Dooley, 1972; Butler et al., 1983; Butler and Stoner, 1984; Nierman et al., 1986). Total biomass is unknown, but, estimates obtained from net tows range from 800 - 2000 kg wet weight km^{-2}. Within the Sargasso Sea, this translates into a standing crop of 4 to 11 million metric tons (Parr, 1939; Zaitzev, 1971; Peres, 1982; Butler et al., 1983; Butler and Stoner, 1984; Nierman et al., 1986; Luning, 1990). Stoner (1983) suggested that there had been a significant decline in biomass this century, but later recanted (Butler and Stoner, 1984). Nierman et al. (1986) also calculated that no apparent decline had occurred.

Pelagic *Sargassum* contributes a small fraction to total primary production in the North Atlantic. However, within the oligotrophic waters of the Sargasso Sea it may constitute as much as 60% of total production in the upper meter of the water column (Howard and Menzies, 1969; Carpenter and Cox, 1974; Hanson, 1977; Peres, 1982). Estimates of production are typically around 1 mg C m^{-2} d^{-1} with slightly higher values reported from more nutrient rich shelf waters. Production has been shown to double under conditions of nitrogen and phosphorus enrichment (LaPointe, 1986; 1995). Hanisak and Samuel (1984) found *Sargassum* to have low nitrogen and phosphorus requirements, and optimal growth at water temperatures of 24 - 30° C and salinity of 36 ppt. Nitrogen fixation by epiphytic cyanobacteria of the genera *Dichothrix, Trichodesmium,* and *Synechococcus* may enhance production (Carpenter 1972; Carpenter and Cox, 1974; Phlips and Zeman, 1990; Spiller and Shanmugam, 1987). Photosynthesis in both *Sargassum* and the blue-green epiphytes is not inhibited at high light intensities (Hanisak and Samuel, 1984; Phlips et al., 1986): not surprising in view of the neustonic niche they occupy.

Large quantities of *Sargassum* frequently occur on the continental shelf off the southeastern United States. Depending on prevailing surface currents, this material may remain on the shelf for extended periods, be entrained into the Gulf Stream, or be cast ashore (Hoyt, 1918; Humm, 1951; Howard and Menzies, 1969; Carr and Meylen, 1980; Winston, 1982; Haney, 1986; Baugh, 1991). During calm conditions *Sargassum* may form large irregular mats or simply be scattered in small clumps. Langmuir circulations, internal waves, and convergence zones along fronts aggregate the algae along with other flotsam into long linear or meandering rows collectively termed “windrows” (Winge, 1923; Langmuir, 1938; Ewing, 1950, Faller and Woodcock, 1964; Stommel, 1965; Barstow, 1983; Shanks, 1988; Kingsford, 1990). The algae sinks in these convergence zones when downwelling velocities exceed 4.5 cm sec^{-1}. Buoyancy is not lost unless the algae sink below about 100 m or are held under at lesser depths for extended periods (Woodcock, 1950). A time-at-depth relationship exists which affects the critical depth at which bladder failure ensues (Johnson and Richardson, 1977). If buoyancy is lost, plants slowly sink to the sea floor. Schoener and Rowe (1970) indicate that sinking algae can reach 5000 m in about 2 days. Such sinking events contribute to the flux of carbon and other nutrients from the surface to the benthos (Schoener and Rowe, 1970; Pestana, 1985; Fabry and Deuser, 1991). However, the flux of *Sargassum* to the sea floor has not been quantified and there is no information on the fate of this surface export.



Solid line refers to the outer boundary of regular occurrence; dashed line refers to the area in which there is a> 5% probability of encounter within 1° square; hatched circle represents possible center of distribution

Figure 8a. Distribution of pelagic *Sargassum* in the Northwest Atlantic (Source: Roger Pugliese Adapted from Dooley, 1972).

3.3.1.1.2 Utilization of Sargassum Habitat

Pelagic *Sargassum* supports a diverse assemblage of marine organisms including fungi (Winge, 1923; Kohlmeyer, 1971), micro-and macro-epiphytes (Carpenter, 1970; Carpenter and Cox, 1974; Mogelberg et al., 1983), at least 145 species of invertebrates (Winge, 1923; Parr, 1939; Adams, 1960; Yeatman, 1962; Weis, 1968; Friedrich, 1969; Fine, 1970; Dooley, 1972; Morris and Mogelberg, 1973; Ryland, 1974; Teal and Teal, 1975; Peres, 1982; Butler et al., 1983; Deason, 1983; Andres and John, 1984; Stoner and Greening, 1984; Morgan et al., 1985; Nierman, 1986; see Table 1 in Coston-Clements et al., 1991), over 100 species of fishes, four species of sea turtles (Smith, 1968; Fletemeyer, 1978; Carr and Meylan, 1980; Redfoot et al., 1985; Ross, 1989; Carr, 1986; 1987a; 1987b; Schwartz, 1988; 1989; Witham, 1988; Manzella and Williams, 1991; Richardson and McGillivary, 1991), and numerous marine birds (Haney, 1986). Many of the organisms most closely associated with *Sargassum* have evolved adaptive coloration or mimic the algae in appearance (Crawford and Powers, 1953; Adams, 1960; Teal and Teal, 1975; Gorelova and Fedoryako, 1986; Hacker and Madin, 1991).

The following points noted in Manooch et al. (1984) and Table 43 developed from information presented in Manooch et al. (1984), further emphasizes the complexity of the *Sargassum* community and the importance of pelagic *Sargassum* habitat to pelagic fishes

especially dolphin *(Coryphaena hippurus)*. This material further supports the Councils conclusions.

"One major contribution of this paper is that we have documented the importance of the Sargassum community to dolphin, and therefore to anglers that fish for the species. Traditionally, fishermen seek weed-lines to land dolphin and other pelagic fishes. Seasonal angling success has been associated with the distribution of Sargassum along the southeastern United States. For instance, Rose and Hassler (1974) suggested that diminished landings of dolphin off North Carolina were probably caused by lack of tide-lines (usually caused by floating rows of Sargassum) rather than overfishing in previous years as some believed."

"Much of the material indicated that dolphin frequently feed at the surface and ingest fishes, crustaceans, insects, plants, and inorganic items that are associated with floating Sargassum."

"Sargassum which occurred in 48.6% of the stomachs, was considered to be consumed incidental to normal foods."

Table 43. Percentages occurrence of Sargassum in the stomachs of dolphin *Coryphaena hippurus* and yellowfin tuna (Data Source: Manooch et al., 1984; Rose and Hassler, 1974; and Manooch and Mason, 1983).

	Species	Number	Season or Size (FL)	% Occurrence of Sargassum in stomach
Rose and Hassler (1974)	Dolphin	396	All	28%
Manooch et al. (1984)	Dolphin	2,219	All	48.6%
Manooch et al. (1984)	Dolphin	158	Spring	55.1%
Manooch et al. (1984)	Dolphin	845	Summer	50.9%
Manooch et al. (1984)	Dolphin	61	Fall	29.5%
Manooch et al. (1984)	Dolphin	14	Winter	41.2%
Manooch et al. (1984)	Dolphin	13	≥300 mm	23%
Manooch et al. (1984)	Dolphin	987	≥300-500 mm	49%
Manooch et al. (1984)	Dolphin	686	≥500-700 mm	55%
Manooch et al. (1984)	Dolphin	192	≥700-900 mm	43.8%
Manooch et al. (1984)	Dolphin	189	≥900-1,100 mm	43%
Manooch et al. (1984)	Dolphin	71	≥1,100 mm	38%
Manooch and Mason (1983)	Yellowfin tuna			26.5%
Manooch and Mason (1983)	Blackfin tuna			12.4%

"The relative contribution of the Sargassum community to the diet may be indicative of physiological constraints on the foraging behavior of these pelagic predators. The pursuit and capture of free-swimming prey in the open ocean is energetically expensive, while grazing on relatively sessile animals associated with Sargassum can be accomplished without great energy expenditure. The tunas consume a greater proportion of pelagic, adult fishes and take less prey from the Sargassum community than do dolphin. Although both tunas and dolphin are capable of high speed pursuit, tunas have highly vascularized locomotion muscles enabling sustained aerobic metabolism. Dolphin, with a much smaller portion of red muscle, must rely primarily on anaerobic metabolic pathways (mainly glycolosis), and therefore are limited to short bursts of acceleration. Thus, the energetic strategy for dolphin seems to be forage primarily on smaller prey from the Sargassum community, but also to capture larger prey with short bursts of high speed pursuit if the opportunity arises."

3.3.1.1.3 Measuring Sargassum Distribution and Abundance

Anecdotal information provided by advisory panel members and during the public hearing process indicate abundance of dolphin and success rates seems to be correlated with years when *Sargassum* is abundant and weedlines and windrows are frequently encountered when fishing offshore. However, our current understanding of the seasonal distribution and areal abundance (i.e., biomass per unit area) of pelagic *Sargassum* within the EEZ is poor. Gross estimates of the standing stock for the North Atlantic obtained from towed net samples are highly variable and range between 4 and 11 million metric tons. There is a clear need to improve our understanding of the distribution and abundance of this important habitat. Remote technology could aid to that end. Satellite-based Synthetic Aperture Radar (SAR) offers potential for assessing the distribution of large aggregations over broad swaths of the ocean surface. Coincident ship-based ground-truthing would permit an evaluation of the applicability of routine remote measurements of *Sargassum* distribution and abundance. Understanding the areal distribution and seasonal variability may provide a better indication of dolphin and wahoo abundance or availability in a given year.

3.3.1.2 Description of Water Column Habitats

Specific habitats in the water column can best be defined in terms of gradients and discontinuities in temperature, salinity, density, nutrients, light, etc. These "structural" components of the water column environment (*sensu* Peters and Cross, 1992) are not static but change both in time and space. Therefore, there are numerous potentially distinct water column habitats for a broad array of species and life-stages within species.

The continental shelf off the southeastern U.S., extending from the Dry Tortugas to Cape Hatteras, encompasses an area in excess of 100,000 km^2 (Menzel, 1993). Based on physical oceanography and geomorphology, this environment can be divided into two regions: Dry Tortugas to Cape Canaveral and Cape Canaveral to Cape Hatteras. The break between these two regions is not precise and ranges from West Palm Beach to the Florida-Georgia border depending on the specific data considered. The shelf from the Dry Tortugas to Miami is ~25 km wide and narrows to approximately 5 km off Palm Beach. The shelf then broadens to approximately 120 km off of Georgia and South Carolina before narrowing to 30 km off Cape Hatteras. The Florida Current/Gulf Stream flows along the shelf edge throughout the region. In the southern region, this boundary current dominants the physics of the entire shelf (Lee et al., 1992; 1994). In the northern region, additional physical processes are important and the shelf environment can be subdivided into three oceanographic zones (Atkinson et al., 1985; Menzel, 1993). The outer shelf (40-75 m) is influenced primarily by the Gulf Stream and secondarily by winds and tides. On the mid-shelf (20-40 m), the Gulf Stream, winds, and tides almost equally affect the water column. Freshwater runoff, winds, tides and bottom friction influence inner shelf waters (0-20 m).

Several water masses are present in the region. From the Dry Tortugas to Cape Canaveral, the three water types are: Florida Current Water (FCW), waters originating in Florida Bay, and shelf water. Shelf waters off the Florida Keys are an admixture of FCW and waters from Florida Bay (Lee et al., 1992; 1994). From Cape Canaveral to Cape Hatteras, four water masses are found: Gulf Stream Water (GSW), Carolina Capes Water (CCW), Georgia Water (GW) and Virginia Coastal Water (VCW). Virginia Coastal Water enters the region from north of Cape Hatteras. Carolina Capes Water and GW are admixtures of freshwater runoff and GSW (Pietrafesa et al., 1985;1994).

Spatial and temporal variation in the position of the western boundary current has dramatic affects on water column habitats. Variation in the path of the Florida Current near the Dry Tortugas, induces formation of the Tortugas Gyre (Lee et al., 1992; 1994). This cyclonic eddy has horizontal dimensions on the order of 100 km and may persist in the vicinity of the Florida Keys for several months. The Pourtales Gyre, which has been found to the east, is formed when the Tortugas Gyres moves eastward along the shelf. Upwelling occurs in the center of these gyres, thereby adding nutrients to the near surface (<100 m) water column. Wind and input of Florida Bay water also influence the water column structure on the shelf off the Florida Keys (Smith, 1994; Wang et al., 1994). Similarly, further downstream, the Gulf Stream encounters the Charleston Bump, a topographic rise on the upper Blake Ridge. Here the current is often deflected offshore, again resulting in the formation a cold, quasi-permanent cyclonic gyre, and associated upwelling (Brooks and Bane, 1978). Along the entire length of the Florida Current and Gulf Stream, cold cyclonic eddies are imbedded in meanders along the western front. Three areas of eddy amplification are known: Downstream of Dry Tortugas, downstream of Jupiter Inlet (27° N to 30° N latitude) ("The Point" or "Amberjack Hole"), and downstream of the Charleston Bump (32° N to 34° N latitude) ("The Charleston Gyre"). Meanders propagate northward (i.e., downstream) as waves. The crests and troughs represent the onshore and offshore positions of the Gulf Stream front. Cross-shelf amplitudes of these waves are on the order 10 to 100 km. Upwelling within meander troughs is the dominant source of "new" nutrients to the southeastern U.S. shelf and supports primary, secondary, and ultimately fisheries production (Yoder, 1985; Menzel 1993). Off Cape Hatteras the Gulf Stream turns offshore to the northeast. Here, the confluence of the Gulf Stream, the Western Boundary Under Current (WBUC), Mid-Atlantic Shelf Water (MASW), Slope Sea Water (SSW), CCW, and VCW create a dynamic and highly productive environment, known as the "Hatteras Corner" or "The Point" (Figure 8b).

On the continental shelf, offshore projecting shoals at Cape Fear, Cape Lookout and Cape Hatteras affect longshore coastal currents and interact with Gulf Stream intrusions to produce local upwelling (Blanton et al., 1981; Janowitz and Pietrafesa, 1982). Shoreward of the Gulf Stream, seasonal horizontal temperature and salinity gradients define the mid-shelf and inner-shelf fronts. In coastal waters, river discharge and estuarine tidal plumes contribute to the water column structure.

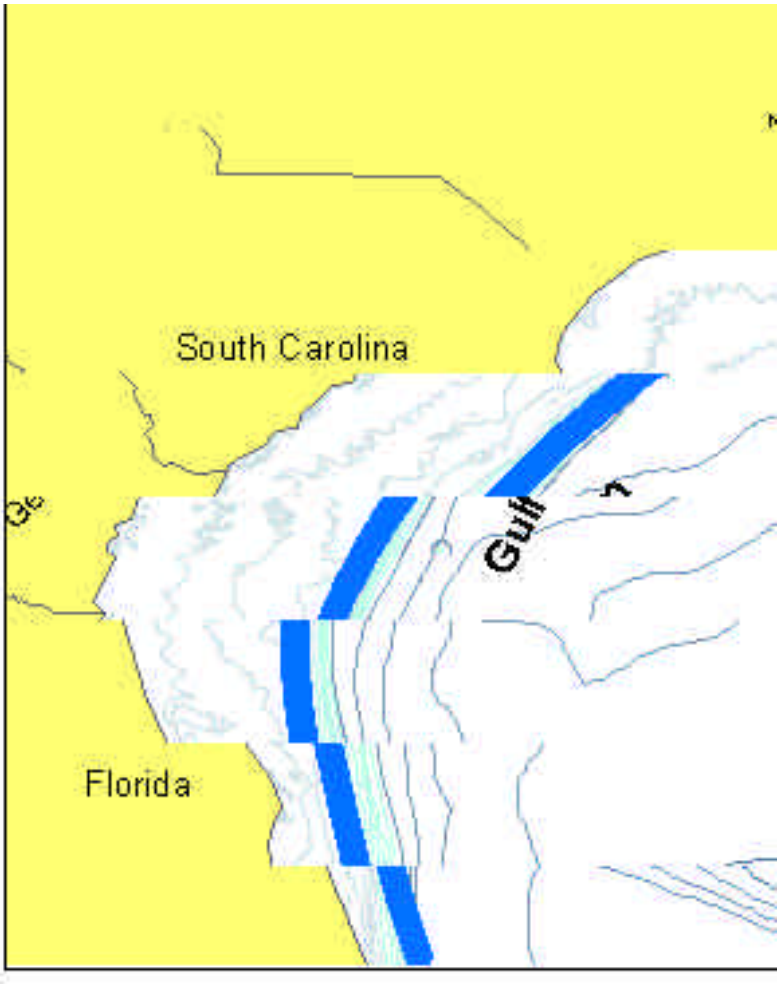


Figure 8b. Water Masses off North Carolina (Source: Roger Pugliese, SAFMC, Adapted from Shepard and Hulbert, 1994).

3.3.1.2.1 Use of Water Column Habitats by Dolphin and Wahoo

Coastal waters off the southeastern U.S. are split into two zoogeographic provinces based on shore fishes and continental shelf invertebrate species. The Caribbean Province includes the Florida Keys and extends northward to approximately the Florida-Georgia border, but its northern boundary is not sharp. The Carolinian Province extends from this border, northwards to Cape Hatteras (Briggs, 1974). A similar faunal break is evident in mesopelagic fish fauna. The boundary between the North Sargasso Sea Province and the South Sargasso Sea Province occurs approximately parallel with Jupiter Inlet, Florida (Backus et al., 1977).

The water column from Dry Tortugas to Cape Hatteras serves as habitat for dolphin and wahoo and a variety of marine fish and shellfish. Dolphin, wahoo, and most marine fish and shellfish broadcast spawn pelagic eggs and thus, most species utilize the water column during some portion of their early life history (e.g., egg, larvae, and juvenile stages). Larvae of shrimp, lobsters, crabs, and larvae of reef, demersal and pelagic fishes are found in the water column (e.g., Fahay, 1975; Powels and Stender, 1976; Leis, 1991; Yeung and McGowan 1991, Criales and McGowan 1994). Problems with species-level identifications prohibits an exact accounting of the number of fishes whose larvae inhabit the water column, but the number of families represented in ichthyoplankton collections ranges from 40 to 91 depending on location, season, and sampling method and includes dolphin and wahoo.

Dolphin and wahoo inhabit the water column as adults. Other pelagic fishes in the region include numerous clupeoids, exocoetids, carangids, *Rachycentron*, *Pomatomus*, coryphaenids, sphyraenids and the scombroids (Schwartz, 1989). Some pelagic species are associated with particular benthic habitats (e.g., *Seriola*, *Sphyraena*), while other species are truly pelagic (e.g., *Thunnus*, *Makaira*). Adult meso- and bathypelagic species inhabit the water column in the Gulf Stream (8c) and adjacent Sargasso Sea (Backus et al., 1977).

Species- and life-stage-specific patterns of water column habitat utilization are not well known for most fishes. Some utilize near-shore fronts as feeding or nursery habitats (e.g., *Anchoa, Scomberomorus*); others utilize offshore fronts (e.g., *Coryphaena, Xiphius*). Important spawning locations include estuarine fronts (e.g., *Cynoscion, Sciaenops*), the mid-shelf front (e.g., *Micropogonias*, *Leiostomus*, *Paralichthys*), and the Gulf Stream front (e.g., *Coryphaena, Xiphius*). Recent work has shown an accumulation of fish larvae, including dolphin and wahoo, in these shelf fronts (Govoni, 1993). Movement of the Gulf Stream front also affects the distribution of adult fishes (Magnuson et al., 1981) and hook and line fisherman and longliners target much of their effort for dolphin and other pelagic species in these frontal zones. In addition, the quasi-permanent gyres which impinge upon the shelf near the Florida Keys and downstream from the Charleston Bump probably serve as important spawning/larval retention habitat for a variety of fishes including dolphin and wahoo (Collins and Stender, 1987; Lee et al., 1994). The region known as "The Point" off Cape Hatteras supports an unusually high biomass of dolphin and wahoo and other upper trophic level predators, including many important pelagic fishes. It has been suggested that the area is the most productive sport fishery on the east coast targeting dolphin, wahoo, and other pelagic species including billfish (Ross, 1989).

Due to their important ecological function, areas of the offshore pelagic environments discussed above and the associated benthic habitats represent essential fish habitat-habitat areas of particular concern (EFH-HAPC) and were designated as such though previous Council actions (see SAFMC Comprehensive Habitat Amendment; SAFMC, 1998c). These include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and the Georgetown Hole (South Carolina); for species in the Snapper Grouper complex, Coastal Migratory Pelagic species including dolphin and Coral and Live/Hard Bottom Habitat. Additional EFH-HAPCs were designated for Coastal Migratory Pelagics including: Amberjack Hole (The Point) off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; and The "Wall" off of the Florida Keys. These areas are productive and highly dynamic oceanic areas. A quasi-permanent, cyclonic eddy with attendant upwelling of nutrient-rich, deep water sets-up in the wake of the Charleston Bump. Upwelling results in persistent primary and secondary production that may well result in an important, if not essential feeding environment for the larvae of fishes that congregate to spawn there. The hydrodynamics of the eddy may well serve in the retention of fish propagules that are lost from local populations elsewhere through entrainment into the Gulf Stream. "The Point" off Cape Hatteras is also highly productive due to the confluence of as many as four water masses. Adults of highly migratory species congregate in this area, while the diversity of larval fishes found there is truly astounding (Table 18b of the Habitat Plan (SAFMC, 1998b)). Other water column habitats with high production or dynamic bottom habitats include "Big Rock" and "The Ten Fathon Ledge". Other areas where water flow is affected by bottom habitat concentrating bait and increasing availability of pelagic habitat like *Sargassum*, include "The Georgetown Hole" off South Carolina.

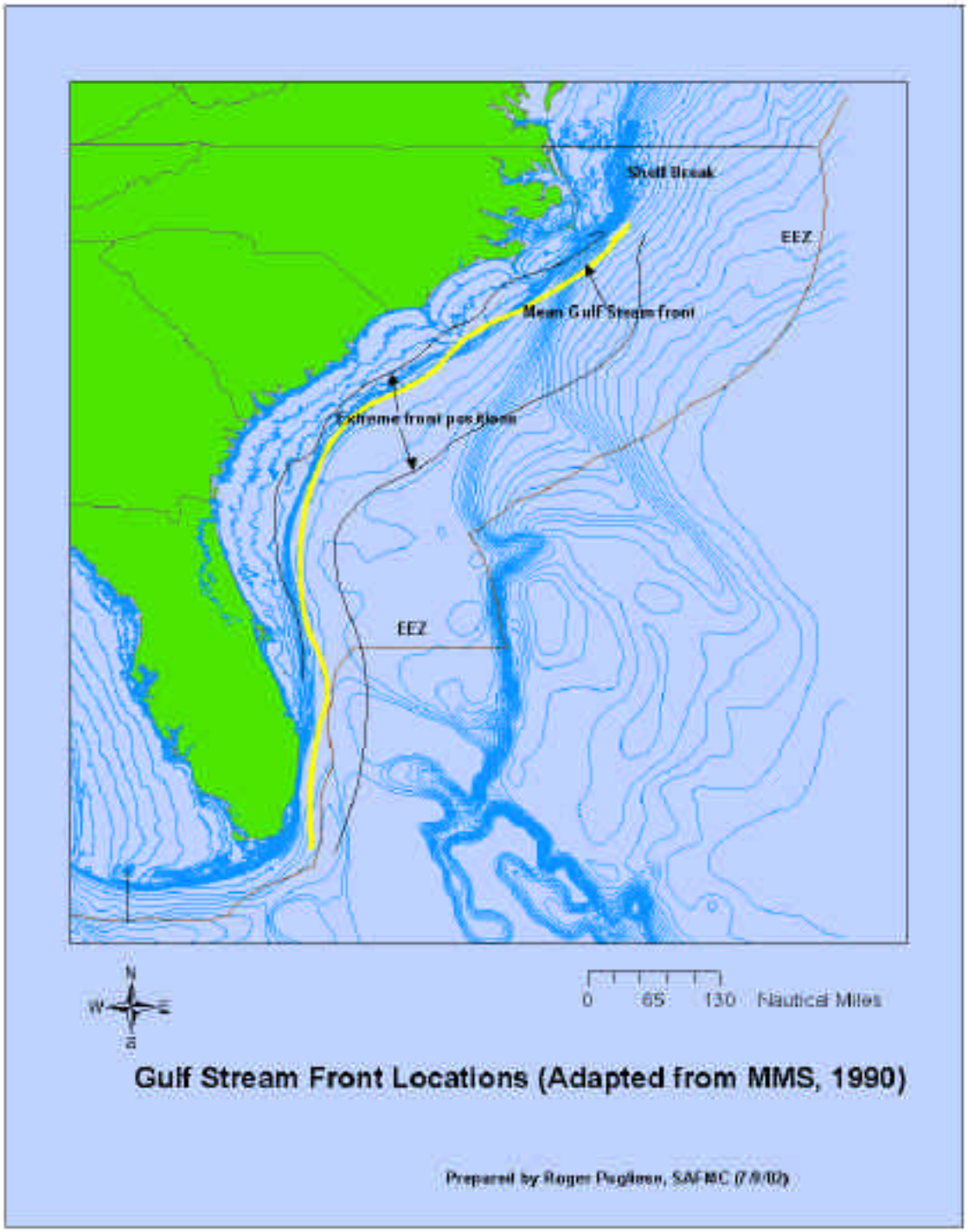


Figure 8c. Gulf Stream front location (Source: MMS 1990).

3.3.1.3 Ecosystem Considerations

The following section is a modification of the South Atlantic Council's SAFE Report for Dolphin and Wahoo (SAFMC, 1999). Tables, Figures, and references are contained in the SAFE Report.

Introduction

As a result of the Sustainable Fisheries Act Amendment to the Magnuson-Stevens Fishery Conservation and Management Act in 1996 the Councils and the NMFS have been mandated to use an ecosystem approach in managing the Nation's Fisheries. The Council has taken the first step with the approval of the Habitat Plan identifying and describing in detail essential fish habitat (EFH) for species managed throughout the South Atlantic and with the approval of the Comprehensive Habitat Amendment amending all existing FMPs to include descriptions of EFH and EFH-habitat areas of particular concern (EFH-HAPCs). By including an Ecosystems Considerations section in the required SAFE reports, existing data regarding the effects of a fishery on the ecosystem will be provided to the Council on a species by species basis while emphasizing the need for a new level of information. This section will also provide a forum in which to express ecosystem concerns for a specific fishery. In addition to receiving information from the National Marine Fisheries Service and Habitat Advisory Panel, anecdotal information concerning ecosystem issues has also been gathered from the Dolphin and Wahoo Advisory Panel, provided both during public hearing and by people familiar with the fishery, and has been included in this section.

While incorporating ecosystem concerns into stock assessment reports is a new approach for this Council, the North Pacific Fishery Management Council has taken this approach for several years. A copy of their ecosystems chapter has been included as Appendix E of the 1999 Wreckfish SAFE report and is an example of the way the ecosystem approach can be used in annual SAFE reports. Another supporting document detailing new ideas and approaches to holistic management is the report to Congress from the Ecosystem Principles Advisory Panel of the NMFS (Appendix F of the 1999 Wreckfish SAFE report), appointed by the National Academy of Sciences. Congress charged NMFS with establishing this panel to assess the extent that ecosystem principles are used in fisheries management and research and to recommend how such principles can be used to improve our Nation's management of living marine resources.

Ecosystem-Based Fishery Management- A Report to Congress by the Ecosystem Principles Advisory Panel as Mandated by the SFA amendments to Magnuson-Stevens Fishery Conservation and Management Act:

Ecosystem-Based Management - *Fishery management actions aimed at conserving the structure and function of marine ecosystems, in addition to conserving the fishery resource. …….… A comprehensive ecosystem-based management approach would require managers to consider all interactions that a target fish stock has with predators, competitors, and prey species; the effects of weather and climate on fisheries biology and ecology; the complex interactions between fishes and their habitat; and the effects of fishing on fish stocks and their habitat.*

Principles, Goals, and Policies recommended by the Ecosystem Principles Advisory Panel include:

Principles -

- The ability to predict ecosystem behavior is limited.
- Ecosystems have real thresholds and limits which, when exceeded, can effect major system restructuring.
- Once thresholds and limits have been exceeded, changes can be irreversible.
- Diversity is important to ecosystem functioning.
- Components of ecosystems are linked.
- Ecosystems are open.
- Ecosystems change with time.

Goals -

- Maintain ecosystem health and sustainability.

Policies -

- Change the burden of proof.
- Apply the precautionary approach.
- Purchase insurance against unforeseen, adverse ecosystem impacts.
- Learn from managed experiences.
- Make local incentives compatible with global goals.
- Promote participation, fairness, and equity in policy and management.

Summary of Recommendations-

Development of a Fishery Ecosystem Plan that will: Delineate the geographical extent of the ecosystem(s) that occur within a Council's authority, including characterization of the biological, chemical, and physical dynamics of the ecosystems, and consider zoning areas for alternative uses; Develop a conceptual model of the food web; Describe the habitat needs of different life history stages; Calculate total removals; Assess uncertainty; Develop indices of ecosystem health; Describe available long-term monitoring; and Assess ecological, human, and institutional elements of the ecosystem.

Ecosystem considerations presented in the final rule to implement the essential fish habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

Overview of EFH FMP Amendment Guidelines

The themes of sustainability and risk-averse management are prevalent throughout the Magnuson-Stevens Act, both in the management of fishing practices (e.g., reduction of bycatch and overfishing and consideration of ecological factors in determining optimum yield [OY]) and in the protection of habitats (i.e., prevention of direct and indirect losses of habitats, including EFH). Management of fishing practices and habitat protection are both necessary to ensure long-term productivity of our Nation's fisheries. Mitigation of EFH losses and degradation will supplement the traditional management of marine fisheries. Councils and

managers will be able to address a broader range of impacts that may be contributing to the reduction of fisheries resources. Habitats that have been severely altered or impacted may be unable to support populations adequately to maintain sustainable fisheries. Councils should recognize that fishery resources are dependent on healthy ecosystems; and that actions that alter the ecological structure and/or functions within the system can disturb the health or integrity of an ecosystem. Excess disturbance, including over-harvesting of key components (e.g., managed species) can alter ecosystems and reduce their productive capacity. Even though traditional fishery management and FMPs have been mostly based on yields of single-species or multi-species stocks, these regulations encourage a broader, ecosystem approach to meet the EFH requirements of the Magnuson-Stevens Act. Councils should strive to understand the ecological roles (e.g., prey, competitors, trophic links within food webs, nutrient transfer between ecosystems, etc.) played by managed species within their ecosystems. They should protect, conserve, and enhance adequate quantities of EFH to support a fish population that is capable of fulfilling all of those other contributions that the managed species makes to maintaining a healthy ecosystem as well as supporting a sustainable fishery. Councils must identify in FMPs the habitats used by all life history stages of each managed species in their fishery management units (FMUs). Habitats that are necessary to the species for spawning, breeding, feeding, or growth to maturity will be described and identified as EFH. These habitats must be described in narratives (text and tables) and identified geographically (in text and maps) in the FMP. Mapping of EFH maximizes the ease with which the information can be shared with the public, affected parties, and Federal and state agencies to facilitate conservation and consultation. 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, should be identified as "habitat areas of particular concern" (HAPC) to help provide additional focus for conservation efforts. After describing and identifying EFH, Councils must assess the potential adverse effects of all fishing-equipment types on EFH and must include management measures that minimize adverse effects, to the extent practicable, in FMPs. Councils are also directed to examine non-fishing sources of adverse impacts that may affect the quantity or quality of EFH and to consider actions to reduce or eliminate the effects.

(ii) EFH determination.

(E) Ecological relationships among species and between the species and their habitat require, where possible, that an ecosystem approach be used in determining the EFH of a managed species or species assemblage. The extent of the EFH should be based on the judgment of the Secretary and the appropriate Council(s) regarding the quantity and quality of habitat that is necessary to maintain a sustainable fishery and the managed species' contribution to a healthy ecosystem.

(11) Review and revision of EFH components of FMPs.

This information should be reviewed as part of the annual Stock Assessment and Fishery Evaluation (SAFE) report prepared pursuant to § 600.315(e)."

3.3.1.4 The Effects of Fishing Gear on the Ecosystem and Prior South Atlantic Council Action

The following summarizes the South Atlantic Council's actions to protect essential fish habitat and essential fish habitat - habitat areas of particular concern for dolphin and wahoo. The Council determined the effects of all other fishing activities are minimal and temporary.

The Council, through a revised Fishery Management Plan for Pelagic *Sargassum* Habitat (SAFMC, 2002) is proposing to prohibit all harvest and possession of *Sargassum* from the South Atlantic EEZ south of the 34° N. latitude line and within 100 miles of shore between the 34° N. latitude and the latitude line representing the NC/VA border. The plan caps annual harvest at 5,000 pounds wet weight (determined dockside after being off-loaded). In addition, harvesters will be required to: (a) take onboard observers on each trip, (b) limit harvest to the months of November through June, and (c) use four inch stretch mesh or larger on a frame no larger than four feet by six feet. It is the Council's intent to protect to the maximum extent practicable *Sargassum* as essential fish habitat by immediately prohibiting harvest and possession of *Sargassum* in all areas of the South Atlantic EEZ where harvest has not previously occurred. In addition, the Council is minimizing harvest with no intent to allow an increase because of the value as EFH and EFH-HAPCs to dolphin/wahoo and other managed species including threatened and endangered sea turtles.

The *Sargassum* community represents a highly evolved ecotype with organisms (e.g., *Sargassum* fish, *Sargassum* pipefish, *Sargassum* shrimp, and *Sargassum* crab) which have evolved cryptic coloration and feeding mechanisms to survive and thrive in this habitat. In addition, many organisms (e.g., bryozoans) live attached to the *Sargassum* and feed on phytoplankton in the water column and associated with the habitat. Individuals of these species would be lost in any removal of this habitat. Recent research indicates the essential nature of the fish and other marine organisms using pelagic *Sargassum* in providing the nutrients for growth of the algae. Therefore, the determination that all *Sargassum* is essential fish habitat, as well as an essential fish habitat-habitat area of particular concern, is further supported by this interrelationship between the inhabitants and the growth of *Sargassum*.

The Council concluded the removal of pelagic *Sargassum* habitat constitutes a net loss of essential fish habitat in the South Atlantic region. Also, the Council concluded that the harvest of pelagic *Sargassum* is a violation of Council habitat policies. The harvest of *Sargassum* is contradictory to the goals and objectives of the Habitat Plan (SAFMC, 1998b), the Habitat Comprehensive Amendment (SAFMC, 1998c), and the Revised Pelagic *Sargassum* Habitat Plan (SAFMC, 2002). An experimental fishing provision was considered but dropped because the Council determined this activity constituted a violation of Council habitat policy and goes against the intent of the Magnuson-Stevens Act mandate to address essential fish habitat. This action would meet the directive to identify, describe, and protect essential fish habitat. An acceleration of harvest could degrade the quality of habitat.

Apart from increases in the non-consumptive values discussed below, the Council concluded severe limitations on harvest is likely to increase productivity of marine life in the ecosystem. In particular, dolphin-fish and turtles would be protected to the extent possible from any potential negative impacts and could result in increased abundance depending on additional measures implemented.

The Council concluded maintaining the integrity of the non-consumptive values and the value to other species as habitat greatly outweighs the costs resulting from severely limiting harvest. Like any natural resource, *Sargassum* commands what have been termed non-use values; specifically existence value, bequest value, and option value. Existence value refers to the satisfaction individuals derive from the knowledge that a natural resource exists and will continue to exist in the future even though they may never use or see the resource. Bequest value is the

benefit associated with endowing a natural resource to future generations. Option value refers to the benefit individuals obtain from retaining the option to use the resource in the future by conserving it now. These values are undoubtedly difficult to measure, but measurement has been done in a few instances (e.g., Amazonian rainforest and Australian Great Barrier Reef).

In terms of non-consumptive uses, the Council concluded severely limiting harvest would reduce further loss of essential fish habitat; increase the possibility of enhancing ecosystem function and marine productivity; and increase existence, bequest, and option values. After implementation, most of the direct benefits will go to the non-consumptive users. The other values, existence, bequest, and option, are likely to increase at a faster rate. There is no direct method to estimate these benefits. Indirect benefits will accrue to consumptive users to the extent productivity of harvested species (e.g., dolphin-fish) are increased.

3.3.1.5 The Effects of the Proposed Measures on Atlantic Dolphin and Wahoo Habitat

[See South Atlantic Fishery Management Council's Habitat Plan (SAFMC, 1998b).]

Descriptions of Biological Impacts, including impacts on habitat, of proposed measures are included in Section 4.0 Environmental Consequences. No other impacts from fishing were identified during the public hearing process. However, the Council's need to protect *Sargassum* as essential habitat to dolphin and wahoo was the most prevalent comment on habitat received during the public hearing process.

3.3.1.6 The Cumulative Impacts of all Fishing and Non-Fishing Activities on EFH

There are no known impacts from any other recreational or commercial fishing activity on dolphin and wahoo EFH other than the direct removal of pelagic *Sargassum*. Subsequently the harvest off South Atlantic states is being severely curtailed or eliminated through management measures contained in the Sargassum Fishery Management Plan (SAFMC, 2002) designed to protect this habitat to the maximum extent practicable. No other impacts from fishing were identified during the public hearing process. However, the Council's need to protect *Sargassum* as essential habitat to dolphin and wahoo was the most prevalent comment on habitat received during the public hearing process. In addition as described in Section 3.3.1.4 no other fishing gear is known to impact dolphin and wahoo EFH.

In addition, the Council reviewed the information available on non-fishing activities which could effect dolphin and wahoo EFH and has included Action 24 to provide conservation recommendations, adopted habitat policy statements (e.g., ocean disposal and oil and gas exploration, development and transportation), and activity based policies which are intended to protect habitat that is essential to dolphin and wahoo.

3.3.1.7 Summary of Procedure to Update EFH

Habitat Plan

The Council will periodically review and update EFH information and revise the Habitat Plan document (SAFMC, 1998b) 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.

Workshop Process to Update EFH and EFH-HAPCs and Initiate Development of the South Atlantic Fishery Ecosystem Plan

The first phase of the development of the plan involves the expansion and updating of the existing Habitat Plan (SAFMC, 1998b). This workshop process will build on information and technical expertise drawn on the development process conducted by the South Atlantic Council to address the 1997 proposed rule published by NMFS 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 original essential fish habitat mandates in the Magnuson-Stevens Act, the Council developed the Habitat Plan to serve as a source document describing EFH and the Comprehensive Habitat Amendment to amend each of the existing fishery management plans to identify and describe EFH and address impacts of fishing gear and/or fishing practices on EFH. In addition, the Council has monitored each fishery management plan and addressed any new impacts from fishing gear and/or fishing practices in an effort to minimize, to the extent practicable, the adverse impacts on EFH. A five-year timeline was established for Council review and update of EFH information through revision of the Habitat Plan. This update was already scheduled for consideration in 2003.

The Council recognizes the scope of the significant task necessary to meet the new essential fish habitat mandates and directive to begin evaluating ecosystem-based management through the development of a Fishery Ecosystem Plan (FEP) and is again calling upon the Habitat Advisory Panel members and other technical experts involved in the previous Habitat Plan development process to serve as or identify appropriate experts to function on a quasi-plan development team for this task. The Habitat and Coral Advisory Panel are scheduled to meet this fall and will provide additional guidance on the workshop process and ecosystem management.

A Final EFH Rule was published on January 17, 2002 replacing the interim Final Rule of December 19, 1997 on which the original EFH and EFH-HAPC designations were made. The Councils have, pursuant to the Final EFH Rule, been directed to update EFH and EFH-HAPC information and designations; in addition, pursuant to revisions to NOAA GC interpretation of the National Environmental Policy Act the Councils will be required to update all Environmental Impact Statements for all Federal Fishery Management Plans under their jurisdiction. Information compiled during this process will further facilitate meeting both the EFH and the NEPA mandate. As was done with the original Habitat Plan, a series of technical workshops will be conducted by Council habitat staff, in cooperation with NMFS/NOS Beaufort Laboratory, NMFS SEFSC Miami Laboratory, NMFS SERO personnel and invited participants. Workshops are intended to build on a review of existing information presented in the Habitat Plan, and focus on updating information pursuant to the new EFH Rule. This effort will begin the integration of comprehensive details of habitat distribution and characterization, the biology of managed species including their biological and the characteristics of the food web they exist in.

3.4 Current Atlantic State Regulations on Dolphin and Wahoo

Dolphin

North Carolina - No minimum size limit; 10 per person per day recreational bag limit; and Charter vessel limit of 60 per trip.

South Carolina - Dolphin must be landed head and tail intact; no transfer at sea; 7 dolphin per person per day recreational bag limit and maximum of 26 dolphin per boat per day; headboats licensed to carry 50 or more passengers could retain up to 50 dolphin per day; 4,500 pound commercial trip limit and 150,000 pound annual commercial landing quota (once the quota is met commercially harvested dolphin will no longer be allowed to be landed in South Carolina); and fishing year would begin April 1 and end the following March 31 or when the quota is reached.

Georgia - 18 inch FL minimum size limit; 15 per person per day recreational bag limit; and commercial closure once a Federal quota (if adopted) is met.

Florida - 20 inch FL commercial size limit and 10 per person per day recreational bag limit.

Wahoo

No Atlantic State has existing regulations or is proposing regulations for wahoo.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This section presents management measures and alternatives considered by the Councils and the environmental consequences of management. The final environmental impact statement (FEIS), regulatory impact review (RIR), initial regulatory flexibility analysis (IRFA), and social impact assessment (SIA)/fishery impact statement (FIS) are incorporated into the discussion under each of the proposed action items.

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

4.2 Management Measures

4.2.1 ACTION 1. Management Unit for Dolphin.

The management unit is the population of dolphin (common dolphin - *Coryphaena hippurus* and pompano dolphin - *Coryphaena equiselis)* from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts.

It is the Councils' intent to remove Atlantic dolphin from the Coastal Migratory Pelagics management unit. Under the designation of the South Atlantic Council as lead in development of an Atlantic FMP, management recommendations with respect to the Atlantic group of dolphin will be the responsibility of the South Atlantic Council working with the Mid-Atlantic and New England Councils.

When the plan was being developed jointly for the Atlantic, Gulf, and Caribbean, the management unit under consideration encompassed all three regions with each Council retaining authority for regulations in their area of jurisdiction. Given the multiple and extensive delays in development of the multi-Council FMP, and the need for regulations in the Atlantic, the South Atlantic Council requested they be relieved of their administrative responsibilities to develop a joint plan and they be designated as true lead for development of an Atlantic FMP in cooperation with the New England and Mid-Atlantic Councils. The proposed management unit manages dolphin to the maximum extent practicable throughout their range in the Atlantic.

Biological Impacts

The proposed action will establish a mechanism for management of dolphin in U.S. waters of the Atlantic. This action is consistent with the best available scientific information including recommendations contained in the proceedings of the SAFMC Dolphin and Wahoo workshop (SAFMC, 1998a). These recommendations are based on the discussions and consensus reached at this workshop regarding the biological characteristics and management options most appropriate for management of dolphin and wahoo.

Genetic analysis of dolphin collected through the western north Atlantic was conducted by Robyn Wingrove with the University of Charleston. No significant genetic differences were found in the samples taken from the proposed management unit. See Section 3.1.5 for more details.

In addition to genetic analyses, available tagging information shows movement of dolphin throughout the management unit, especially along the Atlantic coast, which supports selection of the proposed management unit. Northward movement is shown in the following tag-recapture data (Table 44) provided by SCDNR (Kay Davy, pers. comm.).

Table 44. Dolphin tagged and recaptured in the SCDNR Marine Gamefish Tagging Program (Kay Davy, SCDNR, pers.comm.).

DOLPHIN TAGGED IN THE SC MARINE GAME FISH TAGGING PROGRAM				
DATE TAGGED	**LOCATION TAGGED**	**DAYS OUT**	**LOCATION RECOVERED**	**MIN. DISTANCE (NM)**
12/14/90	STUART, FL	65	ST. LUCIE, FL	
7/1/95	OFF CHARLESTON	24	CAPE HATTERAS, NC	270
8/27/95	OFF CHARLESTON	197	CAPE CANAVERAL,FL	220
5/30/97	OFF CHARLESTON	38	MOREHEAD CITY,NC	160
5/30/97	OFF CHARLESTON	45	OREGON INLET, NC	440
5/17/97	OFF HILTON HEAD	35	CAPE LOOKOUT,NC	245
5/1/98	OFF GEORGETOWN	87	CAPE HATTERAS, NC	210
5/22/98	OFF GEORGETOWN	29	BEAUFORT INLET,NC	150
6/12/98	OFF GEORGETOWN	19	DIAMOND SHOAL, NC	190
5/8/99	OFF GEORGETOWN	98	LONG ISLAND, NY	800
5/21/99	OFF GEORGETOWN	8	OFF GEORGETOWN	0
7/10/99	OFF GEORGETOWN	14	CAPE HATTERAS, NC	210
7/27/99	OFF CHARLESTON	12	CAPE HATTERAS, NC	270

Economic Impacts

Designation of the management unit is required by statute for FMP implementation and establishes a platform for future action and defines the bounds over which such action can apply. In this respect this proposed measure and Option 2 are superior to Option 1 (no action). Defining the management unit for dolphin does not alter current harvest or use of the resource and, therefore has no direct effect on existing fisheries or fishing communities associated with use restrictions. Direct effects only accrue to future actions such as bag limits and trip limits that are promulgated to improve the health of the resource and/or to increase economic benefits to society. These economic benefits would include the non-market benefits anglers derive from improved catch rates or fish size, non-use benefits realized by sectors of society who are not interested in harvest or use of these resources but gain satisfaction from the knowledge that healthy fisheries exist, and increased net revenue to commercial harvesters from improved catch rates.

Social Impacts

Many attendees at the public hearings, particularly from the for-hire and commercial sectors, expressed the belief that a management plan was unnecessary because the fishery was healthy. The Councils recognize that dolphin and wahoo stocks are healthy but wish to be proactive in the management of this fishery, heading off problems before they can occur. The first step in becoming proactive is to declare a management unit. Furthermore, by taking action now, the Council will be helping to lessen the impacts of any conflicts that may arise in the future between different sectors exploiting the resource. However, while managing stocks throughout their geographical range makes good biological sense, it may not be the best option from a social and cultural perspective. Breaking up the management unit may be more beneficial as it will allow for local variances in culture and practice. This increased responsiveness will lead to more realistic management policies and more compliance with the management measures.

Conclusion

Establishment of this management unit complies with the Magnuson-Stevens Act that requires a species be managed to the maximum extent practicable throughout its range. The Councils concluded that defining the management unit is a required part of a fishery management plan and the Councils' action will address the directive to manage a species to the maximum extent practicable throughout its range.

This action allows the Councils to take a risk averse approach and proceed in a timely fashion to develop management measures for the dolphin fisheries of the Atlantic. Although the management unit does not necessarily refer to a biological stock, for the purposes of management of fisheries operating along the U.S. east coast, the management unit definition is appropriate. This is consistent with guidance in 50 CFR 600.320. This action is supported by the best available scientific information and allows the Councils to achieve the stated goals and objectives. The Councils determined this action best achieves the goals of the FMP and the management objectives.

Rejected Options for Action 1:

Option 1. No action.

Biological Impacts

In the South Atlantic and Gulf Councils' areas, dolphin could be managed through the current Coastal Migratory Pelagics FMP of the Gulf and South Atlantic, however this option would not provide for management of dolphin in the New England area of jurisdiction because the species is not included in an existing fishery management plan like Coastal Migratory Pelagics. Lack of management could result in localized depletion.

Economic Impacts

This option would not allow the Councils to manage the Atlantic dolphin fishery throughout its range and to take timely actions when necessary. Without the appropriate management measures, such as bag limits and size limits to ensure healthy fisheries, there could be reduced net economic benefits to society in the future.

Social Impacts

Many attendees at the public hearings, particularly from the for-hire and commercial sectors, expressed the belief that a management plan was unnecessary because the fishery was healthy. If no action is taken, a consistent understanding of the fishery across its geographical range would not be developed, leaving the fishery open to problems such as overfishing and/or the increase of social conflict between fishing sectors. In the short and long-term, not taking any action would lessen the Councils' effectiveness in dealing with and resolving conflict between sectors in the fishery.

Conclusion

This option would not allow the Councils to manage the dolphin fisheries in accordance with the Magnuson-Stevens Act, which directs stocks to be managed to the maximum extent practicable throughout their range. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP. Therefore, the Councils rejected this option.

Option 2. Four other management units considered: (1) Caribbean as a management unit, with Gulf and Atlantic combined as a management unit; (2) Atlantic as a management unit, with Caribbean and Gulf combined as a management unit; (3) Gulf as a management unit, with Caribbean and Atlantic combined as a management unit; and (4) a combined management unit for the Gulf, Caribbean, and Atlantic.

Biological Impacts

While preliminary information indicates that dolphin for the Western North Atlantic may be one stock. Establishing an Atlantic management unit provides the South Atlantic Council with the mechanism to more rapidly implement regulations intended to be risk averse and precautionary for the Atlantic fishery.

Economic Impacts

Establishing a management unit for dolphin should have no economic impact on the recreational and commercial sectors in this fishery, or to other stakeholders who derive benefits from this resource. The choices for setting a geographic range listed under option 2 would meet the technical requirements of defining the management unit and support implementation of an FMP for the resource, thereby providing the platform for subsequent actions that could result in changes in net economic benefits.

Social Impacts

Because the Councils must manage the stocks throughout their range, the most appropriate action is to manage the stocks in a comprehensive geographical range/unit. While this makes biological sense for the fishery, it may not be the best option from a social and cultural perspective. Breaking up the management unit may be more beneficial as it will allow for local variances in culture and practice. This increased responsiveness will lead to more realistic management policies, and hence, more compliance with the policies. Regardless of how the management unit is geographically defined, the action would have an indirect social impact on the fishery. Creating a management unit will be the first step most likely to lead to better data collection and knowledge of all sectors participating in the dolphin and wahoo fishery.

Conclusion

The Councils rejected these options because they were not practicable and they were not the best way to achieve the goals and management objectives of the FMP.

4.2.2 ACTION 2. Management Unit for Wahoo.

The management unit is the population of wahoo (*Acanthocybium solandri*) from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts.

Under the designation of the South Atlantic Council as lead in development of the FMP, management recommendations with respect to the Atlantic group of wahoo will be the responsibility of the South Atlantic Council working with the Mid-Atlantic and New England Councils.

When the plan was being developed jointly for the Atlantic, Gulf, and Caribbean, the management unit under consideration encompassed all three regions with each Council retaining authority for regulations in their area of jurisdiction. Given the multiple and extensive delays in development of the multi-Council FMP, and the need for regulations in the Atlantic, the South Atlantic Council requested they be relieved of their administrative responsibilities to develop a joint plan and they be designated as true lead for development of an Atlantic FMP in cooperation with the New England and Mid-Atlantic Councils. The proposed management unit manages wahoo to the maximum extent practicable throughout their range in the Atlantic.

Biological Impacts

The proposed action will establish a mechanism for management of wahoo in U.S. waters of the Atlantic. In addition, this action will allow the Councils to manage wahoo in accordance with the Magnuson-Stevens Act which states that stocks are to be managed to the maximum extent practicable throughout their range.

Economic Impacts

Designation of the management unit is required by statute for FMP implementation and establishes a platform for future action and defines the bounds over which such action can apply. In this respect this proposed measure and Option 2 are superior to Option 1 (no action). Defining the management unit does not alter current harvest or use of the wahoo resource and, therefore has no direct economic effect on existing fisheries or fishing communities associated with use restrictions. Direct effects only accrue to future actions such as bag limits and trip limits that are promulgated to improve the health of the resource and/or to increase economic benefits to society. Refer to the discussion under Action 1 for a description of these benefits.

Social Impacts

This action will most likely have an indirect but positive social impact on the fishery. Creating a management unit will lead to better data collection and knowledge of all sectors participating in the wahoo fishery in the U.S Atlantic, U.S. Caribbean, and Gulf of Mexico. Furthermore, by dividing the responsibilities for management between the various councils and regions, the will be a positive social impact on the policy-makers themselves, thus aiding in the ease of management and effecting more efficient relations between the various regions. Another benefit will be an enhanced ability to respond more efficiently to local biological and cultural conditions of the fishery.

Conclusion

The Councils concluded that the proposed management unit is appropriate for the wahoo fishery. Also, defining the management unit is a required part of a fishery management plan and the Councils' action will address the directive to manage a species to the maximum extent practicable throughout its range. The Councils have also adopted this unit because wahoo occupy a similar range and use similar pelagic habitats as dolphin and are pursued and harvested by many of the same fishermen.

This action allows the Councils to take a risk averse approach and proceed in a timely fashion to develop management measures for the wahoo fisheries of the Atlantic. Although the management unit does not necessarily refer to a biological stock, for the purposes of management of fisheries operating along the U.S. east coast, the management unit definition is appropriate. This action is supported by the best available scientific information and allows the Councils to achieve the stated goals and objectives. The Councils determined this action best achieves the goals of the FMP and the management objectives.

Rejected Options for Action 2:

Option 1. No action.

Biological Impacts

This option would not provide for management of wahoo in the Councils' areas of jurisdiction. Lack of management could result in a greater risk of biological problems if increased utilization of wahoo resources occurs in the future. In addition, this option would not allow the Councils to manage wahoo in accordance with the Magnuson-Stevens Act which states that stocks are to be managed to the maximum extent practicable throughout their range.

Economic Impacts

This option would not allow the Councils to manage the wahoo fishery throughout its range and to take timely actions when necessary. Without the appropriate management measures, such as bag limits and size limits to ensure healthy fisheries, there could be reduced net economic benefits to society in the future.

Social Impacts

If no action is taken, no consistent understanding of the fishery will occur, leaving the fishery open to developing problems such as overfishing or the increase of social conflict between fishing sectors. No actions could be taken to resolve such problems in a timely manner.

Conclusion

This option would not allow the Councils to manage the wahoo in accordance with the Magnuson-Stevens Act, which directs stocks to be managed to the maximum extent practicable throughout their range. Therefore, the Councils rejected this option. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Option 2. Four other management units considered: (1) Caribbean as a management unit, with Gulf and Atlantic combined as a management unit; (2) Atlantic as a management unit, with Caribbean and Gulf combined as a management unit; (3) Gulf as a management unit, with Caribbean and Atlantic combined as a management unit; and (4) separate management units for each region: Gulf, Caribbean, and Atlantic.

Biological Impacts

Establishing an Atlantic management unit provides the South Atlantic Council with the mechanism to more rapidly implement regulations intended to be risk averse and precautionary for the Atlantic wahoo fishery.

Economic Impacts

Establishing a management unit for wahoo should have no economic impact on the recreational and commercial sectors in this fishery, or to other stakeholders who derive benefits from this resource. The choices for setting a geographic range listed under option 2 would meet the technical requirements of defining the management unit and support implementation of an FMP for the resource, thereby providing the platform for subsequent action that could result in changes in net economic benefits.

Social Impacts

Regardless of how the management unit is geographically defined, the action would have an indirect social impact on the fishery. Creating a management unit will most likely lead to better data collection and knowledge of all sectors participating in the wahoo fishery.

Conclusion

The Councils rejected these options because they would not provide for management of wahoo based on the best available biological information. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

4.2.3 ACTION 3. In the Atlantic any dealer, defined as the person who first receives dolphin or wahoo harvested in or from the EEZ by way of purchase, barter, trade, or transfer in commerce, will be required to possess a valid dealer permit issued by the National Marine Fisheries Service and to report data needed to monitor the dolphin and wahoo fisheries.

Requirements for a federal dolphin and wahoo permit are that the applicant possesses a state dealer's license and that the applicant must have a physical facility at a fixed location in the state where the dealer has a state license. A fee will be charged to cover the administrative costs of issuing the federal dolphin and wahoo permit. In addition, reporting requirements are specified in Action 6.

It should be noted that dealers who already have federal dealer permits for other species in the Atlantic will not have to obtain separate permits. They will only be required to include dolphin and wahoo in the list of species on their permits. The NMFS Southeast Regional Administrator will issue permits and administer the dealer permit program.

When the plan was being developed jointly with the Gulf and Caribbean Fishery Management Councils, requirements for dealer reporting was proposed for the Gulf region. Given the multiple and extensive delays in development of the multi-Council FMP, and the need for regulations in the Atlantic, the South Atlantic Council requested they be relieved of their administrative responsibilities to develop a joint plan and they be designated as true lead for development of an Atlantic FMP in cooperation with the New England and Mid-Atlantic Councils. The proposed dealer reporting requirements are for the fishery prosecuted in the Atlantic EEZ (New England, Mid-Atlantic, and South Atlantic EEZs).

Biological Impacts

Information obtained from dealers, including but not limited to landings, size distribution, and catch locations, would allow NMFS to better monitor this fishery and thus determine the status of dolphin and wahoo stocks. This information is needed to appropriately manage these stocks in accordance with the Magnuson-Stevens Act.

Economic Impacts

Dealers who want to handle dolphin and wahoo must obtain a federal dealer permit. It should be noted that dealers who already have federal dealer permits for other species in the Atlantic will not have to obtain separate permits. They will only be required to include dolphin and wahoo in the list of species on their permits.

Dealers who handle dolphin and wahoo must fill out monthly dolphin and wahoo reports listing their dolphin and wahoo purchases. This particular option is more comprehensive, in terms of data collection, in that not only wholesalers but also retailers are required to submit data reports.

Dealer permits will increase incentives for dealers to report dolphin and wahoo purchases accurately. The estimated annual cost of dealer permits to the industry is unknown at this time because there is no available count on the number of dolphin and wahoo dealers.

The public cost of dealer reporting is estimated at $12.50 per hour for processing monthly reports. Processing time per report is estimated at 15 minutes based on the level of information collected. Requiring that dealers have physical facilities at fixed locations should not impose any large cost on legitimate dealers because physical facilities are required to offload dolphin and wahoo.

This proposed action should benefit the fishery if it is successful in discouraging non-reporting and other forms of non-compliance, which could significantly reduce the expected benefits from other management measures. This action will impose monetary and time cost to dealers from purchasing a dealer permit and submitting regular data reports to the National Marine Fisheries Service. However dealer information will improve economic analyses, and thus management decisions based on this additional information is expected to increased net economic benefits. In comparison, the no action alternative (Option 1) would not impose these costs on dealers, however, Option 1 would not result in increased benefits to society from improved data collection and analyses for better management of these fisheries. Option 2 and Option 3 would provide some of the same benefits as this measure.

Social Impacts

Being able to identify and quantify those directly involved in marketing the fish, the dealers, can only help to attain appropriate data for management of the fishery. Dealers are in the unique position of being involved on a regular basis with the participants in various fisheries, and they are often the first source of information about changes in landings, prices, and fishing conditions, both natural and social. Dealers can also act to quickly disseminate information from management agencies about proposed or real changes in regulations.

While permitting might be seen in the short-term as burdensome paperwork by some of the dealers, the long-term benefits for the fishery in general will outweigh any perceived negative impacts.

There may be more of a problem in identifying small-scale harvester-dealers that work outside of the formal economy. These are fishermen/dealers that do not have a fixed locality for selling their product. Future social and economic analyses of the fishery should try to account for these undocumented activities so that a better picture of the fishery can be obtained.

Conclusion

The Councils concluded that requiring dealer permits will provide a more accurate and efficient method of determining catch levels and value of dolphin and wahoo. Information obtained from dealers, including but not limited to landings, size distribution, and catch locations, will allow NMFS to better monitor this fishery and thus determine the status of dolphin and wahoo stocks. This information is needed to appropriately manage these stocks in accordance with the Magnuson-Stevens Act. The Councils determined this action best achieves the goals of the FMP and the management objectives to: (1) address localized reduction in fish abundance, (2) minimize market disruption, (3) minimize conflict and/or competition between recreational and commercial user groups, (4) optimize the social and economic benefits, and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

Rejected Options for Action 3:

Option 1. No action.

Biological Impacts

This option would not allow determination of the number of dealers in the fishery. If this lack of data precluded the Councils from adequately assessing the status off the dolphin and wahoo stocks, there would be an increased risk of not being able to detect overfishing, should it occur.

Under this option there would be no monetary and time cost to dealers from purchasing a dealer permit and submitting regular data reports. This option would not allow for dealer reporting on dolphin/wahoo landings to better monitor this fishery, and improve data collected for economic analyses and other analyses for management. Also, if a dealer permit is not required the incentive for compliance among dealers and fishermen would decrease and a weak link in the compliance chain could result in reduced economic benefits in the future.

Social Impacts

Not requiring a dealer permit would eliminate any cost to the dealer, thus being of short-term value. However, as noted in the Economic Impacts, not having a dealer permitting structure in place will hamper efforts to effectively obtain data that will assist in managing the fishery. As noted in Section 3.2 in this document, very little social data about the dolphin/wahoo fishery exists. If dealers cannot be identified, then an important potential source of social (as well as biological and economic) data will be lost.

Conclusion

The Councils rejected the no action alternative because it would result in a reduced ability to assess the catch levels and value of dolphin and wahoo resources. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Option 2. In the Atlantic, U.S. Caribbean, and Gulf of Mexico any dealer, defined as the person who first receives dolphin or wahoo harvested in or from the EEZ by way of purchase, barter, trade, or transfer in commerce, would be required to possess a valid dealer permit issued by the National Marine Fisheries Service and to report data needed to monitor the dolphin and wahoo fisheries.

Requirements for a federal dolphin and wahoo permit are that the applicant possesses a state dealer's license and that the applicant must have a physical facility at a fixed location in the state where the dealer has a state license. A fee will be charged to cover the administrative costs of issuing the federal dolphin and wahoo permit. In addition, reporting requirements are specified in Action 6.

This option would establish a dealer permit in the U.S. Caribbean and Gulf of Mexico as is proposed in Action 3 for the Atlantic.

Biological Impacts

Information obtained from dealers, including but not limited to landings, size distribution, and catch locations, would allow NMFS to better monitor this fishery and thus determine the status of dolphin and wahoo stocks. This information is needed to appropriately manage these stocks in accordance with the Magnuson-Stevens Act.

Economic Impacts

There would be time and monetary investment costs to dealers, or in the case of the U.S. Caribbean to most fishermen, from the purchasing of a dealer's permit from NMFS. There would also be time costs associated with data reporting. The information obtained from the identification of dealers in the Atlantic and Gulf of Mexico may improve the economic analyses in the future. Refer to the economic impact section under Action 3 for a detailed discussion of these benefits.

The administrative costs associated with obtaining a dealer's permit would be levied on the same person. The commercial fishing licenses in Puerto Rico cost U.S. $40.00 for 4 years and in the U.S.V.I. $5.00 per year. A dealer's permit would, in most cases, be obtained by the same commercial fisherman who is already paying for the fishing license. In addition, the Draft Regulations (Law 278) in Puerto Rico will require that commercial fishermen obtain permits for a number of other fisheries at a specified cost per year. All these permits could add up to a significant amount of money for the artisanal commercial fisher in the U.S. Caribbean.

The Draft Regulations (Law 278) include a definition of a non-resident commercial fisherman. Such a non-resident commercial fisherman can obtain, at a cost, a commercial fishing license and the special permits for certain fisheries.

The commercial fishers in the U.S.V.I. sell their day's catch off the back of trucks, where the fish are found in ice boxes, road side, or directly to small restaurants in the area. All catch is sold on the same day that it is caught and landed. In Puerto Rico, there are a number of commercial fishing associations that have certain physical facilities for maintaining fish over a period of time. However, most fish are sold upon landing.

As a result, unlike dealers in the Gulf of Mexico and Atlantic, these Caribbean "dealers" are an identified universe subject to the necessary reporting requirements, and they can be monitored to determine if they are complying with fishery management regulations. Thus, the additional cost for a dealer permit and cost to establish physical facilities in the Caribbean would not provide additional benefits to society.

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Social Impacts

Imposing a permit structure on Caribbean harvesters who also act as dealers is seen by some as an action that would likely alter traditional social and cultural configurations among fishing communities. This would occur when the proposed permit structure bypasses long-standing economic ties based on reciprocity and kinship among fishermen and others. This would lead to perhaps severe disruption of social and household relations not only for those directly involved in the fishery, but for those people indirectly involved, such as the consumer.

Furthermore, because in many instances the fishermen is also the vessel owner, operator and the dealer, he will be required to obtain three separate permits, perhaps causing economic hardship. Additionally, in this case, most fishermen/dealers would not have a fixed location to work from as would be required, and hence would be ineligible to sell their product. This is predicted to cause not only immediate negative impacts, but may actually alter the traditional market and kinship structures in communities over the long-run. Because of the unknown social and economic impacts upon fishermen in the Caribbean, the Councils rejected this option while simultaneously recognizing the benefits of permitting dealers.

Conclusion

This option is no longer appropriate because the Dolphin Wahoo FMP now only addresses the Atlantic.

4.2.4 ACTION 4. Require that the owner of a for-hire vessel obtain a vessel permit from the National Marine Fisheries Service to harvest or possess dolphin or wahoo in or from the Atlantic EEZ.

Require that the owner of a commercial vessel obtain a vessel permit from the National Marine Fisheries Service to harvest or possess dolphin or wahoo in or from the Atlantic EEZ.

In order to qualify for a commercial vessel permit in the Atlantic, during one of the three calendar years preceding the control date, the vessel owner (1) must have 25 percent of his or her earned income derived from commercial or for-hire fishing, or must have earned at least $10,000 from either commercial or for-hire fishing and (2) must be able to document 250 pounds of landings and sale of dolphin and/or wahoo on or before the control date of May 21, 1999 in the Atlantic. Alternatively individuals may also qualify for a commercial permit if they hold a valid permit in the snapper-grouper, king mackerel, or swordfish fisheries. The commercial permit is transferable (1 for 1) with vessel when sold or replaced. Allow a 200 pound incidental harvest possession limit of dolphin and/or wahoo for vessels with a valid federal commercial permit fishing North of 39° North latitude.

For a person aboard a fishing vessel to fish for dolphin and wahoo in the exclusive economic zone (EEZ), possess dolphin and wahoo in or from the EEZ, off-load dolphin and wahoo from the EEZ, or sell dolphin and wahoo in or from the EEZ, a vessel permit for dolphin and wahoo must be issued to the vessel and be on board.

A fee will be charged to cover the administrative costs of issuing federal vessel permits. There are no requirements to qualify for a for-hire vessel permit.

The NMFS Southeast Regional Administrator will issue permits and administer the vessel permit program.

When the plan was being developed jointly with the Gulf and Caribbean Fishery Management Councils, requirements for vessel permits was proposed for the Gulf and Caribbean regions. Given the multiple and extensive delays in development of the multi-Council FMP, and the need for regulations in the Atlantic, the South Atlantic Council requested they be relieved of their administrative responsibilities to develop a joint plan and they be designated as true lead for development of an Atlantic FMP in cooperation with the New England and Mid-Atlantic Councils. The proposed vessel permits and reporting requirements are for the fishery prosecuted in the Atlantic EEZ (New England, Mid-Atlantic, and South Atlantic EEZs).

Biological Impacts

This action sets up a limited access system for the fishery pursuant to Section 303(b)(6) of the Magnuson-Stevens Fishery Conservation and Management Act, in order to achieve optimum yield in the fishery. Requiring vessel permits will have biological impacts to the extent that this permit system helps achieve optimum yield (see Action 8). If requiring permits leads to a more accurate determination of the number of vessels in the fishery and their catch, a better understanding of the status of dolphin and wahoo stocks and the OY of the fishery can be attained. The 200-pound incidental harvest limit will allow northern vessels to retain the few dolphin and wahoo they encounter without the burden of obtaining a permit. This allowance will help achieve OY while not having any adverse biological impacts.

Economic Impacts

Vessel permits will enable identification of commercial harvesting and charterboat vessels in the dolphin and wahoo fisheries and to the extent they limit access, cap the participation in the fishery. This could improve the timeliness of obtaining information on these fisheries and allow for effective enforcement. A fee will be charged to cover the cost of administering this permitting process. This fee is currently $50 per application. The opportunity cost (time spent completing the application) is estimated at $5 per application. However, vessel owners holding other federal permits will only pay an additional $20 to receive an endorsement for dolphin and wahoo on their permits. Additional cost to the industry would include the loss in revenue to those vessels that did not meet the permit qualifying criteria and are prohibited from landing dolphin and wahoo.

At this time the number of individuals who will apply for a vessel permit is unknown since the universe of vessels that commercially land dolphin and wahoo cannot be identified. However, these losses could be minor as most vessels in the for-hire and full time commercial harvesting sectors are expected to meet the $10,000 revenue earning criteria that has been the standard used by the Council in determining commercial activity. Also, most vessels that have a "serious interest" in the commercial harvest of dolphin and or wahoo should meet the 250 pound dolphin and wahoo landings requirement. In terms of overall income, 250 pounds of dolphin would have an ex-vessel value of $387.50, using the 2000 average price of $1.55 per pound ($1.55 x 250).

Data from a recently completed study on the for-hire sector indicated that the mean income for South Atlantic charterboat vessels was $51,000 (Holland et al., 1999). Information on the distribution of fishing income was not presented in this report. However, analysis of the data set revealed that among charterboats that targeted dolphin and wahoo only 3.7% reported annual gross fishing income less than $10,000 annually (one observation out of 27). The average length of this category was 23 feet and thus it can be assumed that this vessel was probably a guide boat.

There is no specific information on annual fishing income for vessels commercially harvesting dolphin and wahoo in the Atlantic. An earlier report on vessels in the Southeast with federal fishing permits indicated that the geometric mean income in 1997 was $18,215, and 25% of all vessels reported gross income of less than $9,502 (Vondruska, 1998). Again these figures are not representative of only vessels that commercially harvest dolphin and wahoo.

Analysis of the Florida trip ticket data revealed that 1617 vessels (unique vessel numbers) were found to have landed dolphin and/or wahoo on the Florida Atlantic coast during 1997-2001 (1056 in 1997-1999 only). Among the 1617 vessels, 636 had snapper-grouper, king mackerel and/or swordfish permits. Another 101 had some kind of federal permit for charter fishing during 1997-2001, but only 32 of them had landed 250 pounds or more of dolphin and wahoo on the Florida Atlantic coast in at least one year during 1997-1999. In addition, 100 vessels without any kind of federal fishing permit had met the 250-pound and $10,000 criteria, along with 2 Saltwater Products Licensees that could not be associated with a vessel. Thus, 768 vessels out of the 1617, nearly half, would likely qualify for a permit to fish for dolphin and wahoo (768 = 636 + 32 + 100), plus 2 SPLs for which there is no associated vessel identifier.

However, it cannot be assumed that the remainder of these vessels would not qualify for a dolphin/wahoo permit. Some of these vessels could also operate in the for-hire sector, and charter income would allow the vessel to meet the income requirement. In addition some of the commercial fishing vessels would have landings in other states that are not recorded by the Florida trip ticket system that could enable the vessel to qualify for a dolphin/wahoo commercial vessel permit. In this category there could be "private recreational vessels" that obtain a SPL and

sell fish in Florida (there is no income requirement to commercially sell dolphin and wahoo in Florida. They are classified as unrestricted species). This measure was adopted to eliminate this private recreational sale in order to protect the interests of the commercial sector that is dependent on these species.

Vessels with any federal permit that did not qualify for a dolphin/wahoo permit will be allowed an incidental harvest limit of 200 pounds annually when fishing North of the 39° North latitude line. Thus, the short-term forgone revenue of vessels that do not qualify for a permit is not expected to be significant. It is expected that these vessels would make up any minor lost revenue in the future from targeting other species.

The limited access aspect of his measure is only expected to have a minor impact on vessels that do not qualify for a dolphin permit. Vessels that do qualify for a permit would incur an annual out of pocket cost not exceeding $50, and a time cost of $5 for completing the application. It is expected to slow the growth rate of capacity in the future in comparison to the no action alternative (Option 1). In addition, this measure will increase future economic benefits from better management based on data collected from the known universe of participants and better enforcement of fishing regulations.

Social Impacts

Section 303(b)(6) requires that whenever a limited access program is proposed by a federal fishery management body, the Council must take into account present participation in the fishery, historical participation, the economics of the fishery, the capability of fishermen to engage in other fisheries, and the social and cultural framework relevant to the fishery and any affected fishing communities. Although the data available are partial, we can answer these considerations in the majority of cases. While the social and cultural data is limited in the dolphin and wahoo fisheries, there is substantial evidence from other limited entry programs that helps to guide this analysis and make reasonable predictions of social outcomes. Furthermore, enough is known about commercial and for-hire sectors in the fishery that again, one can make reasonable assessments of the social impacts caused by this measure.

Beginning with the for-hire sector, as there are no qualifying criteria to obtain vessel permits, the impacts of this measure should be negligible. Other that the increased burden of paperwork created when applying for a permit, little negative social impact on this sector can be expected (however, with regard to fairness and equity, many fishermen at public hearings questioned why there was no qualifying criteria for the for-hire sector but there was such criteria for commercial vessels). A positive effect from this measure will be the creation of a reliable database that allows for the quantification of the universe of vessels that fish for dolphin and wahoo. Being able to identify this universe will enhance management procedures by increasing management's efficiency and creating a more reliable database.

The social impacts for the commercial sector of those who harvest and sell dolphin and wahoo will be different than for the "no-sale" for-hire sector. The Council however, has made the qualifying criteria to obtain a permit extremely broad to be as inclusive as possible. Having an income requirement in order to qualify actually serves to protect the commercial fishery from encroachment from those who might only be in the fishery for quick profit. As mentioned under Economic Impacts, the majority of for-hire and commercial vessels are predicted to meet the income requirement for a vessel permit.

Requiring commercial landings of at least 250 pounds of dolphin in any one of the three years prior to the control date is also a very liberal criterion. 250 pounds would be equal to approximately 10 to 20fish, which should not prohibit many fishermen from qualifying. Furthermore, since those fishermen who already hold a snapper-grouper, mackerel, tuna or

swordfish permit will be eligible to add dolphin as an endorsement, few impacts are expected to be felt by this group.

One of the only negative social impacts that may occur is that of the cumulative effect of adding one more permitted fishery to the already heavily regulated commercial fisheries in the United States. Each time a permit is created, there is an impact on fisheries in general, and although each impact may be small at the moment of implementation, the cumulative impact over time is predicted to be much greater. Such impacts may be psychological and cultural. They may also be economic, restricting business practices or limiting options. At this time, such impacts can only be suggested, as no work has yet to document these effects has been undertaken in any scientific studies, although it is recommended that such studies be carried out.

It should be noted however, that in public hearing testimony there was some opposition to this measure, citing it was not "fair and equitable" to require permits from some of the fisheries sectors (for hire and commercial) and not others (private recreational fishermen).

One additional social benefit arising from this action will be that this action will be congruent with Action 11 prohibiting the recreational sale of dolphin and wahoo. Whenever measures mirror each other there is less negative social impact upon a user group.

A potential negative impact upon the for-hire sector will be for those who are just entering the chartering sector and have no history in the commercial fishery. They will not be able to document landings or income prior to the control date set for this fishery. If they do not hold other commercial permits such as for snapper grouper or mackerel, they will be effectively barred from selling fish. They could obtain a permit through the purchase of a vessel that already had a permit, but that will be a limited option. This impact will be both negative (for newcomers in the fishery) but positive to those who already hold permits, since their holding in the resource becomes more valuable.

Conclusion

The Councils concluded that requiring vessel permits will more accurately establish the universe of commercial and for-hire vessels in the fishery. This will subsequently improve the timeliness and accuracy of fishery data collected and provide a better opportunity to assess the biological, economic, and social impacts of future management. This action addresses Section 303(b)(6) of the MSFCMA and the Council has determined it will help achieve OY in the fishery.

The 25% and $10,000 income requirements were chosen to track the current requirements for Coastal Migratory Pelagic permits. The 200 pounds was specified as a very low threshold requirement with the intend to include all fishermen that had landed and sold virtually any dolphin and/or wahoo prior to the control date. The 200-pound limit is intended to cover the likely incidental harvest in the area north of 39 degrees North latitude. This would allow this harvest to continue without these fishermen being required to obtain another permit. This trip limit will be enforced along with other fishing regulations as vessels are intercepted and the quantities possessed measured.

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (1) address localized reduction in fish abundance, (2) minimize market disruption, (3) minimize conflict and/or competition between recreational and commercial user groups, (4) optimize the social and economic benefits, (5) reduce bycatch in the dolphin fishery, and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

Rejected Options for Action 4:

Option 1. No action.

Biological Impacts

If a vessel permit is not required, the universe of vessels in this fishery would not be known. Not knowing the number of vessels in the fishery could negatively impact our understanding of the fishery and thus result in less accurate stock assessments which increases the risk of overfishing.

Economic Impacts

Compared to the Council's proposed action, there would be no permit fee for vessel owners nor the time cost from completing these applications. If a vessel permit was not required, the universe of vessels in this fishery would not be known which would not improve enforcement of regulations in the dolphin/wahoo fishery. This situation would not facilitate the collection of information on the fishery to improve management. In the long-term, there would likely be a reduction in economic benefits if management measures were not based on accurate information.

Social Impacts

If permits are not required, the Councils and other fishery managers would be unable to determine who fills these two sectors (commercial and for-hire vessels), how they interact in the fishery, and what impacts the regulations might have upon commercial and for-hire fishers. If this sector cannot be identified, then an important potential source of social (as well as biological and economic) data would be lost.

Conclusion

The Councils rejected this option because it would not identify the universe of vessels and would result in a reduced ability to assess catch levels and effort in the dolphin and wahoo fishery. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

4.2.5 ACTION 5. Require that the operator of a commercial or for-hire vessel obtain an operator's permit issued by the National Marine Fisheries Service to harvest or possess dolphin or wahoo in or from the Atlantic EEZ. On each federally permitted dolphin/wahoo commercial or for-hire vessel, there must be on board at least one operator who has been issued a federal operator's permit for the dolphin/wahoo fishery. The federally permitted operator will be held accountable for violations of fishing regulations and also may be subject to a permit sanction. If an operator's permit has been sanctioned, during the permit sanction period the individual operator may not work in any capacity aboard a federally permitted fishing vessel.

No performance or competency testing will be required to obtain a permit. However, the permit may be revoked for violation of Federal dolphin and wahoo regulations as authorized by 15 C.F.R. 904.

The federal permit program will have the following requirements:

1. Any operator of a vessel fishing for dolphin or wahoo (either commercial or for-hire) must have an operator's permit issued by the NMFS Regional Administrator.

2. An operator is defined as the master or other individual on board a vessel who is in charge of that vessel (see 50 CFR 620.2).

3. The operator is required to submit an application, supplied by the Regional Administrator, for an Operator's Permit. The permit will be issued for a period of up to three years.

4. The applicant must provide his/her name, mailing address, telephone number, date of birth, and physical characteristics (height, weight, hair, and eye color) on the application. In addition to this information, the applicant must provide two passport size color photos.

5. The permit is not transferable.

6. Permit holders will be required to carry their permit aboard the fishing vessel during fishing and off-loading operations and must have it available for inspection upon request by an authorized officer.

7. The Regional Administrator may charge an administrative fee for the operator permit consistent with NOAA guidelines.

Possession of any operator permit under another FMP will meet this requirement. The NMFS Southeast Regional Administrator will issue permits and administer the operator permit program.

When the plan was being developed jointly with the Gulf and Caribbean Fishery Management Councils, a requirement for operator permits was proposed for the Gulf region. Subsequently, with the South Atlantic Council requesting they be relieved of their administrative responsibilities in the development of a joint plan while retaining true lead for development of an Atlantic FMP, the proposed operator permits are for the fishery prosecuted in the Atlantic EEZ.

Biological Impacts

There should be no direct biological impacts associated with requiring operator's permits. There will be indirect impacts from having the ability to identify and prosecute operators who continue to violate regulations implemented to protect the long-term viability of the stock or habitat essential to the species managed under this or other Federal fishery management plans.

Economic Impacts

The cost to the agency for setting up this ID card system for operator permits could run up to $10,000 (data provided by the National Marine Fisheries Service). There would also be the cost of issuing and reissuing these permits when they expire. The cost of ID issuance is expected to be similar to that currently charged for most permit categories ($50). Changes or updates to the operator's personal information during the effective period will be accommodated via issuance of a new ID card that would require another fee payment. NMFS recommends that ID cards be issued for a period of three years and thus operators would have to incur the $50 cost every three years.

The proposed action would ensure that vessel operators would be held accountable for federal fishery violations. If there is a permit sanction, that individual may not work in any capacity aboard a federally permitted fishing vessel during the sanction period. Thus, this measure should deter fishery violations. For vessel owners who are not operators this would enhance accountability of the vessel operators they employ and reduce their costs for fishery violations. For owner/operators this measure would ensure that if convicted of a fishery management violation they could not work as an operator aboard another fishing vessel. Thus, the Council's preferred option is likely to effect higher compliance than Option 1.

A reduction in the incidence of fishery management violations is likely to increase net benefits in the future from a reduction in enforcement costs, a reduction in the cost of the penalties (as a result of voluntary compliance), and gains from increased compliance with fishery management regulations. In comparison the "no action" alternative is not likely to provide these benefits but there will be no vessel operator fee from implementing this rejected alternative.

Social Impacts

One of the greatest deterrents to being able to predict accurately the social impacts of a proposed regulations is the lack of knowledge about who is participating in the fishery. While there may be resistance by commercial and for-hire vessel operators to being permitted, the benefits appear to far outweigh the costs. Aside from the benefits to be gained from being able to identify who is operating commercial and for-hire vessels, thus enhancing understanding of the fishery, compliance with other fishery regulations will be enhanced. By not excluding anyone already in the fishery, the Councils sought to be as inclusive as possible.

Comments received during the public hearing process addressed the issue of "fair and equitable treatment" for all sectors of the fishery. In general, commercial and for-hire operators felt that they had been unfairly singled out for sanctions while recreational fishermen will not be held accountable for their actions. Another concern voiced is that the permits protect owners from errant boat captains, but what protects the operators from crew that may not follow regulations? A related point is that while recreational fishers are not counted in the same way as other sectors in the fishery, the data base will not be complete.

An unintended consequence of this proposed action has been to increase tension between the different sectors in the dolphin wahoo fishery.

Since no competency or performance testing will be required, no one currently operating a vessel will be precluded from continuing and new captains entering the fishery will not be affected. The permit program requirements are generally those applied for all permits in the South Atlantic Region.

Conclusion

The Councils concluded that requiring an operator's permit will make vessel captains more responsible for complying with fishery regulations, thus helping to achieve optimum yield. The Councils addressed Advisory Panel member concerns by allowing the possession of any operator permit under any FMP to meet this requirement. This action will especially reduce the impact on all HMS and many Mid-Atlantic and New England fishermen. Many Mid-Atlantic and New England fishermen are already required to have operator permits. This option is strongly supported by the National Marine Fisheries Service and many vessel owners. The Councils determined this action best achieves the goals of the FMP and the management objectives to: (4) optimize the social and economic benefits, and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

Rejected Options for Action 5:

Option 1. No action.

Biological Impacts

Voluntary compliance could decrease which could lead to negative biological impacts.

Economic Impacts

There would not be an operator's fee or cost to the agency for setting up and managing this ID card system. If a vessel operator's permit is not required the incentive for compliance among vessel operators fishing for dolphin and wahoo would not increase. Thus, there would be no economic gains from improved compliance with fishery management regulations in the future.

Social Impacts

The lack of a permitting structure will have a negative impact on data collection in general and social data collection efforts in particular. Efforts to enhance law enforcement will also suffer. However, by not treating the varying sectors of the fishery differently through different permitting structures, social conflict may decrease in the short and long term between private recreational fishermen and those in the commercial and for-hire sectors.

Conclusion

The Councils rejected this option because it would not provide the number of operators in the fishery or additional incentives to vessel operators to comply with regulations. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

4.2.6 ACTION 6. In the Atlantic, require reporting of vessel permit holders (commercial and for-hire) and include the reporting requirements as specified in the Atlantic Coastal Cooperative Statistics Program (ACCSP).

It is the Councils' intent that existing logbook requirements continue until the cooperating partners meet to determine whether these efforts will continue under ACCSP.

NMFS is to provide an annual summary of available data and research results for dolphin and wahoo. This Annual SAFE Report is to be written and provided to the South Atlantic Council at least three weeks prior to the Council's annual June meeting.

Bycatch Considerations

National Standard 9 states: "Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch."

Section 303(a)(11) of the Magnuson Stevens Act states: "Any fishery management plan which is prepared by any Council … with respect to any fishery, may - establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority--

(A) minimize bycatch; and

(B) minimize the mortality of bycatch which cannot be avoided…."

Thus, in order to minimize bycatch, the Council needs to have a way of evaluating whether there is bycatch in the fishery, and if there is bycatch, the amount of that bycatch. That is done through establishing "a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery" as stated in Section 303(a)(11) above. The standardized reporting methodology the Council is choosing to use includes vessel reporting and other aspects of the ACCSP discussed below. The data collection program to quantify finfish discard and release data for headboat fisheries will be an at-se observer program. The data collection program to quantify finfish discard and release data for charterboat fisheries will be the MRFSS intercept survey and at-sea observers, where feasible. Reporting of protected species interactions is required for both headboat and charterboat fisheries.

Bycatch is believed to be minimal in the recreational, charter, and headboat fisheries. Bycatch in the longline fishery is discussed and addressed in Action 20. Once the bycatch information has been collected and assessed, to the extent practicable, the Council will be able to take any action necessary to minimize bycatch and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

Atlantic Coastal Cooperative Statistics Program or ACCSP

The States of Maine through Florida and the National Marine Fisheries Service presently are collecting statistical information. This information is necessary for the Councils to monitor the fishery. Reporting is mandatory for those selected by the sampling design to ensure a representative subsample of the fishery providing information.

The South Atlantic, Mid-Atlantic, and New England Fishery Management Councils, the ASMFC, NMFS, U.S. Fish and Wildlife Service, all Atlantic Coastal States, District of Columbia, and the Potomac River Fisheries Commission are currently implementing a coastwide fisheries statistics program. A minimum set of reporting requirements (based on a trip-level) for fishermen and dealers have been developed and adopted by each state/agency. These reporting requirements are now the minimum standard for data collection on the Atlantic coast. Nothing in the proposed program will prohibit the state/agency from requiring more detailed information on

a trip basis if so desired. The ACCSP has now approved the following modules: (1) Catch and effort; (2) Biological Sampling; (3) Socioeconomic; and (4) Release, Discard, and Protected Species Interactions (see Appendix J for details of the Discard Module). Each of these are hereby incorporated into the reporting requirements for the dolphin and wahoo fishery.

Ongoing efforts of the Atlantic Coastal Cooperative Statistics Program (ACCSP) will result in standardized data collection. Therefore, the Councils urge state and federal agencies to continue collecting this important information:

1. Total Landings By Month By Area
2. Ex-Vessel Value
3. Boats and Vessels:
   General Characteristics
   Number of Crew
   Gear Type and Size
4. Shore Facilities
5. Employment
6. Annual Wholesale Value
7. Imports and Exports

DEFINITION OF AN ACCSP COMMERCIAL DEALER FOR REPORTING PURPOSES:
A seafood dealer is defined as any person or entity other than the final consumer, who purchases, ships, consigns, transfers, transports, barters, accepts (maintains), or packs any marine fishery products received from marine resource harvesters or marine aquaculturists. Any marine fishery product landed in any state must be reported by a dealer or a marine resource harvester acting as a dealer in that state. Any marine resource harvester or aquaculturist who sells, consigns, transfers, or barters marine fishery products to anyone other than a dealer would himself be acting as a dealer and would therefore be responsible for reporting as a dealer. This definition is provided for purposes of statistical gathering only.

This definition is being used in the Atlantic in the ACCSP Program.

When the plan was being developed jointly with the Gulf and Caribbean Fishery Management Councils, reporting requirements for the Gulf and Caribbean regions were proposed to be included through a framework action. Subsequently, with the South Atlantic Council requesting they be relieved of their administrative responsibilities in the development of a joint plan while retaining true lead for development of an Atlantic FMP, the reporting requirements are for the fishery prosecuted in the Atlantic EEZ.

BACKGROUND FROM THE ACCSP WEBSITE

Recognizing the need for compatible coastal fishery data, the ACCSP Partners came together to set data collection standards. Because the need for some kinds of data must be balanced against the cost and burden of collecting it, the partners have determined various standards for collecting data from various fishing stakeholders.

Metadata, as defined by the ACCSP are “corollary or descriptive information, both numeric and non-numeric that may qualify or explain primary data.” These data include environmental, economic, social, and regulatory factors affecting commercial, recreational, and for-hire fisheries.

Commercial Fisheries

The ACCSP Partners are at various stages in the implementation of ACCSP-compatible data collection programs for commercial fisheries.

Catch and Effort Data

All marine products that are sold, bartered, or otherwise exchanged for value will be handled through a documented dealer or fisherman responsible for reporting as a dealer in the state where initially landed or produced via aquaculture. This dealer or fisherman will be responsible for reporting each transaction, including price.

The ACCSP commercial data collection program is a mandatory, trip-based system with all fishermen and dealers required to report standardized data elements. All catch and effort data are to be collected at the trip-level with resolution for each gear and area combination. For example, landings and effort data should be recorded separately each time the fisherman changes gear or fishing area within a trip. Either one-ticket or two-ticket reporting systems may be used to collect basic catch and effort at the trip level from both the dealer and the fisherman. In a one-ticket system, both the dealer and fisherman report on one form. In a two-ticket system, a fishermen reports trip data and catch estimates on one form, the dealer reports the trip landing weight and price-per-unit on another form, and both enter data that are required to link the two forms.

Commercial harvesters are required to report all commercial trips regardless of catch. A trip with effort but no catch is still considered a trip; therefore, all data elements other than catch must be reported. Dealers are required to submit monthly negative (no activity) reports in the states where they are licensed. Harvesters with no reported commercial landings during the previous license period are required to certify that fact at the time of license renewal. Commercial fishermen and dealer reports are to be submitted monthly by the 10th of each month after the reporting month, unless more stringent reporting requirements exist (e.g. quota monitoring).

All catch and effort data collection programs for commercial fisheries will follow ACCSP quality control and assurance documentation.

The ACCSP encourages the investigation and use of innovative technologies for commercial data collection in order to reduce the reporting and data entry burdens on all parties.

Quota Monitoring data are a subset of commercial catch and effort data, and involve reports with less detailed data and quicker reporting times. The ACCSP endorsed use of computerized Interactive Voice Response (IVR) systems as the best technology for implementing quota monitoring. Other methods (e.g. Operator Assisted Voice Response System, U.S. mail, voice mail, FAX) may be accepted for reporting commercial quotas if dealers do not have access to touch tone phones. The ACCSP also encourages use of cooperative systems across partners that eliminate duplication and increase efficiency.

Catches of quota monitored species, and negative reports, are required on a weekly and sometimes daily basis. Data should be provided to responsible partners as required under state, ASMFC, or federal fishery management plans or by the following minimum standards:

* 0-75% of quota reached: submitted monthly within 15 days of the end of the month, and
* >75% of quota: submitted weekly by Thursday noon following the end of the reporting week.

Registration Tracking

An ACCSP objective is to link data for each specific fishing trip across the various modules. For example, if a commercial vessel carried an observer, and its crew was interviewed at the dock for socio-economic data, we should be able to link the trip data reported by the vessel captain to dealer data on price-per-pound plus the discard data recorded by the observer and the socio-economic data collected by dockside port agents. This linkage is necessary to model the biological and socio-economic impacts of regulations on fisheries. The ability to link data depends

on the development of a unique identifier for various entities. A complete list of all unique identifiers will be maintained in the Registration Tracking module.

Unique identifiers will be required for all commercial dealers and commercial fishermen, and for other commercial entities such as processors. Tracking of permits and fishing vessels by individuals and/or fishing businesses will also be incorporated.

The ACCSP recommends that the hull identification number (HIN) be mandatory on all commercial fishing and for-hire vessels, and that the HIN should be reported on all data collection forms where applicable. The ACCSP recommends that each partner's licensing agency classify each vessel as participating in commercial, recreational and/or for-hire fisheries. The ACCSP specifies baseline data elements that should be collected on all state and federal vessel registration applications.

The current ACCSP standard for the unique identifier for trip data is the trip date plus the vessel identifier plus the trip number when a vessel is involved, and the trip date plus the individual identifier plus the trip number when a vessel is not involved.

Biological Sampling

Dealers should be required to provide port samplers with space and access to landed catch for the collection of biological samples.

Trained field personnel, or port agents, perform biological sampling. Port agents visit docks, unloading sites, and fish houses to collect biological samples by direct observation. Biological sampling includes species identification, length and weight measurements, hard part extraction (e.g., spines, otoliths, scales) for aging purposes, and tissue collection (e.g., gonads, stomach) for life history and stock delineation purposes. The ACCSP Program Design specifies minimum data elements, length frequency measurement methods for specific species, and species-specific aging structures. It also addresses sub-sampling procedures to ensure sampling is representative of the catch.

The ACCSP Biological Review panel recommends annual sampling targets by quarter, area fished, gear/species, and market category. All species managed under Fishery Management Plans are considered priority species. Requests for annual species priorities and target biological sampling levels are sent to NOAA Fisheries Science Center Directors, the ASMFC Director of Research and Statistics, and the Coordinating Council member from each ACCSP Partner. The Biological Review Panel then meets to generate recommendations for sampling. This sampling prioritization is linked closely with the bycatch prioritization process. Recommended priorities and sampling levels are included in the annual ACCSP Request for Proposals.

Filleting of fishes at-sea is a growing issue that may impact the numbers of specimens available for shore-based biological sampling. Partners are urged to consider enacting regulations that require fishes to be landed with head and tail intact, or in a dressed form consistent with Fishery Management Plan requirements (swordfish carcasses, etc.).

ACCSP recommends development of regional aging centers to take advantage of the scientific expertise available coast-wide and to maximize funding available for processing biological samples.

Bycatch, Releases and Protected Species Interactions

The bycatch, releases, and protected species interactions monitoring program (referred to here as bycatch) includes quantitative and qualitative data collection components.

The quantitative component includes:

* mandatory at-sea observers, and
* mandatory and voluntary reporting of releases and discards through the catch and effort trip ticket systems.

Qualitative data collection includes:

* sea turtle and marine mammal stranding and entanglement reporting networks,
* beach bird surveys,
* port sampling to verify reporting on fishermen trip reports, and
* real-time reporting programs (mandatory reports).

Commercial vessels should be required to carry at-sea observers as a condition of permitting in commercial fisheries.

Reporting of protected species interactions and releases and discards of managed species are the highest priorities under this module.

* Reporting of protected species interactions (including threatened species and protected finfish species) is mandatory.
* Reporting of non-protected species releases and discards through the catch and effort reporting system is voluntary.
* Federal statutes require that marine mammal interactions involving incidental injury or mortality must be reported within 48 hours after return from a trip or within 48 hours of occurrence for non-vessel trips.

All partners should develop outreach and training programs to improve reporting accuracy by fishermen.

The ACCSP developed minimum data elements, an extensive set of sampling protocols, and quality control/assurance procedures for at-sea observer programs. The ACCSP and program partners will conduct approved training programs for all new at-sea observers, and will provide certification of qualifications.

Non-verified observer data should be made available for data entry 1-7 days after the trip return date. Finalized data should be provided 45 days after the last day of the month for which data was collected.

Data collected on mandatory trips sampled by At-Sea Observer Programs are not confidential, since the data are observed by an agent of a partner and are not submitted by a person. Observed data on a voluntary trip are confidential.

A Bycatch, Releases, and Protected Species Interactions Committee will recommend priorities for commercial fisheries, using data collected through the monitoring programs and other information. The highest priority for bycatch monitoring of commercial fisheries is fisheries with probable or proven high discards and/or releases. This process will be linked with setting of biological data collection priorities by the Biological Review Panel.

<u>Socioeconomic Data</u>

The ACCSP will collect baseline social and economic data on commercial harvesters using the following voluntary surveys:

* Annual Fixed Cost Survey - data collected from vessel owners/operators,
* Trip Cost Survey (variable costs for a vessel's most recent commercial fishing trip) - data collected from the vessel captain, and
* Annual Owner/Captain/Crew Survey for sociological information.

The surveys will be linked to the ACCSP registration tracking and commercial catch/effort modules. The ACCSP will conduct evaluation studies to determine appropriate survey methodologies (i.e., mode of collection, statistical design) for the commercial harvester surveys.

ACCSP standards include approved survey instruments and quality control and assurance procedures.

All social and economic data at the vessel or individual level are confidential, with access granted only to authorized users as identified in the ACCSP confidentiality protocols…Status

Recreational Fisheries

Data for recreational finfish fisheries on the Atlantic coast are collected primarily through the Marine Recreational Fisheries Statistics Survey (MRFSS), which is conducted by NOAA Fisheries.

Catch and Effort Data

Because of the sheer number of recreational fishermen, it is not practical to require mandatory reporting of all trips and catch, as is done for commercial fishermen. Such an effort would cost tens of millions of dollars to implement and would be impossible to enforce. Therefore recreational data must be collected through surveys that are statistically valid, with levels of precision that allow realistic management decisions.

ACCSP standards for recreational catch and effort data specify that:

* Effort data for the private/rental boat and shore fishing will be collected through a telephone survey with random sampling of households, until a more comprehensive and efficient sampling frame is available, and
* Catch data for the private/rental boat and shore fishing will be collected through an access-site intercept survey of fishermen as they are completing their trips.

ACCSP State Partners are encouraged to increase their involvement in conducting the intercept survey for catch data.

The ACCSP has defined minimum data elements, standard definitions, and quality control/quality assurance procedures for recreational fisheries effort and catch surveys.

The ACCSP will conduct research to evaluate the effects of expanded sampling for improvement of precision and/or accuracy of the estimates of recreational catch and effort data. The ACCSP will implement evaluation studies of alternate methods or sampling frames for effort estimation. A complete list of possible improvements to current surveys that should be evaluated is included in the Program Design.

Quota monitoring data are a subset of recreational catch and effort. The ACCSP is evaluating quota monitoring methods for recreational fisheries.

Registration Tracking

Registration tracking of the for-hire fisheries relies on the same concepts and standards as the commercial and recreational fisheries modules. The commercial standards apply for data collected from the charter and head boat captains and/or operators, and when collecting catch data through the MRFSS intercept interviews (i.e. a vessel identifier will be collected). Unique identifiers for data collected from individual recreational fishermen utilizing for-hire vessels will be the same as for other recreational fishermen.

Biological Sampling

Ideally, when conducting the fishermen intercept interviews for catch data, all fish species in a catch should be measured and weighed unless refused by the fisherman.

Recreational samplers should collect biological data other than lengths and weights (scales, otoliths, tissue, etc.) independently of intercept sampling information in order to minimize possible procedural corruption of the intercept data.

Collection of biological data through tournaments, freezer collections, and scale envelopes offers opportunities for recreational constituencies to participate in the data collection process and should be implemented where feasible.

The ACCSP Program Design specifies minimum data elements, length frequency measurement methods for specific species, and species-specific aging structures. It also addresses sub-sampling procedures to ensure sampling is representative of the catch.

Bycatch, Releases, and Protected Species Interactions

The bycatch, releases, and protected species interactions monitoring program (referred to here as bycatch) includes quantitative and qualitative data collection components.

The quantitative component includes:

* collection of the numbers of released and discarded finfish through existing recreational intercept surveys, and
* collection of release and discard information on protected species through add-ons to existing recreational telephone surveys.

Qualitative data collection includes:

* sea turtle and marine mammal stranding and entanglement reporting networks, and
* additions to existing recreational telephone and intercept surveys for finfish species in high incidence areas and/or the addition of special questions to both surveys.

The ACCSP developed minimum data elements, and quality control/assurance procedures for existing recreational surveys.

Data collected on mandatory trips sampled by At-Sea Observer Programs are not confidential, since the data are observed by an agent of a Partner and are not submitted by a person. Observed data on a voluntary trip are confidential.

A Bycatch, Releases, and Protected Species Interactions Committee will recommend priorities for commercial fisheries, using data collected through the monitoring programs and other information. The highest priority for bycatch monitoring of commercial fisheries is fisheries with probable or proven high discards and/or releases. This process will be linked with setting of biological data collection priorities by the Biological Review Panel.

Socio-Economic Data

The ACCSP will collect baseline social and economic data on the recreational fishery using several voluntary surveys.

The ACCSP will collect social and economic data for finfish recreational fisheries through the addition of data elements to existing MRFSS telephone and intercept surveys. An extensive survey should be conducted every sixth year to allow complete modeling of recreational demand or value (random utility - RUM - or travel-cost models) and expenditures (jobs and dollars spent). Minimum data elements will be added to the intercept or telephone survey every three years to allow for updating the models. The extensive survey will be collected with a brief add-on

to the intercept survey, and a lengthier telephone follow-up survey of interviewed fishermen who agree to participate.

Surveys to determine the value of non-consumptive activities involving marine resources (whale-watching, etc.) should be conducted at three and six year intervals. These should be staggered with the consumptive surveys.

Surveys to determine the value and expenditures for recreational shellfish/crustacean fishing need to be developed.

For-hire Fisheries

For-hire fisheries include charter boats, head boats and guide boats. Guide boats are considered a subset of charter boats for sampling purposes. Charter vessels are generally hired on a per-trip basis, while head boats are paid on a per-person basis. Guide boats are generally smaller vessels that are not documented by the Coast Guard and fish inshore.

Catch and Effort Data

ACCSP standards for for-hire fisheries catch and effort data specify that:

* Effort data will be collected through a weekly survey of ten percent of randomly selected charter and head boat captains and/or operators,
* Catch data for charter boats will be collected through an access-site intercept survey of fishermen as they are completing their trips, and
* Catch data for head boats may be collected through both access-site intercepts of fishermen as they are completing their trips and at-sea observers.

This new method for effort data collection was chosen as the most timely, accurate, and reliable method after extensive evaluation of alternate methods for collecting effort and catch data from charter and head boats, including the new method, 100% mandatory logbook reporting, and the current MRFSS random-digit dialing telephone and fishermen intercepts.

The weekly telephone survey of charter and head boat captains and/or operators depends upon compilation and maintenance of a complete list of vessels to use as a for-hire directory frame.

For data collection purposes, charter boats and head boats will be separated, with guide boats included as part of the charter boat component. All charter boat surveys should be designed to allow identification and representative sampling of those trips that may be called guided trips.

The ACCSP has defined minimum data elements, standard definitions, and quality control/quality assurance procedures for the for-hire fisheries effort and catch surveys. The unique identifier for trip data will be the date of return, sampler number, record number, and vessel, individual, and/or interview identifier.

ACCSP State Partners are encouraged to increase their involvement in conducting the intercept survey for catch data.

Quota monitoring data are a subset of for-hire catch and effort. The ACCSP is evaluating quota monitoring methods for the for-hire fisheries.

Registration Tracking

A unique identifier will be required by the ACCSP for all recreational fishermen.

For private/rental boat and shore modes, the unique record identifier for linkage of catch/effort/biological/bycatch, releases and protected species interactions/economic/social trip data will be the date of return, sampler number, record number, and interview identifier. A permit number or a vessel identifier is not necessary as a minimum data element for the private/rental boat or shore modes.

Biological Sampling

Ideally, when conducting the for-hire fishermen intercept interviews for catch data, all fish species in a catch should be measured and weighed unless refused by the fisherman.

Samplers should collect biological data other than lengths and weights (scales, otoliths, tissue, etc.) independently of intercept sampling information in order to minimize possible procedural corruption of the intercept data.

Collection of biological data through tournaments, freezer collections, and scale envelopes offers opportunities for the for-hire constituencies to participate in the data collection process and should be implemented where feasible.

The ACCSP Program Design specifies minimum data elements, length frequency measurement methods for specific species, and species-specific aging structures. It also addresses sub-sampling procedures to ensure sampling is representative of the catch.

Bycatch, Releases, and Protected Species Interactions

The data collection program to quantify finfish discard and release data for head boat fisheries will be an at-sea observer program. The data collection program to quantify finfish discard and release data for charter boat fisheries will be the MRFSS intercept survey and at-sea observers, where feasible. Reporting of protected species interactions is required for both head boat and charter boat fisheries.

Qualitative monitoring for the for-hire fisheries will include the same standards described for the commercial and recreational programs.

Information on finfish bycatch is currently collected for charter and head boats through the MRFSS intercept sampling, and is reported by head boat operators on the Southeast Logbooks. Observer sampling of head boats is expected to be implemented as part of the new MRFSS for-hire methodology in 2003.

Socio-Economic Data

The standards for socio-economic data collection for recreational fishermen who participate in for-hire fisheries are identical to those proscribed for recreational private-boat and shore fishermen.

Socioeconomic data collection for the commercial aspects of for-hire fisheries remain to be developed.

The Councils' evaluation of impacts begins below:

Biological Impacts

Reporting from vessels in the fishery will improve our understanding of the fishery and will improve stock assessments. Biological sampling and data that will be collected through the logbook and by observers are critical to stock assessments. This information is critical for refinement of the dolphin and wahoo management program, determining the type and amount of bycatch, and in preventing overfishing. Ongoing data collection and stock assessments will allow each Council to implement needed modifications in their area of jurisdiction through the comprehensive framework procedure.

Economic Impacts

ACCSP is a comprehensive data collection program that encompasses the recreational and commercial sectors of the fishery. Reporting, making the catch available, and carrying observers are all necessary to monitor and assess the dolphin and wahoo fishery. These analyses will allow identification of management actions that result in increased economic benefits to society. A

mandatory logbook reporting system, if implemented, enables the collection of more accurate and complete biological and economic data, increases incentives for regulatory compliance, and aids in enforcement. Estimated cost of logbook reporting to the industry is $12.50 per hour per vessel. This represents the opportunity cost for filling out vessel logbooks.

The public burden costs associated with vessel logbooks include: (a) the cost of logbooks at $8.00 per logbook, (b) mailing cost estimated at $3.00 per logbook, and (c) processing cost estimated at $100 per vessel annually. The benefits from better management of the resource is expected to be greater than any inconvenience to harvesters from requiring mandatory logbook reporting and the public/agency costs from implementing this logbook program. Thus, this measure is superior to the no action alternative (Option 1).

Social Impacts

Data collection is a crucial part of fisheries management, particularly as the numbers of participants in each fishery increases. While each sector may resent the implementation of additional reporting regulations, better data allows for more fair and equitable management decisions for the different sectors participating.

Because the ACCSP has established uniform data collection procedure for the east coast of the United States, fishermen – both recreational and commercial – should feel less burdened.

Conclusion

The Councils concluded the most appropriate method to collect accurate data on dolphin and wahoo in the Atlantic was to include reporting requirements as specified in the Atlantic Coastal Cooperative Statistics Program (ACCSP) and to continue existing logbook requirements. Bycatch information is presently collected for the recreational fisheries through the MRFSS program, the Headboat monitoring program of NMFS, and reporting requirements for highly migratory species. Commercial fisheries are monitored for bycatch through logbooks for the snapper grouper fishery, the coastal migratory pelagic fishery, and the highly migratory pelagic species. The ACCSP program provides a baseline and minimum standards and elements so as to provide access to a uniform combined database. Once the bycatch information has been collected and assessed, to the extent practicable, the Council will be able to minimize bycatch and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (3) minimize conflict and/or competition between recreational and commercial user groups, (4) optimize the social and economic benefits, and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

Rejected Options for Action 6:

Option 1. No action.

Biological Impacts

Not requiring reporting from vessels in the fishery would lessen our understanding of the fishery and would not provide biological sampling and data that are critical for refinement of the dolphin and wahoo management program and in preventing overfishing. The collection of data that may be used in assessing the status of the dolphin and wahoo stocks is necessary to insure that each Council may implement needed modifications to the management of dolphin and wahoo in their area of jurisdiction through the comprehensive framework procedure.

Economic Impacts

Without requiring data collection, the Councils would not have the necessary information to manage the fishery in such a manner so as to increase economic benefits to society. Not maintaining a logbook reporting system would not assist in the collection of more accurate and complete data, and not increase regulatory compliance.

Social Impacts

Not requiring vessels to participate in their respective reporting program (RecFIN, ComFIN, and the ACCSP) or to fill out logbooks would have a negative impact overall on the fisheries in question. If the other actions, such as vessel and operator permits are approved, there will be information about the fishery generated but poorly managed. By not employing existing and proven data collection management methods, data can easily become garbled and of little use to the fishermen, the public or policy-makers and scientists. There would be a great deal of data lost, and this would have a negative impact on the ability to understand, monitor, and assess the fisheries and determine appropriate management measures. This situation would ultimately result in negative social impacts.

Conclusion

The Councils rejected this option because it would lessen our understanding of the fishery and would not provide biological sampling and data that are critical for refinement of the dolphin and wahoo management program. This action would result in lack of adequate information for each Council to implement needed modifications to the management of dolphin and wahoo in their area of jurisdiction through the comprehensive framework procedure. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

4.2.7 ACTION 7. Maximum Sustainable Yield for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 18.8 and 46.5 million pounds. The Maximum Sustainable Yield proxy for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 1.41 and 1.63 million pounds. Note: This FMP no longer applies to the Caribbean and Gulf of Mexico Council jurisdictions, however, the range of MSY for dolphin and wahoo based on available data is still appropriate.

Biological Impacts

The National Marine Fisheries Service requires that the Councils include biomass-based estimates of MSY in every fishery management plan. This action will meet the requirement for dolphin. This measure by itself will not impact the fishery, and short-term benefits or costs will depend on the management measures adopted to keep the fishery from exceeding MSY.

The draft exploratory assessment for dolphin (Prager, 2000; Appendix B) provides a benchmark estimate for MSY from a production model. The benchmark estimate is 27 million pounds (12,241 metric tons); 80% confidence intervals range from 18.8 million pounds (8,506 metric tons) to 46.5 million pounds (21,110 metric tons).

A proxy MSY of 1.41 to 1.63 million pounds for wahoo was also provided by NMFS SEFSC based on a range of 5 to 10 year median catch history through 1999 (Source: January 8, 2001 letter from Joe Powers (Acting RA) to Kay Williams with an attached memo from Mike Prager to Nancy Thompson dated December 7, 2000).

The Councils have previously proposed using 30% Static SPR as a proxy for MSY but can now specify MSY for dolphin and wahoo based on biomass estimates.

Economic Impacts

The National Marine Fisheries Service requires that the Councils include biomass based estimates of MSY in every fishery management plan. This action will meet the requirements for dolphin and wahoo, and is superior to the no action alternative (option 1) which will not allow for development of this FMP and Option 2 which only provides a biomass based estimate for dolphin.

Defining the MSY does not alter current use of the resource; it merely establishes a benchmark for fishery and resource evaluation from which to base additional management actions, specifically establishing the OY and TAC. OY and TAC should be less than or equal to MSY. Since defining the MSY has no direct effect on resource harvest/use, there would be no direct economic effects associated with harvest changes. Direct effects only accrue to the additional actions that directly alter the use of the resource.

The reference to economic benefits includes consumer surplus to the recreational sector, non-market value to non-consumptive and non-use groups, and net revenue to the for-hire and commercial harvesting sectors of the dolphin/wahoo fisheries.

Social Impact

The National Marine Fisheries Service requires that the Councils include biomass based estimates of MSY in every fishery management plan. This option would meet the requirement for dolphin and wahoo. This option by itself would not impact the fishery and future social benefits or negative social impacts would depend on the management measures adopted to keep the fishery from exceeding MSY. Social benefits/impacts refers to cultural continuity, community cohesion, fishing opportunities, social conflict, stress, etc.

Conclusion

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (4) optimize the social and economic benefits and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

Rejected Options for Action 7:

Option 1. No action.

Biological Impacts

The Councils rejected this option because the Magnuson-Stevens Act requires the Councils set MSY or a proxy for MSY. In addition, future stock assessments will be required to address biomass estimates for MSY.

Economic Impact

The Magnuson-Stevens Act requires the Councils set MSY or a proxy for MSY in development of an FMP. Thus, this option would not allow for management of dolphin and wahoo in the future, which could result in reduced net economic benefits to society.

Social Impacts

The Magnuson-Stevens Act requires the Councils set MSY or a proxy for MSY in development of an FMP. Thus, this option would not allow for management of dolphin and wahoo in the future, which could result in reduced social benefits to society.

Conclusion

The Councils rejected this option because the Magnuson-Stevens Act requires the Councils set MSY or a proxy for MSY

Option 2. The Maximum Sustainable Yield for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 16 and 18 million pounds. The Maximum Sustainable Yield proxy for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is 30% Static SPR.

Biological Impacts

The National Marine Fisheries Service requires that the Councils include biomass based estimates of MSY in every fishery management plan. This option would meet the requirement for dolphin. This measure by itself would not impact the fishery and short-term benefits or costs would depend on the management measures adopted to keep the fishery from exceeding MSY.

The draft exploratory assessment for dolphin (Prager, 2000) provides a proxy MSY of 15.9 million pounds (7,204 metric tons) based on the average of the last 10 years' catch (1988-1997) or 17.8 million pounds (8,089 metric tons) based on the average of the last 5 years' catch (1993-1997). The Councils previously proposed using 30% Static SPR as a proxy for MSY but can now specify MSY for dolphin and wahoo based on biomass estimates.

Economic Impact

The National Marine Fisheries Service requires that the Councils include biomass based estimates of MSY in every fishery management plan. This option would meet the requirement for dolphin but not wahoo. This option by itself would not impact the fishery and future benefits or costs would depend on the management measures adopted to keep the fishery from exceeding MSY.

Social Impact

The National Marine Fisheries Service requires that the Councils include biomass based estimates of MSY in every fishery management plan. This option would meet the requirement for dolphin but not wahoo. This option by itself would not impact the fishery and future social benefits or negative impacts would depend on the management measures adopted to keep the fishery from exceeding MSY.

Conclusion

The Councils rejected this option in favor of the proposed action because the range for dolphin is based on more data and a biomass proxy for wahoo was provided by NMFS. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Option 3. The Maximum Sustainable Yield for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 18.8 and 46.5 million pounds. The Maximum Sustainable Yield proxy for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 1.63 and 2.176 million pounds.

Biological Impacts

The draft exploratory assessment for dolphin (Prager, 2000) provides a benchmark estimate for MSY from a production model. The benchmark estimate is 27 million pounds (12,241 metric tons); 80% confidence intervals range from 18.8 million pounds (8,506 metric tons) to 46.5 million pounds (21,110 metric tons). A proxy MSY of 1.41 to 1.63 million pounds for wahoo was also provided by NMFS based on catch history.

Economic Impacts

As stated previously, this measure would not have any direct economic effects. Indirect benefits or costs would depend on the management measures adopted to keep the fishery from exceeding MSY.

Social Impact

The National Marine Fisheries Service requires that the Councils include biomass based estimates of MSY in every fishery management plan. This option would meet the requirement for dolphin and wahoo. This option by itself would not impact the fishery and future social benefits or negative impacts would depend on the management measures adopted to keep the fishery from exceeding MSY.

Conclusion

The Councils rejected this option in favor of the proposed action because NMFS recommended using the range for wahoo MSY they provided because it is based on the best available scientific information available. The upper range of MSY for wahoo presented in this option (2.176 million pounds) was derived so that if reduced by 25% to estimate OY the resulting value would be equal to present landings, or approximately 1.63 million pounds. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

4.2.8 ACTION 8. Optimum Yield (OY) for dolphin and wahoo is the amount of harvest that can be taken by fishermen while not exceeding 75% of MSY (between 14.1 and 34.9 million pounds) for dolphin and 100% of MSY (between 1.41 and 1.63 million pounds) for wahoo.

Biological Impacts

The term Optimum Yield is used in the first national standard of the Magnuson Act to achieve the greatest overall benefit to society through the harvest of any species without overfishing. It refers to the maximum number of fish that can be harvested safely as reduced by social, economic, and ecological factors.

Optimum Yield is usually set at a more biologically conservative level than MSY and cannot be set at a level greater than MSY. The difficulty in determining Optimum Yield for dolphin and wahoo comes from the limited information available about the biological, social, economic, and ecological aspects of this fishery. With dolphin and wahoo there is a great deal of uncertainty as to what level of harvest would maximize protection of the resource, ensure economic efficiency, and provide some social security for those involved. Setting Optimum Yield at a low level may be too restrictive for a fishery that operates on a short-lived fish. On the other hand, setting Optimum Yield at a level high enough to allow unlimited harvest could result in less than optimum management.

Economic Impact

Defining the OY does not alter current use of the resource; it merely establishes a benchmark for fishery and resource evaluation from which to base additional management actions, specifically establishing the TAC. Since defining the OY has no direct effect on resource harvest or use, there would be no direct economic effects associated with its specification. Direct economic effects only accrue to the additional management actions that directly alter the use of the resource such as a TAC and other harvest control rules that are implemented to prevent overfishing. This measure is preferred over Option 1 since it would allow for development of the FMP for dolphin and wahoo which would allow for implementation of management measures that could increase economic benefits.

The reference to economic benefits includes consumer surplus to the recreational sector, non-market value to non-consumptive and non-use groups, and net revenue to the for-hire and commercial harvesting sectors of the dolphin/wahoo fisheries.

Social Impacts

This measure by itself will have no impact on the entities in this fishery. Economic and social benefits and costs will depend on the management measures adopted to keep the fishery from exceeding the chosen optimum yield level.

The Councils are required to prevent overfishing and achieve Optimum Yield from each fishery. This requirement directs the Councils to consider overall benefits to society through the harvest of any species without overfishing. Social benefits/impacts refers to cultural continuity, community cohesion, fishing opportunities, social conflict, stress, etc.

Conclusion

The Councils concluded the estimate of MSY for dolphin was appropriate; however, the MSY for wahoo probably underestimates the true MSY. This conclusion was based on the level of wahoo landings relative to the MSY estimate and the fact that the fishery is not fully exploited. In addition, the December 7, 2000 memo from Mike Prager to Nancy Thompson

includes the following: "Percentage points on the median of five-year catch are suspect. The estimation procedure indicates significant bias, and I am unfamiliar with any procedure likely to correct that. Therefore, I suggest that the median proxy estimate based on 5 years of data not be used, or if used, that only the point estimate be used." This statement was also a factor in the Council's determination that the estimate of MSY probably underestimates the true MSY. Therefore, the Councils specified OY as 100% of MSY. As additional data are collected and the MSY estimate is refined, the Councils will reexamine the appropriateness of setting OY = 100% MSY.

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (4) optimize the social and economic benefits, (5) reduce bycatch in the dolphin fishery, (6) direct research to evaluate the role of dolphin and wahoo as prey and predators in the pelagic ecosystem, and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

Rejected Options for Action 8:

Option 1. No action.

Biological Impacts

Not setting an Optimum Yield could lead to overfishing because there would not be a target harvest level.

Economic Impact

There would be no direct economic effect. However, the definition of OY is a necessary benchmark to determine the health of a fishery and whether subsequent action is necessary for stock rebuilding. Such management actions if restrictive would decrease short term economic benefits but with improvements in the fishery could result in increased long term economic benefits. This option would not allow for this monitoring and for subsequent action to avert a decrease in economic benefits.

Social Impacts

This measure by itself would have no impact on the entities in this fishery. Economic and social benefits and costs will depend on the management measures adopted to keep the fishery from exceeding the chosen optimum yield level. The Councils are required to prevent overfishing and achieve Optimum Yield from each fishery. This requirement directs the Councils to consider overall benefits to society through the harvest of any species without overfishing.

Conclusion

The Councils are required to prevent overfishing and achieve Optimum Yield from each fishery. This requirement directs the Councils to consider overall benefits to society through the harvest of any species without overfishing. Therefore the Councils must establish an optimum yield for managed species, hence, the no action option was rejected. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Option 2. Optimum Yield (OY) for dolphin and wahoo is the amount of harvest that can be taken by U.S. fishermen while maintaining the Spawning Potential Ratio (SPR) at or above 40% Static SPR.

Biological Impacts

Prior to biomass based Optimum Yield values for dolphin and wahoo being provided to the Councils by NMFS, a proxy Optimum Yield of 40% Static SPR was proposed as the best that could be developed based on the available data.

Economic Impacts

Defining the OY does not alter current use of the resource; it merely establishes a benchmark for fishery and resource evaluation from which to base additional management actions, specifically establishing the TAC. Since defining the OY has no direct effect on resource harvest or use, there would be no direct economic effects associated with its specification. Direct economic effects only accrue to the additional management actions that directly alter the use of the resource such as a TAC and other harvest control rules that are implemented to prevent overfishing. The Councils rejected this option in favor of the proposed action which is biomass based. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Social Impacts

This measure by itself would have no impact on the entities in this fishery. Economic and social benefits and costs will depend on the management measures adopted to keep the fishery from exceeding the chosen optimum yield level. The Councils are required to prevent overfishing and achieve Optimum Yield from each fishery. This requirement directs the Councils to consider overall benefits to society through the harvest of any species without overfishing.

Conclusion

Optimum Yield for coastal pelagics is presently defined as 40% Static SPR (for Atlantic migratory group king and Spanish mackerel) and was the South Atlantic Council's preferred definition in the SFA amendment (SAFMC, 1998d). The Councils had previously concluded using this Optimum Yield definition serves as a proxy until NMFS provided additional guidance. The Councils rejected this option in favor of the proposed action which is biomass based. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Option 3. Optimum Yield (OY) for dolphin and wahoo is the amount of harvest that can be taken by fishermen while not exceeding 75% of MSY (between 14.1 and 34.9 million pounds) for dolphin and (1.63 and 2.176 million pounds) for wahoo.

Biological Impacts

The impacts would be similar to the proposed Action. The only difference between this option and the proposed action is that the upper range of MSY for wahoo was derived to provide a number, when reduced by 25%, equals the level of present harvest. NMFS provided additional guidance to the Councils indicating the range of wahoo MSY was between 1.41 and 1.63 million pounds which represents the best estimate. Optimum Yield is usually set at a more biologically conservative level and cannot be set at a level greater than MSY. The difficulty in determining Optimum Yield for dolphin and wahoo comes from the limited information available within the social, economic, and ecological realms of this fishery. With dolphin and wahoo there is a great deal of uncertainty as to what level of harvest would maximize protection of the

resource, ensure economic efficiency, and provide some social security for those involved. Setting Optimum Yield at a low level may be too restrictive for a fishery that operates on a short-lived fish. On the other hand, setting Optimum Yield at a level high enough to allow unlimited harvest could result in less than optimum management.

Economic Impact

Defining the OY does not alter current use of the resource; it merely establishes a benchmark for fishery and resource evaluation from which to base additional management actions, specifically establishing the TAC. Since defining the OY has no direct effect on resource harvest or use, there would be no direct economic effects associated with its specification. Direct economic effects only accrue to the additional management actions that directly alter the use of the resource such as a TAC and other harvest control rules that are implemented to prevent overfishing.

Social Impacts

This measure by itself would have no impact on the entities in this fishery. Economic and social benefits and costs will depend on the management measures adopted to keep the fishery from exceeding the chosen optimum yield level. The Councils are required to prevent overfishing and achieve Optimum Yield from each fishery. This requirement directs the Councils to consider overall benefits to society through the harvest of any species without overfishing.

Conclusion

The Councils rejected this option in favor of the proposed action which is based on the best available data. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Option 4. Optimum Yield (OY) for dolphin and wahoo is the amount of harvest that can be taken by fishermen while maintaining a total spawning stock size (biomass) as shown below.

a. Atlantic Dolphin = _____ pounds. b. Atlantic Wahoo =_____pounds.
c. U.S. Caribbean Dolphin = _____pounds. d. U.S. Caribbean Wahoo =_____pounds.
e. Gulf of Mexico Dolphin = _____pounds. f. Gulf of Mexico Wahoo = _____ pounds.

Biological Impacts

The present assessment for both dolphin and for wahoo encompass all regions and does not provide separate estimates.

Economic Impacts

This option by itself would have no impact on the entities in this fishery. Economic benefits and costs will depend on the management measures adopted to keep the fishery from exceeding the chosen optimum yield level.

Social Impacts

This measure by itself would have no impact on the entities in this fishery. Economic and social benefits and costs will depend on the management measures adopted to keep the fishery from exceeding the chosen optimum yield level. The Councils are required to prevent overfishing and achieve Optimum Yield from each fishery. This requirement directs the Councils to consider overall benefits to society through the harvest of any species without overfishing.

Conclusion

The Councils rejected this option due to the inability to assess the stock at a level to estimate spawning biomass so harvest could be allocated by region. In addition, the present assessment for both dolphin and for wahoo encompass all regions. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

4.2.9 ACTION 9. Overfishing Level. Overfishing is defined in terms of the NMFS Guidelines Checklist.

A maximum fishing mortality threshold (MFMT) - In the Atlantic, U.S. Caribbean, and Gulf of Mexico overfishing for dolphin and wahoo is defined as a fishing mortality rate (F) in excess of F_{MSY} ($F_{30\%Static\ SPR}$).

A minimum stock size threshold (MSST) – In the Atlantic, U.S. Caribbean, and Gulf of Mexico the minimum stock size threshold for dolphin and wahoo is defined as a ratio of current biomass ($B_{current}$) to biomass at MSY or (1-M)*$B_{MSY,}$ where 1-M should never be less than 0.5. Using the best available estimates of natural mortality (M = 0.68-0.80) in the formula results in a MSST of 50% $B_{MSY.}$ The stock would be overfished if current biomass ($B_{current}$) was less than MSST and would be recovered when current biomass was equal or greater than the biomass at MSY.

The natural mortality (M) estimates above are for dolphin; values for wahoo are unknown.

Biological Impacts

The National Standards Guidelines provided the following two definitions: (1) "To overfish means to fish at a rate or level that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis" and (2) "Overfishing occurs whenever a stock or stock complex is subjected to a rate or level of fishing mortality that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis." The Guidelines go on to indicate that "In all cases, status determination criteria must specify both of the following: (i) A maximum fishing mortality threshold or reasonable proxy thereof, and (ii) A minimum stock size threshold or reasonable proxy thereof."

Prager (2000) provided a benchmark estimate of F_{MSY} from surplus production modeling for dolphin of 0.51 and estimated the stock status at the start of 1998 as above B_{MSY}. No estimates are available for wahoo.

Economic Impacts

Specifying the overfished and overfishing definitions does not directly affect resource use and, therefore would not have any direct effects on existing fisheries and communities. Direct economic effects associated with resource use would only accrue to subsequent management action in response to an evaluation of the fishery with regards to these benchmarks. If restrictive management actions are implemented there would be increased costs/reduced benefits in the short term. However, it is expected that stock rebuilding will result in increased economic benefits. These definitions are statutory requirements of an FMP and the "no action" alternative (Option 1) would not allow full implementation of the FMP, thereby limiting future opportunity to manage the resource. This situation could lead to reduced economic benefits in the future.

The reference to economic benefits includes consumer surplus to the recreational sector, non-market value to non-consumptive and non-use groups, and net revenue to the for-hire and commercial harvesting sectors of the dolphin/wahoo fisheries.

Social Impacts

This measure by itself would have no impact on the entities in this fishery. Social benefits and costs will depend on the management measures adopted to keep the fishery from exceeding the chosen overfishing level. The Councils are required to prevent overfishing and achieve Optimum Yield from each fishery. This requirement directs the Councils to consider overall benefits to society through the harvest of any species without overfishing. Social benefits/impacts refers to cultural continuity, community cohesion, fishing opportunities, social conflict, stress, etc.

Conclusion

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (3) minimize conflict and/or competition between recreational and commercial user groups, (4) optimize the social and economic benefits, and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries. This action also meets the Magnuson-Stevens Act requirements to specify MFMT and MSST.

Rejected Options for Action 9:

Option 1. No action.

Biological Impacts

The Councils rejected this option and concluded the proposed action best serves as a proxy until NMFS provides additional guidance regarding setting overfished and overfishing levels for dolphin and wahoo. Specifying MFMT and MSST is a legal requirement and this option would not meet the requirement. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Economic Impacts

This option would not allow for development of the FMP for dolphin and wahoo, since definitions of the overfishing level and overfished levels are required by law. This would limit future opportunity to effectively manage the resource and could result in reduced net economic benefits to society.

Social Impacts

This measure by itself would have no impact on the entities in this fishery. Social benefits and costs will depend on the management measures adopted to keep the fishery from exceeding the chosen overfishing level. The Councils are required to prevent overfishing and achieve Optimum Yield from each fishery. This requirement directs the Councils to consider overall benefits to society through the harvest of any species without overfishing.

Conclusion

The Councils are required to define MFMT and MSST for each fishery. Therefore the Councils rejected the no action because it would not define these two parameters as required by the Magnuson-Stevens Act. In addition, the Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Option 2. In the Atlantic and U.S. Caribbean overfishing for dolphin and wahoo is defined as a fishing mortality rate (F) in excess of the fishing mortality rate at 30% Static SPR ($F_{30\% \text{ Static SPR}}$). A threshold level for dolphin and wahoo is defined as 10% Static SPR in the Atlantic. The overfished threshold is based upon a transitional SPR of 30%.

Biological Impacts

There should be no biological impacts from this option because at present the Councils have defined overfishing for all species in the coastal migratory pelagic management unit as a fishing mortality rate (F) in excess of the fishing mortality rate at 30% Static SPR ($F_{30\% \text{ Static SPR}}$) with their recent amendments to meet the mandate under the Sustainable Fisheries Act. This is also the coastal migratory pelagic (CMP) MSY proxy, and it is included in the CMP FMP as the standard that should be used when insufficient data are available, as is the case for dolphin and wahoo. A threshold level for all species in the coastal migratory pelagics management unit is defined as 10% Static SPR in the Atlantic. The 30% Transitional SPR definition for overfished is also consistent with the overfished definition that is currently in place. Because dolphin and wahoo are biologically dissimilar from king and Spanish mackerel, there may be other more appropriate definitions of overfishing and overfished.

If the fishery currently operates at or above the SPR levels specified for these criteria, this option would have no impact on the fishery. However, if it is currently operating below these levels there would be some impact depending on what other measures are implemented to get the stock to the specified SPR levels. There are no data on the current SPR level for dolphin and wahoo stocks. It should be noted that the specified SPR levels under these criteria would create a stable fishery and sustained economic benefits in the long-term.

This overfishing level served as a proxy until NMFS provided additional guidance regarding setting overfished and overfishing levels for dolphin and wahoo. As any scientific definition, it can have social impacts if this new level of overfishing is below present harvesting levels. Dolphin and wahoo are relatively short lived and a large proportion of one and two year old fish is harvested annually. By establishing this overfishing level, the Councils can address these concerns and yet continue to allow harvest at levels that are comparable to recent historical catches.

Economic Impacts

Specifying the overfished and overfishing definitions does not directly affect resource use and, therefore would not have any direct effects on existing fisheries and communities. Direct effects associated with resource use would only accrue to subsequent management action in response to an evaluation of the fishery with regards to these benchmarks.

Social Impacts

This measure by itself would have no impact on the entities in this fishery. Social benefits and costs will depend on the management measures adopted to keep the fishery from exceeding the chosen overfishing level. The Councils are required to prevent overfishing and achieve Optimum Yield from each fishery. This requirement directs the Councils to consider overall benefits to society through the harvest of any species without overfishing.

Conclusion

The Councils originally concluded using this overfishing level would serve as a proxy until NMFS provides additional guidance regarding setting overfished and overfishing levels for dolphin and wahoo. The Councils have now rejected this option considering NMFS has provided, and the Councils have adopted, biomass based estimates of MSY as mandated by the

Magnuson-Stevens Act. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

4.2.10 ACTION 10. Establish a framework procedure for the Dolphin and Wahoo FMP to provide the South Atlantic Fishery Management Council with a mechanism to independently adjust the following management measures for their area of responsibility through framework action.

The Council is including a framework to respond to changes in the fishery more quickly. Framework actions can be implemented in a shorter period of time than Plan Amendments because the level of review and public participation is not as extensive.

The proposed action is based on other existing frameworks in the southeast, northeast, and Pacific regions. [Note: The Coastal Migratory Pelagics FMP, the Snapper Grouper FMP, and the Golden Crab FMP contain examples of frameworks that were considered in development of the framework for the Dolphin/Wahoo FMP.] The Councils considered expanding and reducing the number of items in these frameworks. Based on NOAA GC advice, the preferred framework is based on removing the following items that were included in the DEIS:

(1) Establishing or modifying a requirement for onboard observers.

(2) Establishing or modifying a requirement for use of a VMS unit that meets standards published by NMFS.

(3) Quotas (including zero quotas).

(4) Moratorium on vessels.

The administrative records contains details of the discussions of various alternatives considered by the Councils. Only the proposed action and no action alternatives are shown to reduce confusion.

When the plan was being developed jointly with the Gulf and Caribbean Fishery Management Councils, this measure established a framework procedure for the Atlantic, Caribbean, and Gulf regions. Subsequently, with the South Atlantic Council requesting they be relieved of their administrative responsibilities in the development of a joint plan while retaining true lead for development of an Atlantic FMP, the proposed framework is for the fishery prosecuted in the Atlantic EEZ.

A. An assessment panel (Panel) appointed by the Councils will reassess the condition of dolphin and wahoo on an annually planned basis. The Panel shall be composed of NMFS scientists, Council staff, Scientific and Statistical Committee members, and other state, university, and private scientists as deemed appropriate by the Councils.

The Panel will address the following items for each stock:

1. Stock identity and distribution. This should include situations where there are groups of fish within a stock which are sufficiently different that they should be managed as separate units. If several possible stock divisions exist, the Panel should describe the likely alternatives.

2. MSY and/or B_{MSY} (or appropriate proxy) for each identified stock. If more than one possible stock division exists, MSY and/or B_{MSY} for each possible combination should be estimated.

3. Condition of the stock(s) or groups of fish within each stock which could be managed separately. For each stock, this should include but not be limited to:
   a. Fishing mortality rate relative to F_{MSY}, $F_{0.1}$, $F_{20\%SPR}$, $F_{30\%SPR}$, $F_{40\%SPR}$, and MFMT.
   b. Spawning potential ratio (SPR).
   c. Abundance relative to an adequate spawning biomass (e.g., MSST).
   d. Trends in recruitment.
   e. Acceptable Biological Catch (ABC) which will result in long-term yield as near MSY as possible.
   f. Maximum Sustainable Yield (MSY).

4. Overfishing and Overfished.
   a. The Councils' target level or Optimum Yield (OY) is the amount of harvest that can be taken by fishermen while not exceeding 75% of MSY (between 14.1 and 34.9 million pounds) for dolphin and 100% of MSY (between 1.41 and 1.63 million pounds) for wahoo. ABC is calculated based on the target level or Optimum Yield (75% MSY for dolphin and 100% MSY for wahoo).
   b. Overfishing is defined as a fishing mortality rate (F) in excess of the Maximum Fishing Mortality Threshold (MFMT) which is defined as F_{MSY} ($F_{30\%Static}$ SPR).
   c. Overfished is defined as a biomass below the Minimum Stock Size Threshold (MSST) which is defined as a ratio of current biomass ($B_{current}$) to biomass at MSY or (1-M)*B_{MSY}, where 1-M should never be less than 0.5.
   d. When a stock is overfished, a rebuilding program that makes consistent progress towards restoring stock condition must be implemented and continued until the stock is restored to MSY. The rebuilding program must be designed to achieve recovery within an acceptable time frame consistent with the National Standard Guidelines and as specified by the Councils. The Councils will continue to rebuild the stock until the stock size is restored to the management target (OY) if different from MSY.
   e. When a stock is not overfished, the act of overfishing is defined as a fishing mortality rate (F) in excess of the maximum fishing mortality threshold (MFMT). If overfishing is occurring, a program to reduce fishing mortality rates toward management target levels (OY) will be implemented, even if the stock or group of fish is not in an overfished condition.
   f. The Councils have requested the Assessment Panel (Panel) provide a range of possibilities and options for specifying an absolute biomass level which could be used to represent a depleted condition or state. The Councils will modify biomass based levels through the framework process. Should the biomass be below such a level, the Councils would take appropriate action, including but not limited to, eliminating directed fishing mortality and evaluating measures to eliminate any bycatch mortality in a timely manner through the framework procedure.

5. Management options. The Panel may delineate possible management options based on stock status including effective levels for such actions as:
   a. Bag limits.
   b. Size limits.
   c. Tackle configuration (e.g., minimum hook size).
   d. Season/area closures (including spawning area closures).
   e. Gear restrictions or prohibitions.

f. Permitting restrictions.
g. Trip limits.
h. Overfishing/overfished definitions and related thresholds (e.g., MSST and MFMT) and targets (e.g., OY).
i. Annual specification/quota setting process.
j. Assessment Panel composition and process.
k. Identification, designation, and modification of EFH and EFH-HAPCs.
l. Management measures to reduce or eliminate the impact of fishing gear/activities on EFH or EFH-HAPCs.
m. Specify quota for scientific research.
n. Designation of areas for scientific research.
o. Regulations of longline length if ongoing research with marine mammals documents usefulness.
p. Any other action to minimize the interaction of fishing gear with endangered species or marine mammals.

[When the plan was being developed jointly with the Gulf and Caribbean Fishery Management Councils, this measure established a framework procedure for the Atlantic, Caribbean, and Gulf regions. The preceding list of actions were to be applied variably within each Council jurisdiction at the discretion of each individual Council (Atlantic, U.S. Caribbean, and Gulf of Mexico). Subsequently, with the South Atlantic Council requesting they be relieved of their administrative responsibilities in the development of a joint plan while retaining true lead for development of an Atlantic FMP, the proposed framework is for implementing additional management measures for the fishery prosecuted in the Atlantic EEZ.]

6. The Panel may also recommend more appropriate levels or statements for MSY (or proxy), OY, MFMT, and/or MSST for any stock including their rationale for the proposed changes.

7. Other biological questions as appropriate.

B. The Panel will prepare a written report with its recommendations for submission to the Councils in years assessments are completed in response to annual Operations Plans between NMFS and the Councils by such date as may be specified by the Councils. The report will contain the scientific basis for their recommendations and indicate the degree of reliability which the Council should place on the results and recommendations.

C. The Councils may take action based on the panel report or may take action based on issues/information that surface separate from the assessment panel. The steps for Councils' action are as follows:

1. Assessment panel report: The Councils will consider the report and recommendations of the Panel and such public comments as are relevant to the Panel's report. A public hearing will be held at the time and place where each Council considers the Panel's report. The Councils will consult their Advisory Panels and Scientific and Statistical Committees to review the report and provide advice prior to taking final action. After receiving public input, the Councils will make findings on the need for changes.

2. Information separate from assessment panel report: The Councils will consider information that surfaces separate from the assessment 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 each Council. A public hearing will be held at the time and place where Councils consider the Council staff report. The Councils will consult their Advisory Panels and Scientific and Statistical Committees to review the report and provide advice prior to taking final action. After receiving public input, the Councils will make findings on the need for changes.

D. If changes are needed in the following*, the Councils will advise the Regional Administrator (RA) of the Southeast Region of the National Marine Fisheries Service in writing of their recommendations, accompanied by the assessment panel or staff report, relevant background material, and public comment:

a. Adjustment of the best estimate of MSY (range and/or best point estimate).
b. Adjustment of the best estimate of OY (range and/or best point estimate).
c. Initial specification of Acceptable Biological Catch (ABC) and subsequent adjustment of the ABC range and/or best estimate when this information becomes available.
d. Setting or modifying Total Allowable Catch (TAC).
e. Reopening of a previously closed area/season, timeframe for recovery of dolphin and wahoo should they become overfished, or fishing year which may not be adjusted by more than two months.
f. Bag limits.
g. Size limits.
h. Tackle configuration (e.g., minimum hook size).
i. Season/area closures (including spawning area closures).
j. Gear restrictions and/or prohibitions.
k. Permitting restrictions.
l. Trip limits.
m. Overfishing/overfished definitions and related thresholds (e.g., MSST and MFMT).
n. Annual specification/quota setting process.
o. Assessment Panel composition and process.
p. Identification, designation, and modification of EFH and EFH-HAPCs.
q. Management measures to reduce or eliminate the impact of fishing gear/activities on EFH or EFH-HAPCs.
r. Specify quota for scientific research.
s. Designation of areas for scientific research.
t. Regulations of longline length if ongoing research with marine mammals documents usefulness.
u. Any other action to minimize the interaction of fishing gear with endangered species or marine mammals.
v. Allocations and modifications to allocations.

***[When the plan was being developed jointly with the Gulf and Caribbean Fishery Management Councils, this measure established a framework procedure for the Atlantic, Caribbean, and Gulf regions. The preceding list of actions with the exception of items a and m, were to be applied variably within each Council**

jurisdiction at the discretion of each individual Council (Atlantic, U.S. Caribbean, and Gulf of Mexico). Subsequently, with the South Atlantic Council requesting they be relieved of their administrative responsibilities in the development of a joint plan while retaining true lead for development of an Atlantic FMP, the proposed framework is for implementing additional management measures for the fishery prosecuted in the Atlantic EEZ.]

Recommendations with respect to the Atlantic group of dolphin and wahoo will be the responsibility of the South Atlantic Council working with the Mid-Atlantic and New England Councils.

E. The RA will review the Council's recommendation, supporting rationale, public comments and other relevant information, and if he/she concurs with the recommendation, he/she will draft regulations in accordance with the recommendation. He/she may also reject the recommendation, providing written reasons for rejection. In the event the RA rejects the recommendation, existing regulations shall remain in effect until resolved.

F. If the RA concurs that the Council's recommendations are consistent with the goals and objectives of the plan, the National Standards, and other applicable law, he/she shall implement the regulations by proposed and final rules in the Federal Register prior to the appropriate fishing year or such dates as may be agreed upon with the Councils. A reasonable period for public comment shall be afforded, consistent with the urgency, if any, of the need to implement the management measure.

Appropriate regulatory changes* recommended by the Council, that may be implemented by the Regional Administrator by proposed and final rules in the Federal Register are:

a. Adjustment of the best estimate of MSY (range and/or best point estimate).
b. Adjustment of the best estimate of OY (range and/or best point estimate).
c. Initial specification of Acceptable Biological Catch (ABC) and subsequent adjustment of the ABC range and/or best estimate when this information becomes available.
d. Setting or modifying Total Allowable Catch (TAC).
e. Reopening of a previously closed area/season, timeframe for recovery of dolphin and wahoo should they become overfished, or fishing year which may not be adjusted by more than two months.
f. Bag limits.
g. Size limits.
h. Tackle configuration (e.g., minimum hook size).
i. Season/area closures (including spawning area closures).
j. Gear restrictions and/or prohibitions.
k. Permitting restrictions.
l. Trip limits.
m. Overfishing/overfished definitions and related thresholds (e.g., MSST and MFMT).
n. Annual specification/quota setting process.
o. Assessment Panel composition and process.
p. Identification, designation, and modification of EFH and EFH-HAPCs.
q. Management measures to reduce or eliminate the impact of fishing gear/activities on EFH or EFH-HAPCs.

r. Specify quota for scientific research.
s. Designation of areas for scientific research.
t. Regulations of longline length if ongoing research with marine mammals documents usefulness.
u. Any other action to minimize the interaction of fishing gear with endangered species or marine mammals.
v. Allocations and modifications to allocations.

***[When the plan was being developed jointly with the Gulf and Caribbean Fishery Management Councils, this measure established a framework procedure for the Atlantic, Caribbean, and Gulf regions. The preceding list of actions with the exception of items a and m, were to be applied variably within each Council jurisdiction at the discretion of each individual Council (Atlantic, U.S. Caribbean, and Gulf of Mexico). Subsequently, with the South Atlantic Council requesting they be relieved of their administrative responsibilities in the development of a joint plan while retaining true lead for development of an Atlantic FMP, the proposed framework is for implementing additional management measures for the fishery prosecuted in the Atlantic EEZ.]**

Authority is granted to the Regional Administrator to close the fishery once a quota has been established through the procedure described above and such quota has been reached or projected to be reached. Authority is also granted to reopen a fishery once a new fishing year begins. When such action is necessary, the Regional Administrator will recommend that the Secretary publish a notice in the Federal Register as soon as possible.

The procedure described above will allow for stock assessments on an annually planned basis and provide for timely adjustments to the management program to prevent overfishing and/or rebuild the stock if overfished. It is the Councils' intent that dolphin and wahoo receive periodic assessments. Initially, assessments would be annual and as sufficient data become available such that the Assessment Panel, the Scientific and Statistical Committee, and the Council feel confident in the results, assessments will be completed every 2-5 years. Council staff and NMFS will specify such assessments in the annual NMFS/Council planning process (called Operations Plans). If overfished, assessments would be done annually.

It is the Councils' intent that Total Allowable Catch (TAC) be limited by the upper end of an Acceptable Biological Catch (ABC) range when and if one is provided; however, no limits should be placed on the lower limit of TAC so that a zero TAC could be specified if deemed necessary to protect the resource.

Biological Impacts

This procedure allows for rapid modification of the management program based on updated stock assessments as well as information separate from the assessment. Providing a mechanism for such modification will allow the Councils to better protect the biological integrity of the dolphin and wahoo resources and achieve optimum yield.

Economic Impacts

The assessments and annual adjustments described above will require some expenditures of public funds for meetings and staff work. 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, which is expected to increase net

economic benefits to society from a more rapid response to "problems" that develop in the fishery. In comparison, the “no action” alternative (Option 1) would not provide the benefits of a flexible management system.

Social Impacts

By specifying this framework mechanism for modifying management regulations, a more rapid response to changes in the fishery will be facilitated. This timeliness results from allowing each regional grouping of Councils, or each Council, the ability to act apart from other Councils named in this FMP. However, concern has been expressed through the public hearing process that the proposed framework process will not adequately address issues and impacts on the recreational, for-hire, and commercial sectors. This should not be a concern as analysis of social and economic impacts are required in the framework process. However, for this action to succeed, it is critical that other data collection efforts described in other actions in this proposed plan also be implemented.

Conclusion

The proposed framework procedure allows for rapid modification of the management program and is necessary to allow the Councils to better protect the biological integrity of the dolphin and wahoo resources. This action meets the objectives of the plan while retaining substantial Council and public involvement in management decisions and allows the Councils to rapidly adapt to changes in resource abundance, new scientific information, and changes in fishing pattern among user groups.

Development of future management actions with respect to the Atlantic group of dolphin and wahoo will be the responsibility of the South Atlantic Council working with the Mid-Atlantic and New England Councils.

The Councils determined this action best achieves the goals of the FMP and management objectives: (1) address localized reduction in fish abundance, (2) minimize market disruption, (3) minimize conflict and/or competition between recreational and commercial user groups, (4) optimize the social and economic benefits, (5) reduce bycatch in the dolphin fishery, (6) direct research to evaluate the role of dolphin and wahoo as prey and predators in the pelagic ecosystem, and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

Rejected Options for Action 10:

Option 1. No action.

Biological Impacts

This option would not allow for rapid modification of the management program based on updated stock assessments or other information. Without a mechanism for such modification, the Council could not adequately protect the biological integrity of the dolphin and wahoo resources and would increase the risk of overfishing.

Economic Impacts

This option would not allow the Councils to take timely action if and when needed. Delays in taking action to address problems in the fishery could lead to reduced economic benefits.

Social Impacts

This option would not allow for timely and informed action by the Councils due to the time required for an amendment to the plan to be implemented. Furthermore, when the Councils cannot act in a timely and efficient manner, they lose credibility with the public. Such a loss may lead to declining compliance with regulations.

Conclusion

The Councils rejected this option because adopting a procedure which allows for rapid modification of the management program is necessary to better protect the biological integrity of the dolphin and wahoo resources. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

4.2.11 ACTION 11. Prohibit sale of recreationally caught dolphin or wahoo in or from the Atlantic EEZ except for allowing for-hire vessels that possess the necessary state and Federal commercial permits to sell dolphin harvested under the bag limit in or from the Atlantic EEZ.

Biological Impacts

To the extent prohibition of sale will reduce the number of dolphin and wahoo retained, there may be some positive biological benefits. To estimate a range of impacts from prohibiting the sale of recreationally caught dolphin and wahoo in New England, the Mid-Atlantic, and the South Atlantic, one can examine the average commercial hook and line category much of which is believed to be recreational and for-hire harvest that was sold. This category includes dolphin caught by hand line, rod and reel, trolling, and electric reel and, on the average (1994-1997), accounts for 2,717 pounds in New England, 1,328 pounds in the Mid-Atlantic, and 856,079 pounds in the South Atlantic annually (Tables 36-38 and Figures 5-7). In addition, wahoo landings caught by hand line, rod and reel, trolling, and electric reel, on the average (1994-1997), accounts for 71,783 pounds in the Atlantic (Goodyear, 1999).

Economic Impacts

This measure will prohibit all sale of recreationally caught wahoo and restrict private recreational anglers from selling dolphin. In the short-term, this action will reduce benefits to individuals in the private recreational sector who sell bag limit caught dolphin, and individuals in the recreational sector who sell wahoo. There will be a loss of revenue to the recreational sector at least equal to the value of fish sold. Input received during public hearings indicated that a considerable amount of bag limit dolphin is sold.

There is no information on the level of recreational sale for either species, and thus it is not possible to determine the exact magnitude of the expected future revenue losses in the recreational sector. It can be assumed that sale of bag limit caught fish will be recorded in the commercial hook and line category, which includes fish caught by hand line, rod and reel, trolling, and electric reel.

The average wahoo annual landings by hand line, rod and reel, trolling, and electric reel, between 1994 and 2000 for all three regions (New England, the Mid-Atlantic, and the South Atlantic) amounted to 55,783 pounds (Goodyear, 1999; data for 1999 and 2000 were provided by the NMFS, SERO). In order to protect confidential records, information on wahoo landings could not be displayed separately for each region. In the absence of this regulation, the expected ex-vessel value of wahoo landings (whole fish) in this hook and line category is $129,975 per year (using average landings between 1994-2000 and the 2000 average wahoo ex-vessel price of $2.33 per pound for the Atlantic).

The annual ex-vessel value of dolphin in this category is expected to be $1.33 million. This figure was derived from using average landings between 1994-2000 of 860,124 pounds for the Atlantic coast (Tables 36,37,38), and the 2000 average dolphin ex-vessel price of $1.55 per pound for the Atlantic (NMFS web site).

Not all fish in the hook and line category are caught by the recreational sector, as commercial landings from these gear types will also be included. These values are most likely an overestimate of the loss in revenue from restrictions on recreational sale particularly in the case of dolphin, since it is expected that the majority of bag limit caught dolphin will come from the for-hire sector (this measure will not prohibit sale of dolphin by the for-hire sector). There may be some cost to the for-hire sector from having to purchase the necessary permits to be able to sell dolphin.

If recreational trips were not taken as a result of this action there will also be a reduction in consumer surplus benefits in the short-term to these anglers, which could be mitigated in the future from anglers switching to other targets. However, this measure will reduce the risk to public health from improperly handled fish. Given the lack of available information, it is difficult to speculate on the long-term impacts of this proposed measure or whether the economic benefits would outweigh the forgone revenue to the recreational sector.

In comparison to Option 1, this measure would reduce revenue to the recreational sector by a total not expected to exceed $1.46 million. However, the revenue loss in the for-hire recreational sector will be lower than that resulting from implementation of Option 3 since for hire operations will still be allowed to harvest and sell dolphin. During the 3-5 year phase out period, as specified under Option 2, the for hire sector would earn higher revenue compared to the situation under the Councils' proposed measure. However, after the phase out period there would be no difference between Option 2 and Option 3 as there would be a prohibition on all recreational sale. This would also affect crew wages since clients regularly "tip" for-hire crew members with fish caught on these trips. If recreational sale results in "localized reduced prices" Option 3 and Option 2 (after the 3-5 year phase out period) would be more effective at preventing this occurrence than the proposed measure and Option 1.

The effect on private recreational sale would be no different among this action and Options 2 and 3 since sale by the private recreational sector would be immediately prohibited. Compared to the "no action" alternative, it is expected that there will be reduced harvesting demand for dolphin and wahoo under the proposed action and if either Option 2 or Option 3 were to be implemented.

The no action alternative (Option 1) would not address the problem of increased health risks from the sale of recreationally caught fish. The preferred alternative, Option 2 and Option 3 should all result in lowering this risk since they would all restrict recreational sale.

Social Impacts

Comments received in public hearings and other consultations indicate that charter and headboat crews derive a substantial part of their income from the sale of "unwanted" fish landed by their clientele. Given that it is a historical practice to tip the crew with the client's fish so the crew might then sell the fish, prohibiting this act will cause crew and captains economic hardship. Owners and captains claim that without the "fish tip" they will not be able to attract and retain as many well-trained crew in the future, exacerbating what is seen as an already dismal labor market. However, if the for-hire vessel qualifies for the commercial permit to land and sell dolphin, then the impact of this proposed action should be lessened. Some of the objectives of prohibiting recreationally caught fish is that it 1) competes with the commercial market and 2) does not allow for a full accounting of commercial landings. Restricting the sale of dolphin and wahoo to permitted vessels will serve to avoid these problems, and benefit the fishery in the long term.

Prohibiting private recreational sale will have some impact on this sector, but it is impossible to measure the impact as no official records of this activity currently exist. There has been some concern expressed by the commercial sector that fish caught and sold by charter and head boats will be counted against the commercial cap should that ever be implemented. This point of confusion among stakeholders is one source of tension for some in the various sectors in the fishery.

Conclusion

The South Atlantic Council is addressing the sale of recreationally caught fish on a species by species basis. Input received during public hearings indicated that a considerable amount of recreationally caught dolphin is sold mainly by the charter sector. The Councils concluded that dolphin and wahoo are so important to the recreational sector, that prohibiting sale of recreationally caught dolphin and wahoo, except allowing for-hire vessels with appropriate permits to sell dolphin as they historically have, will reduce overexploitation and excessive targeting for sale. In addition, it will eliminate a significant amount of concern that commercial fishermen must adhere to food quality standards and vessel safety requirements that recreational fishermen who sell bag limit fish can avoid. The impact on for-hire vessels will be reduced because, with the appropriate permits, these vessels could still sell dolphin.

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (1) address localized reduction in fish abundance, (2) minimize market disruption, (3) minimize conflict and/or competition between recreational and commercial user groups, and (4) optimize the social and economic benefits.

Rejected Options for Action 11:

Option 1. No action.

Biological Impacts

Taking no action to prohibit sale would maintain, or allow an increase, in the number of dolphin and wahoo retained for sale. Any biological benefits associated with reducing the incentive of recreational fishermen to sell dolphin or wahoo would be foregone.

Economic Impacts

In the short-term this option would have no impact on the recreational sector. At this time there is a lack of information to determine whether recreational sale is depressing market prices for dolphin. There have been instances where large quantities of recreationally caught dolphin enter local markets and affect "local" prices for a short period of time. Even though recreational sale may account for a large share of domestic landings sold, imports probably have a significant impact on domestic prices. The National Marine Fisheries Service reported that imports of frozen dolphin fillets for 1998 through 2001 averaged 15.1 million pounds (average import price of $1.68 per pound for dolphin fillets), compared to 1.2 million pounds of domestic landings sold in 1999 and 1.1 million pounds sold in 2000. In addition, information from a seafood dealer indicated that imports of other product forms such as whole, gutted dolphin is substantial, and may even exceed local domestic production.

This option would not result in reduced health risks to the public from improperly handled fish. If it is assumed that sale of bag limit caught dolphin and wahoo would pose a higher risk compared to sale through the commercial sector. Given the lack of available information, it is difficult to speculate on the long-term impacts of this option and whether net benefits would exceed the forgone revenue in the recreational sector.

Social Impacts

In the short-term, this would have no negative impacts on the recreational sector. However, there has been some concern that recreationally caught fish are not properly handled and sold and that this may pose a problem for public health. By maintaining the status quo (allowing recreational fishermen to sell their catch), recreational fishers could avoid following food quality standards and vessel safety requirements.

The greatest problem with this option is that it would exacerbate the friction that exists between recreational and commercial fishermen in the United States in general. Particularly in the South Atlantic, much of the ethnographic data collected from commercial fishermen points to the sale of recreationally caught fish as one of the issues that causes the most anger and conflict for that sector. If one of the goals of this plan is to lessen social conflict between the different participating sectors, the no action proposal will fail in achieving that goal.

Conclusion

The Councils concluded that taking no action would not address the potential for overexploitation and excessive targeting for sale. In addition, it would not eliminate the concern that commercial fishermen must adhere to food quality standards and vessel safety requirements that recreational fishermen who sell bag limit fish can avoid. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP. Therefore, the Councils rejected this option.

Option 2. Allow for-hire vessels that possess the necessary commercial permits to continue to sell fish for a 3-5 year phase-out period.

Biological Impacts

To the extent a phase-out and eventual prohibition of sale would reduce the number of dolphin and wahoo retained, there may be some positive biological benefits. To estimate a range of impacts from prohibiting the sale of recreationally caught dolphin and wahoo in New England, the Mid-Atlantic, and the South Atlantic, one can examine the average commercial hook and line category. This category includes dolphin caught by hand line, rod and reel, trolling, and electric reel and, on the average (1994-1997), accounts for 2,717 pounds in New England, 1,131 pounds in the Mid-Atlantic, and 992,147 pounds in the South Atlantic annually (Tables 36-38 and Figures 5-7). In addition, wahoo landings caught by hand line, rod and reel, trolling, and electric reel and, on the average (1994-1997), accounts for 71,783 pounds in the Atlantic (Goodyear, 1999).

Economic Impacts

By providing for-hire vessels the opportunity to sell bag limit fish, the loss in revenue from the sale prohibition would be distributed over a 3 to 5 year time frame. Vessel owners could phase in other revenue earning activities during this period. Some vessel owners may not be able to make up this lost revenue but this number should be lower than that resulting from carrying out Option 3. There would be an immediate loss of ex-vessel revenue to the private recreational anglers who sell dolphin. This option would likely result in decreased health risks from the sale of bag limit caught fish. Given the lack of available information, it is difficult to speculate on the long-term impacts of this option and whether net benefits from reduced health risks would exceed the forgone revenue in the recreational sector.

Social Impacts

Allowing for a 3-5 year phase-out of for-hire sale of fish would lessen the immediate impacts on this sector. It would allow for adjustments to be made in the for-hire sector relative to how the crew is compensated and by those that buy fish from this sector.

The for-hire vessel owners or captains may be forced to rethink how they operate their vessels with regard to the crew they employ. If they can no longer use the income from selling fish caught by clients to supplement their crews' income, they may need to devise other economic and social solutions for paying those wages.

The greatest impact would be on the private recreational fisherman who could no longer sell their bag limit caught fish. However, since there is no reliable data on the frequency or incidence of this practice, it is not now possible to determine what the future impacts might be.

Conclusion

The Councils included this option for public hearing to receive input from the for-hire sector on the level of sale and the importance of that revenue to their overall operations. This option would end sale from the for-hire sector but would provide a time period to phase-out. This option, until the end of the phase-out, would track some state regulations where individuals who have valid state permits may sell up to the bag limit. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP. Therefore, the Councils rejected this option.

Option 3. Prohibit sale of recreationally caught dolphin and wahoo in the Atlantic EEZ. The intent is to not allow sale from private/rental or for-hire trips and limit sale to vessels with a commercial permit.

Biological Impacts

To the extent prohibition of sale would reduce the number of dolphin and wahoo retained, there may be some positive biological benefits. To estimate a range of impacts from prohibiting the sale of recreationally caught dolphin and wahoo in New England, the Mid-Atlantic, and the South Atlantic, one can examine the average commercial hook and line category. This category includes dolphin caught by hand line, rod and reel, trolling, and electric reel and, on the average (1994-1997), accounts for 2,717 pounds in New England, 1,131 pounds in the Mid-Atlantic, and 992,147 pounds in the South Atlantic annually (Tables 36-38 and Figures 5-7). In addition, wahoo landings caught by hand line, rod and reel, trolling, and electric reel and, on the average (1994-1997), accounts for 71,783 pounds in the Atlantic (Goodyear, 1999).

Economic Impacts

If recreational sale was prohibited there would be a loss of revenue to the recreational sector at least equal to the value of fish sold. Input received during public hearings for Amendment 8 to the Coastal Migratory Pelagics (mackerels) Plan suggest that a considerable amount of bag limit dolphin is sold. It is assumed that recreational sale would be recorded in the commercial hook and line category, which includes dolphin caught by hand line, rod and reel, trolling, and electric reel.

The ex-vessel value of dolphin and wahoo landings (whole fish) in this hook and line category amounts to $1.33 million per year, and $129,975 per year respectively (refer to the analysis under Action 11). Not all fish in this category are caught by the recreational sector, as commercial landings would also be reported in this category. These values are most likely overestimates of the loss in revenue from a ban on recreational sale. If recreational trips were not taken as a result of this action there would also be a reduction in consumer surplus benefits in the short-term to these anglers, which could be mitigated in the future from switching to new targets. However, this measure would reduce the risk to public health from improperly handled fish. Given the lack of available information, it is difficult to speculate on the long-term impacts of this option and whether net benefits would exceed the forgone revenue in the recreational sector.

Social Impacts

There would be a loss in benefits to the recreational and for-hire sector if sale of fish were prohibited. Qualitative data points to recreational fishermen selling their catches to coastal restaurants. Prohibiting sales may have a negative impact on those restaurants and their clientele by losing the attractant of freshly caught fish on the menu. Recreational fishermen would also suffer a loss if sales represent some savings to them for the cost of fishing. This may be a moot point if imports are filling the market instead of recreationally caught fish. Commercial fishermen may experience a positive impact from this action by facing less competition and less conflict in the fishery.

Conclusion

The South Atlantic Council is addressing the sale of recreationally caught fish on a species by species basis. Input received during public hearings indicated that a considerable amount of recreationally caught dolphin is sold primarily from charterboats. The Councils concluded that dolphin and wahoo are important to the recreational sector, and that prohibiting sale of recreationally caught dolphin and wahoo would reduce overexploitation and excessive targeting for sale. In addition, it would eliminate the concern that commercial fishermen must adhere to food quality standards and vessel safety requirements that recreational fishermen who sell bag limit fish can avoid. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP. The Councils rejected this option in favor of the proposed action because testimony at public hearing indicated prohibiting all sale would eliminate a significant portion of dolphin and wahoo which historically have provided fresh product to local markets.

4.2.12 ACTION 12. Establish a cap of 1.5 million pounds or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the Council will review the data and evaluate the need for additional regulations which may be established through the framework.

This action establishes a non-binding cap on the commercial harvest in the Atlantic EEZ at 13% of the total commercial and recreational landings from the Atlantic fishery. The Councils' intent is to monitor the fishery and if commercial landings exceed the non-binding allocation, determine if additional regulations are necessary. The Council is establishing this cap now, even though the recreational landings greatly exceed the commercial, to prevent the potential future expansion of the commercial fishery. This is predominantly a recreational fishery and the Council wants to maintain this structure.

Biological Impacts

Provided measures are in place to ensure overfishing is prevented, allocation of the resource between the commercial and recreational sector is not likely to have any impact on the stock.

Table 45. Dolphin harvest (pounds) on the Atlantic Coast from 1994-1999 (Data Source: NMFS, 2000 and Goodyear, 1999).

	Recreational	Commercial	Total	Recreational	Commercial
1994	9,500,580	1,252,553	10,753,133	88%	12%
1995	13,092,212	2,231,787	15,323,999	85%	15%
1996	8,002,144	1,216,682	9,218,826	87%	13%
1997	10,640,713	1,594,920	12,235,633	87%	13%
1998	7,693,144	826,640	8,519,784	90%	10%
1999	10,127,970	1,050,090	11,178,060	91%	9%
2000	12,574,950	970,781	13,545,731	93%	7%
Avg. 94-97	10,308,912	1,573,986	11,882,898	87%	13%
Avg. 97-99	9,487,276	1,157,217	10,644,492	89%	11%
Avg. 97-2000	10,259,194	1,110,608	11,369,802	90%	10%

Economic Impacts

This is a non-binding allocation and this action will not have any direct economic effects on the recreational or commercial sectors. During the period 1994 to 2000, commercial dolphin landings in the Atlantic exceeded 1.5 million pounds in two years (1995 and 1997). Should dolphin landings exceed this level in the future, the Council will consider restrictive action(s) only if the total commercial share of the harvest exceeds 13%. Future restrictive measures will have economic effects on both the recreational and commercial sectors.

There would be no direct economic impacts from the other alternatives considered since no harvest control rules are associated with these measures. Should harvest control rules be implemented in the future to maintain the allocation shares specified by this action, Option 2 and Option 3, there would be a change in economic benefits. At this time it is not possible to ascertain the direction and magnitude of such changes since these effects would depend on the specific harvest control rule(s) adopted.

Social Impacts

The establishment of an allocation scheme for the recreational and commercial sectors participating in the dolphin wahoo fishery is, at this time, non-binding and will only become effective if the Council determines that there is a need for action to limit fishing effort in the future. The Council's goal in this action is to be proactive and preventative in managing the fishery. There are no immediate tangible social impacts from this action, however many commercial fishermen considered this an unnecessary constraint on their ability to harvest dolphin.

Conclusion

Historically the recreational fishery has dominated dolphin harvest. It has been only within the past ten years that regional commercial catches reached one million pounds annually. Recreational and commercial 1994-1997 landings and percentage of total harvest are shown in Table 58; comparisons to the 1997-1999 and 1997-2000 averages are also included. The cap was established based, in part, on the percentage split between commercial and recreational sector harvest for 1997 and the average 1994-1997.

The Councils concluded establishing a non-binding cap on the dolphin harvest at 87% recreational and 13% commercial is appropriate and reflects both the 1997 and the average 1994-1997 harvest between sectors (Table 45). The 1997-99 average was 89% recreational and 11% commercial and the 1997-2000 average was 90% recreational and 10% commercial (2000 landings are preliminary and the final totals may change). This action meets the overall goal of the fishery management plan and the objective to limit the potential conflict between recreational and commercial sectors. Establishment of the framework procedure will allow the Councils to monitor the fishery and, if necessary, implement additional management measures should either sector exceed their non-binding cap.

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (1) address localized reduction in fish abundance, (2) minimize market disruption, (3) minimize conflict and/or competition between recreational and commercial user groups, and (4) optimize the social and economic benefits.

Rejected Options for Action 12:

Option 1. No action.

Biological Impacts

Provided measures are in place to ensure overfishing is prevented, not allocating the resource between the commercial and recreational sectors is not likely to have any impact on the stock.

Economic Impacts

There should be no change in current short term gross revenue to the commercial and charter sectors and non-market benefits to the recreational sector. However, it is unknown whether the status quo optimizes benefits to society, or whether future shifts in harvesting levels would occur and thus result in changes in economic benefits to society.

Social Impacts

Leaving the fishery open without allocations may only exacerbate any perceived conflict that now exists between commercial and recreational sectors. Conflict between these two sectors is already intense in other fisheries, and steps should be taken to reduce this conflict whenever possible.

Conclusion

The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP. The Councils rejected this option because there is a need to establish a cap on the harvest of dolphin by sector in the Atlantic to take a precautionary and risk-averse approach which maintains management at optimum yield and current allocations among user groups.

Option 2. Allocate the dolphin resource to both recreational and commercial harvesters in the Atlantic EEZ based on the historical average catch (1984-1997, 1990-1997, or 1994-1997).

Biological Impacts

Provided measures are in place to ensure overfishing is prevented, allocation of the resource between the commercial and recreational sector is not likely to have any impact on the stock.

Economic Impacts

This measure would not have an economic impact unless the Councils set a total allowable harvest and take restrictive actions when these landings meet/exceed the non-binding cap.

Social Impacts

Social benefits could be reduced depending on the allocation chosen and whether measures are taken to restrict harvests if allocations are met.

Conclusion

The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP. The Councils rejected this option because capping the harvest of dolphin harvest by sector at 87% recreational and 13% commercial more accurately addresses the goals and objectives of the FMP by reflecting the recent allocation between sectors.

Option 3. Sub-allocate the resource to commercial harvesters based on a historical split between gear types and average landings between 1994 and 1997.

	Hook and Line	Long Line	Other/Unknown
New England	11%	77%	12%
Mid-Atlantic	1%	97%	2%
South Atlantic	69%	30%	1%

Biological Impacts

The historical average catch of dolphin by commercial gear type in New England, Mid-Atlantic and South Atlantic from 1984 to 1997 is provided in Tables 36-38. Average catch by major gear categories (1994-1997) for each Atlantic Region is as shown above (derived from Tables 36-38).

Provided measures are in place to ensure overfishing is prevented, allocation of the resource between the commercial and recreational sector is not likely to have any impact on the stock.

Economic Impacts

The economic impact from these gear allocations would be determined by the total commercial allocation and the expected future harvest for each gear type in each region. The Councils have not decided on the regional allocation in the Atlantic, and at this time it is not possible to calculate the short-term impact on ex-vessel revenue. Since the Councils have not set a binding total allowable harvest, this measure would not have an economic impact on society.

Social Impacts

It should be noted that public hearing comments registered concern that certain subsectors (gear types) of the commercial fishery (e.g., longline vessels) may fill an established allocation more quickly than other subsectors. Concern has also been expressed that because sale of fish by the for-hire sector has not been prohibited, some of this recreational catch and sale might be counted against the commercial allocation. Due to those two problems, this option is more problematic and poses more potential social impacts than the preferred option.

Conclusion

The Councils concluded not to propose sub-allocation of commercial harvest at this time because harvest is only being capped by sector. If this is changed to a hard TAC, such allocation could be considered through the framework provisions of this FMP. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

4.2.13 ACTION 13. Establish a recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Headboats (with a valid certificate of inspection) will be allowed a bag limit of 10 dolphin per paying passenger.

It should be noted that Headboat is a separate category and is not subjected to the 60 dolphin per boat per day limit. The boat limit discussions below address the party/charter sector which is subject to the boat limit.

Biological Impacts

New England - A recreational bag limit of 10 dolphin will reduce landings from the party/charter boat sector by 11% in numbers of fish and 8% in weight; will not reduce landings from the private/rental sector; and will reduce landings from all recreational sectors by 7% in number and 5% in weight (Table 46).

Table 46. Cumulative reduction in New England recreational dolphin landings from bag limits (Source: Goodyear, 1999).

BAG LIMIT	Headboat		Party/Charter		Private/Rental		Total	
	Percent Reduction in Number	Percent Reduction in Weight	Percent Reduction in Number	Percent Reduction in Weight	Percent Reduction in Number	Percent Reduction in Weight	Percent Reduction in Number	Percent Reduction in Weight
1	-	-	52	41	38	33	47	38
2	-	-	40	29	21	18	33	25
3	-	-	35	26	12	9	27	20
4	-	-	31	23	6	4	22	16
5	-	-	28	20	4	3	19	14
6	-	-	24	17	3	2	16	12
7	-	-	21	15	1	1	14	10
8	-	-	18	13	0	0	11	8
9	-	-	14	10	0	0	9	6
10	**-**	**-**	**11**	**8**	**0**	**0**	**7**	**5**
11	-	-	8	6	0	0	5	4
12	-	-	6	4	0	0	4	3
13	-	-	4	3	0	0	3	2
14	-	-	3	2	0	0	2	1
15	-	-	2	1	0	0	1	1
20	-	-	0	0	0	0	0	0
25	-	-	0	0	0	0	0	0

Mid-Atlantic - A recreational bag limit of 10 dolphin will reduce landings from the party/charter boat sector, the private/rental sector, and all recreational sectors by 7% in number and 5% in weight (Table 47).

Table 47. Cumulative reduction in Mid-Atlantic recreational dolphin landings from bag limits (Source: Goodyear, 1999).

BAG LIMIT	Headboat		Party/Charter		Private/Rental		Total	
	Percent Reduction in Number	Percent Reduction in Weight	Percent Reduction in Number	Percent Reduction in Weight	Percent Reduction in Number	Percent Reduction in Weight	Percent Reduction in Number	Percent Reduction in Weight
1	-	-	68	61	58	50	63	55
2	-	-	52	45	42	34	47	39
3	-	-	40	34	32	25	36	29
4	-	-	31	25	25	19	28	22
5	-	-	24	19	20	14	22	17
6	-	-	18	14	16	11	17	13
7	-	-	14	11	13	9	13	10
8	-	-	11	8	10	7	11	8
9	-	-	9	6	9	6	9	6
10	**-**	**-**	**7**	**5**	**7**	**5**	**7**	**5**
11	-	-	5	4	6	4	6	4
12	-	-	4	3	5	3	5	3
13	-	-	4	2	4	3	4	3
14	-	-	3	2	4	2	3	2
15	-	-	2	2	3	2	3	2
20	-	-	1	1	2	1	1	1
25	-	-	0	0	1	0	1	0

South Atlantic - Bag limits are already in place or being considered in South Atlantic states. Florida and North Carolina both have 10 fish recreational bag limits while Georgia has a 15 fish recreational bag limit. South Carolina has recently adopted a 7 fish bag limit. A recreational bag limit of 10 dolphin will reduce landings from the party/charter boat sector by 8% in number and 6% in weight and will reduce landings from the private/rental sector by 6% in number and 3% in weight (Table 48). Establishing a bag limit will reduce the practice of harvesting large quantities or entire schools of small, immature “peanut” or “chicken” dolphin. An increase in yield could be expected, given the rapid growth rate of the species, if fish were caught even only months later.

New England - Establishing a recreational boat limit of 60 dolphin per boat will reduce landings from the party/charter sector by 6% in number and 4% in weight; will not reduce landings from the private/rental sector; and will reduce landings from all recreational sectors by 4% in number and 3% in weight (Table 49).

Table 48. Cumulative reduction in South Atlantic recreational dolphin landings from bag limits (Source: Goodyear, 1999).

BAG LIMIT	Headboat		Party/Charter		Private/Rental		Total	
	Percent Reduction in Number	Percent Reduction in Weight	Percent Reduction in Number	Percent Reduction in Weight	Percent Reduction in Number	Percent Reduction in Weight	Percent Reduction in Number	Percent Reduction in Weight
1	41	32	80	76	55	50	74	69
2	28	20	65	61	35	29	59	53
3	20	14	53	49	24	19	47	41
4	14	10	43	39	18	13	38	33
5	11	7	35	31	15	10	30	26
6	8	5	27	24	12	8	24	20
7	6	4	21	18	10	6	18	15
8	5	3	16	13	8	5	14	11
9	4	2	11	9	7	4	10	8
10	**3**	**2**	**8**	**6**	**6**	**3**	**7**	**5**
11	2	1	6	4	5	3	6	4
12	2	1	4	3	5	3	4	3
13	1	1	3	3	4	2	4	2
14	1	1	3	2	4	2	3	2
15	1	1	2	2	4	2	2	2
20	1	0	1	1	2	1	1	1
25	0	0	1	0	2	1	1	0

Table 49. Cumulative reduction in New England recreational dolphin landings from recreational boat limit (Source: Goodyear, 1999).

Boat Limit	Headboat		Party/Charter		Private/Rental		Total	
	Number %Reduction	Weight %Reduction	Number %Reduction	Weight %Reduction	Number %Reduction	Weight %Reduction	Number %Reduction	Weight %Reduction
0	-	-	100	100	100	100	100	100
5	-	-	52	44	28	24	43	36
10	-	-	39	31	9	7	28	22
20	-	-	29	23	4	3	20	15
30	-	-	21	16	1	1	14	10
40	-	-	14	11	0	0	9	6
50	-	-	9	7	0	0	6	4
60	**-**	**-**	**6**	**4**	**0**	**0**	**4**	**3**
70	-	-	3	2	0	0	2	1
80	-	-	1	1	0	0	1	0
90	-	-	0	0	0	0	0	0
100	-	-	0	0	0	0	0	0

Mid-Atlantic - Establishing a recreational boat limit of 60 dolphin per boat will reduce landings from the party/charter sector by 3% in number and 2% in weight; will reduce landings from the private/rental sector by 3% in number and 2% in weight; and will reduce landings from all recreational sectors by 3% in number and 2% in weight (Table 50).

Table 50. Cumulative reduction in Mid-Atlantic recreational dolphin landings from recreational boat limit (Source: Goodyear, 1999).

Boat	Headboat		Party/Charter		Private/Rental		Total	
Limit	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
0	-	-	100	100	100	100	100	100
5	-	-	67	62	53	46	60	53
10	-	-	51	45	37	31	43	37
20	-	-	30	26	19	15	24	20
30	-	-	18	15	11	8	14	11
40	-	-	10	8	7	5	9	6
50	-	-	6	5	4	3	5	4
60	**-**	**-**	**3**	**2**	**3**	**2**	**3**	**2**
70	-	-	2	1	2	1	2	1
80	-	-	1	1	2	1	1	1
90	-	-	1	1	1	1	1	1
100	-	-	0	0	1	1	1	0

South Atlantic - North Carolina has an overall limit of 60 dolphin fish for charter boats. South Carolina has recently adopted a 26 fish, non-commercial vessel limit and a 50 fish vessel limit for headboats. Establishing a recreational boat limit of 60 dolphin per boat will reduce landings from the headboat sector by 16% in number and 11% in weight; will reduce landings from the party/charter sector by 2% in number and 2% in weight; will reduce landings from the private/rental sector by 1% in number and 1% in weight; and will reduce landings from all recreational sectors by between 2% in number and 2% in weight (Table 51). These are similar to reductions that would occur if similar bag limit measures were applied throughout the management unit (Table 52).

Table 51. Cumulative reduction in South Atlantic recreational dolphin landings from recreational boat limit (Source: Goodyear, 1999).

Boat	Headboat		Party/Charter		Private/Rental		Total	
Limit	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
0	100	100	100	100	100	100	100	100
5	64	55	80	77	32	26	71	65
10	51	41	66	62	19	15	57	51
20	37	29	45	41	10	7	39	34
30	29	22	29	26	6	4	25	21
40	24	17	17	15	3	2	15	12
50	19	14	8	7	2	1	7	6
60	**16**	**11**	**2**	**2**	**1**	**1**	**2**	**2**
70	13	9	1	1	1	0	2	1
80	11	7	1	1	0	0	1	1
90	9	6	0	0	0	0	1	0
100	8	5	0	0	0	0	0	0

Table 52. Cumulative reduction in recreational dolphin landings across all areas (Atlantic, Caribbean, and Gulf of Mexico) from recreational boat limit (Source: Goodyear, 1999).

Boat	Headboat		Party/Charter		Private/Rental		Total	
Limit	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
0	100	100	100	100	100	100	100	100
5	64	55	78	75	35	29	70	64
10	51	41	64	60	21	16	56	50
20	37	29	43	39	10	7	37	32
30	29	21	27	25	6	4	24	20
40	24	17	16	14	3	2	14	12
50	19	14	8	7	2	1	7	6
60	**16**	**11**	**2**	**2**	**1**	**1**	**2**	**2**
70	13	9	1	1	1	0	2	1
80	11	7	1	1	0	0	1	1
90	10	6	0	0	0	0	1	1
100	8	5	0	0	0	0	1	0

Economic Impacts

A bag limit of 10 fish will have more of an impact on total harvest in the for-hire sector than in the private recreational sector (refer to discussion under biological impacts and Tables 46-48). For example, the 10 fish bag limit will reduce the proportion of fish harvested by 11% for the charterboat sector in New England. Boat limits could further constrain harvest on charter and private recreational vessels.

To analyze the impact of a bag limit regulation, it is necessary to examine the number of angler trips that are likely to be affected by this restriction. Data on the proportion of trips that could be impacted by a bag limit regulation are available for the South Atlantic region (Table 53). Assuming the intercept data are representative for the entire recreational sector in the Atlantic, a bag limit of 10 fish per person per day will affect approximately 3% of all recreational dolphin trips. In the South Atlantic, during 1997, the number of recreational trips where dolphin were caught amounted to 469,137 (Holiman, 1999). This estimate does not include headboat trips.

Table 53. South Atlantic recreational dolphin catch and land frequencies, (as a percentage of catch trips), 1997 MRFSS Intercept Data (Holiman, 1999).

	Trips where number of fish were caught		Trips where number of fish were landed	
Number of Fish	%	Cumulative %	%	Cumulative %
0-1	50.83%	50.83%	55.86%	55.86%
2	15.56%	66.39%	14.84%	70.70%
3	7.53%	73.92%	7.20%	77.90%
4	4.61%	78.53%	4.54%	82.44%
5	3.82%	82.35%	3.57%	86.01%
6	3.10%	85.45%	3.06%	89.07%
7	1.91%	87.36%	1.80%	90.87%
8	1.87%	89.23%	1.87%	92.74%
9	1.01%	90.24%	0.90%	93.64%
10	2.92%	93.16%	3.13%	96.77%
11	0.47%	93.63%	0.50%	97.27%
12	4.14%	97.77%	1.08%	98.35%
13	0.50%	98.27%	0.22%	98.57%
14	0.22%	98.49%	0.14%	98.71%
15-32	1.51%	100.00%	1.29%	100.00%

Recreational economic benefits are expected to decline for those affected catch trips/anglers who derive value/pleasure from harvesting dolphin in excess of 10 fish per day and would now be precluded from doing so. Empirical evidence, however, does not exist on which to either document the existence of this additional value or quantify its magnitude. In theory, a decline in recreational value due to a bag or size limit may be sufficient to result in trip cancellation, particularly if the species is a prime target or motivation for taking the trip. Dolphin, however, are a species subject to substantial unsuccessful target effort. Dolphin target trips in 1997 amounted to 684,322 individual angler trips, compared to 469,137 catch trips (trips that caught dolphin regardless of target intent). A straight comparison is not completely correct as the catch trips include anglers who did not target the species. However, assuming a straight comparison were correct, over 31% of target trips would have been unsuccessful. Accounting for the non-target catch trips means that the non-success rate of target trips was even greater than 31%. Thus, given a potentially low success rate and the generous bag limit that would still be allowed, outright cancellation should be minimal. However, again, empirical evidence to support this conclusion is not available, and trip cancellation cannot be ruled out. Further, the more avid and successful anglers for which the new limit would be binding would be expected to place the greater value on the resource. Thus, restricting their behavior may effect a disproportionate loss of economic value.

As described previously there would be some loss of recreational (non market) benefits for those anglers/trips that are constrained by the bag limit. There may be some gain in economic benefits to other anglers if a restriction in the bag limit allows for more angler trips to catch the available resource in a local area. The net economic benefits overall will depend on the relative changes in these angler benefits.

Social Impacts

The only data available about what constitutes a satisfactory fishing experience in the dolphin wahoo fishery is what was heard in public comments. In those comments, many of the for-hire captains and private recreational fishermen claimed that a 10 fish per person, or 60 fish per boat limit was a reasonable limit. Some of those that were not pleased with these limits stated that a lower limit would be more reasonable and conservative. There did not seem to be an overwhelming fear that bag/boat limits would hurt those in the for-hire industry wanting to sell fish left as tips. However, there were not many of those who crew on for-hire vessels who spoke at the public hearings, and no survey has been conducted to determine if these limits would have an impact on them. The measure to allow headboats more freedom by not imposing a boat limit was to reflect the fact that headboats often carry far more passengers than a charter or private vessel and are also less likely to catch/target dolphin. In addition, fishermen responding to an economic add-on question to the NMFS 1999 Marine Recreational Fisheries Statistics Survey (MRFSS) indicated across states and modes of fishing a preference for bag limits as a conservation measure for dolphin (Appendix A.)

Conclusion

The Councils concluded establishing a recreational bag limit for dolphin of 10 and a 60 fish boat limit (excluding headboats) will cap the fishery without excessively reducing the catch. The Councils are allowing the captain and crew to retain a bag limit as well as individuals on headboats because restricting them further was deemed an unnecessary burden on the fishermen. In addition, fishermen responding to an economic add-on question to the NMFS 1999 Marine Recreational Fisheries Statistics Survey (MRFSS) indicated across states and modes of fishing a preference for bag limits as a conservation measure for dolphin (Appendix A.)

This action is intended to reduce wastage but the Councils realize that some fishing with some level of release mortality will occur. However, it is the Councils' opinion that there will be a greater tendency to stop fishing when a bag limit is attained.

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (1) address localized reduction in fish abundance, (2) minimize market disruption, (3) minimize conflict and/or competition between recreational and commercial user groups, and (4) optimize the social and economic benefits.

Rejected Options for Action 13:

Option 1. No action.

Biological Impacts

Unrestricted bag limits could result in localized depletion. In addition, not limiting recreational catch would allow the practice of catching entire schools of immature "peanut" or "chicken" dolphin to continue.

Economic Impacts

There would be no change to the status quo and thus no change in short-term economic benefits. If unrestricted harvest results in growth overfishing, or localized depletion, economic benefits would decrease in the future.

Social Impacts

There would be no change to the status quo and thus no change in short-term social benefits. If unrestricted harvest results in overfishing, there could be long-term negative impacts.

Conclusion

The Councils rejected not establishing a recreational bag limit for dolphin that is intended to be the primary constraint proposed to cap the recreational fishery. The Councils are also concerned that not adopting a recreational bag limit could make existing and proposed state limits unenforceable. In addition, not proposing a bag limit would ignore the recommendations provided by advisors and representatives of various sectors of the recreational industry. Not adopting a bag limit and not capping recreational catch would be inconsistent with the overall goal and management objectives of the FMP.

Option 2. Establish a recreational boat limit of 18-60 dolphin per boat (including private and for-hire vessels).

Biological Impacts

New England - (Note: 20 fish was used in the analysis on the lower end therefore actual reductions from 18 fish may be greater.) Establishing a recreational boat limit of 18-60 dolphin per boat would reduce landings from the party/charter sector by between 29% and 6% in number and 23% and 4% in weight; would reduce landings from the private/rental sector by between 4% and 0% in number and 3% and 0% in weight; and would reduce landings from all recreational sectors by between 20% and 4% in number and 15% and 3% in weight (Table 49).

Mid-Atlantic - (Note: 20 fish was used in the analysis on the lower end therefore actual reductions from 18 fish may be greater.) Establishing a recreational boat limit of 18-60 dolphin per boat would reduce landings from the party/charter sector by between 30% and 3% in number and 26% and 2% in weight; would reduce landings from the private/rental sector by between 19% and 3% in number and 15% and 2% in weight; and would reduce landings from all recreational sectors by between 24% and 3% in number and 20% and 2% in weight (Table 50).

South Atlantic - (Note: 20 fish was used in the analysis on the lower end therefore actual reductions from 18 fish may be greater.) North Carolina has an overall limit of 60 dolphin fish for charter boats. South Carolina has recently adopted a 26 fish, non-commercial vessel limit and a 50 fish vessel limit for headboats. Establishing a recreational boat limit of 18-60 dolphin per boat would reduce landings from the headboat sector by between 37% and 16% in number and 29% and 11% in weight; would reduce landings from the party/charter sector by between 45% and 2% in number and 41% and 2% in weight; would reduce landings from the private/rental sector by between 10% and 1% in number and 7% and 1% in weight; and would reduce landings from all recreational sectors by between 39% and 2% in number and 34% and 2% in weight (Table 51). These are similar to reductions that would occur if similar bag limit measures were applied throughout the management unit (Table 52).

Economic Impacts

If there is some risk from localized depletion and flooding the market, the choice of the appropriate limit per vessel will result in increased economic benefits to society. However, there could be a reduction in benefits to anglers constrained by the boat limit. It is expected that a limit of 18 fish per boat per day could result in as much as a 39% reduction in landings (number of fish) to the recreational sector in the South Atlantic (Table 51), while a limit of 60 fish per boat would be expected to have a maximum of 4% decrease in numbers of fish harvested in New England (Table 49). A boat limit that constrains the harvest of the recreational angler would also result in lower angler benefits per trip even if the trip is taken.

Social Impacts

There are no social data available (other than public hearing comments and other public comments) to determine what defines a satisfactory recreational experience in the dolphin/wahoo fishery, which makes it difficult to predict what impacts, if any, a boat limit will impose. Setting a lower number for a boat limit may have a negative impact on revenues to for-hire vessels. However, limiting the amount of fish a boat may take will lessen the risk of overfishing, which will have a positive, long-term social impact on all sectors of the fishery.

Conclusion

The Council rejected this option after reconsidering the value and need to meet the overall goal and objectives of the FMP. This option would not provide a mechanism to reduce waste and equitably spread the resource among recreational users. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Option 3. Establish a recreational bag limit of 5-10 dolphin per person per day, excluding the captain and crew of for-hire boats in the Atlantic EEZ.

Biological Impacts

New England - A recreational bag limit of between 5 and 10 fish would reduce landings from the party/charter boat sector by between 28% and 11% in numbers of fish and 20% and 8% in weight; would reduce landings from the private/rental sector by between 4% and 0% in number and 3% and 0% in weight; and would reduce landings from all recreational sectors by between 19% and 7% in number and 14% and 5% in weight (Table 46).

Mid-Atlantic - A recreational bag limit of between 5 and 10 fish would reduce landings from the party/charter boat sector by between 24% and 7% in number and 19% and 5% in weight; would reduce landings from the private/rental sector by between 20% and 7% in number and 14% and 5% in weight; and would reduce landings from all recreational sectors by between 22% and 7% in number and 17% and 5% in weight (Table 47).

South Atlantic - Bag limits are already in place or being considered in South Atlantic states. Florida and North Carolina both have 10 fish recreational bag limits while Georgia has a 15 fish recreational bag limit. South Carolina has recently adopted a 7 fish bag limit. A recreational bag limit of between 5 and 10 fish would reduce landings from the headboat sector by between 11% and 3% in number and 7% and 2% in weight; would reduce landings from the party/charter boat sector by between 35% and 8% in number and 31% and 6% in weight; would reduce landings from the private/rental sector by between 15% and 6% in number and 10% and 3% in weight; and would reduce landings from all recreational sectors by between 30% and 7% in number and 26% and 5% in weight. Establishing a bag limit would reduce the practice of harvesting large quantities or entire schools of small, immature “peanut” or “chicken” dolphin. An increase in yield could be expected, given the rapid growth rate of the species, if fish were caught even months later.

Economic Impacts

It is expected that a bag limit of 5 fish per person per day could result in as much as a 35% reduction in number of fish harvested (the charterboat sector in the South Atlantic), while a bag limit of 10 fish would be expected to have a moderate impact, reducing the number of fish harvested by at most 11% (the charterboat sector in New England) (Tables 46-48).

To analyze the impact of a bag limit regulation, it is necessary to examine the number of angler trips that are likely to be impacted by the restriction. Data on the proportion of trips that could be impacted by a bag limit regulation are available for the South Atlantic region (Table 53). Assuming the intercept data are representative for the entire recreational sector in the Atlantic, a 5 fish bag limit would affect approximately 4% of all recreational dolphin trips, while a bag limit of 10 fish per person per day would impact approximately 3% of all recreational dolphin trips. In the South Atlantic during 1997, the number of recreational trips where dolphin were caught amounted to 469,137 (Holiman, 1999). This estimate does not include headboat trips.

A bag limit below harvest demand per trip could result in lower angler benefits per trip even if the trip is taken. In addition, reducing the bag limit could also result in fewer recreational trips where dolphin is one of the target(s), and thus reduce economic benefits to the sport fishing sector. For owners of for-hire vessels a reduction in number of angler trips could also result in a loss of revenue. On the other hand, if there is some risk from localized depletion or growth overfishing under current state bag limits, the choice of the appropriate bag limit will result in increased economic benefits to society.

It is a common practice for customers to "tip" the crew of for-hire vessels with fish caught on these trips. These fish are then sold and the revenue received augments the salary of these crew members. Once the vessel qualifies for a commercial permit, this option would not allow the crew to sell bag limit caught dolphin and thus there would be forgone income.

Social Impacts

The only data available about what constitutes a satisfactory fishing experience in the dolphin wahoo fishery is what was heard in public comments. In those comments, many expressed that 10 fish per person per day was certainly a reasonable limit. Fishermen off the coast of Georgia would be the only ones to experience a reduced bag limit if it is set at 5-10 fish per person. However, all the comments indicate that this reduction will probable not decrease satisfaction in any appreciable way.

Conclusion

The Councils adopted a 10 fish bag limit which lies within the range of limits this option presented at public hearing. It was determined that a recreational bag limit of 10 dolphin will cap the fishery without excessively reducing catch. In addition, the Council rejected prohibiting the captain and crew from retaining a bag limit but limited all recreational fishing vessels, except headboats, to a 60 fish boat limit. Headboats would be allowed to have all fishermen on board retain a bag limit of dolphin. The Councils determined this option was not the best way to achieve the goals and management objectives of the FMP.

Option 4. Establish a recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. For-hire vessels fishing North of 39° N. Latitude (Delaware Bay, Delaware) would be exempt from the boat limit of 60 dolphin.

Biological Impacts

New England - A recreational bag limit of 10 dolphin would reduce landings from the party/charter boat sector by 11% in numbers of fish and 8% in weight; would not reduce landings from the private/rental sector; and would reduce landings from all recreational sectors by 7% in number and 5% in weight (Table 46).

Mid-Atlantic - A recreational bag limit of 10 dolphin would reduce landings from the party/charter boat sector, the private/rental sector, and all recreational sectors by 7% in number and 5% in weight (Table 47).

South Atlantic - Bag limits are already in place or being considered in South Atlantic states. Florida and North Carolina both have 10 fish recreational bag limits while Georgia has a 15 fish recreational bag limit. South Carolina has recently adopted a 7 fish bag limit. A recreational bag limit of 10 dolphin would reduce landings from the headboat sector by 3% in number and 2% in weight; would reduce landings from the party/charter boat sector by 8% in number and 6% in weight; would reduce landings from the private/rental sector by 6% in number and 3% in weight; and would reduce landings from all recreational sectors by 7% in number and 5% in weight (Table 48). Establishing a bag limit would reduce the practice of harvesting large quantities or entire schools of small, immature "peanut" or "chicken" dolphin. An increase in yield could be expected, given the rapid growth rate of the species, if fish were caught even months later.

New England - Establishing a recreational boat limit of 60 dolphin per boat would reduce landings from the party/charter sector by 6% in number and 4% in weight; would not reduce landings from the private/rental sector; and would reduce landings from all recreational sectors by 4% in number and 3% in weight (Table 49). While public testimony indicated a few trips could

be impacted from the boat limit, an analysis of the data in Goodyear (1999) shows a 60 fish boat limit would not impact the headboat fishery in New England (the area north of 39°N. latitude)(Table 49).

Mid-Atlantic - Establishing a recreational boat limit of 60 dolphin per boat would reduce landings from the party/charter sector by between 3% in number and 2% in weight; would reduce landings from the private/rental sector by between 3% in number and 2% in weight; and would reduce landings from all recreational sectors by between 3% in number and 2% in weight (Table 50).

South Atlantic - North Carolina has an overall limit of 60 dolphin fish for charter boats. South Carolina has recently adopted a 26 fish, non-commercial vessel limit and a 50 fish vessel limit for headboats. Establishing a recreational boat limit of 60 dolphin per boat would reduce landings from the headboat sector by between 16% in number and 11% in weight; would reduce landings from the party/charter sector by between 2% in number and 2% in weight; would reduce landings from the private/rental sector by 1% in number and 1% in weight; and would reduce landings from all recreational sectors by between 2% in number and 2% in weight (Table 51). These are similar to reductions that would occur if similar bag limit measures were applied throughout the management unit (Table 52).

Economic Impacts

A bag limit of 10 fish would have more of an impact on total harvest in the for-hire sector than in the private recreational sector (see discussion under biological impacts)(Tables 46-48). For example, the 10 fish bag limit could reduce the proportion of fish harvested by 11% for the charterboat sector in New England. A 60 fish boat limit would likely reduce future harvest by 2% overall in the South Atlantic (Table 51).

To analyze the impact of a bag limit regulation, it is necessary to examine the number of angler trips that are likely to be affected by this restriction. Data on the proportion of trips that could be impacted by a bag limit regulation are available for the South Atlantic region (Table 53). Assuming the intercept data are representative for the entire recreational sector in the Atlantic, a bag limit of 10 fish per person per day will affect approximately 3% of all recreational dolphin trips. In the South Atlantic during 1997, the number of recreational trips where dolphin were caught amounted to 469,137 (Holiman, 1999b). This estimate does not include headboat trips.

A bag limit below harvest demand per trip could result in lower angler benefits per trip even if the trip is taken. In addition, reducing the bag limit could also result in fewer recreational trips where dolphin is one of the target(s), and thus reduce economic benefits to the sport fishing sector. For owners of for-hire vessels a reduction in number of angler trips could also result in a loss of revenue. Dolphin, however, are a species subject to substantial unsuccessful target effort. Dolphin target trips in 1997 amounted to 684,322 individual angler trips, compared to 469,137 catch trips (trips that caught dolphin regardless of target intent). A straight comparison is not completely correct as the catch trips include anglers who did not target the species. However, assuming a straight comparison were correct, over 31% of target trips would have been unsuccessful. Accounting for the non-target catch trips means that the non-success rate of target trips was even greater than 31%. Thus, given a potentially low success rate and the generous bag limit that would still be allowed, outright cancellation should be minimal. However, again, empirical evidence to support this conclusion is not available, and trip cancellation cannot be ruled out. Further, the more avid and successful anglers for which the new limit would be binding would be expected to place the greater value on the resource. Thus, restricting their behavior may effect a disproportionate loss of economic value.

Social Impacts

The only data available about what constitutes a satisfactory fishing experience in the dolphin wahoo fishery is what was heard in public comments. In those comments, many of the for-hire captains and private recreational fishermen claimed that a 10 fish per person, or 60 fish per boat limit was a reasonable limit. However, during public comment it was noted that fishermen north of Delaware Bay rarely encounter dolphin, but if they do, a 60 fish per boat limit would be overly restrictive. In order to accommodate different local fishing experiences, this option was created.

Conclusion

The Councils concluded the preferred option establishing a recreational bag limit for dolphin of 10 and a 60 fish boat limit (except that headboats would be limited to 10 dolphin per paying passenger) would cap the fishery without excessively reducing catch. In addition, the Council rejected prohibiting the captain and crew from retaining a bag limit. For-hire vessels fishing North of Delaware Bay would be allowed to have all fishermen on board retain a bag limit of dolphin. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP and rejected this option in favor of the proposed action. This option is very similar to the proposed action except that headboats would be exempt from the boat limit.

4.2.14 ACTION 14. Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed.

It is the Councils intent that vessels landing north of 31° N. latitude abide by the 3,000 pound trip limit and those vessels landing south of 31° N. latitude abide by the 1,000 pound trip limit. This tracks how other trip limits are enforced.

Biological Impacts

New England - Establishing a commercial trip limit of 3,000 will reduce longline trips by <1% and landed weight by 1%; and will reduce all commercial trips by <1% and landed weight by 1% (Table 54). Tables 55-58 present reductions by New England State.

Table 54. Cumulative reduction in commercial dolphin landings in New England from trip Limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	100	100	100	100	-	-	100	100
100	0	0	60.9	69.9	-	-	60.9	69.9
200	0	0	41.5	51.3	-	-	41.5	51.3
300	0	0	32.5	37.4	-	-	32.5	37.4
400	0	0	27.3	26.2	-	-	27.3	26.2
500	0	0	20.7	17	-	-	20.7	17
600	0	0	9.7	11.1	-	-	9.7	11.1
700	0	0	4.6	8.7	-	-	4.6	8.7
800	0	0	2.5	7.3	-	-	2.5	7.3
900	0	0	2.5	6.4	-	-	2.5	6.4
1000	0	0	1.4	5.8	-	-	1.4	5.8
1500	0	0	0.7	3.8	-	-	0.7	3.8
2000	0	0	0.4	2.6	-	-	0.4	2.6
3000	**0**	**0**	**0.4**	**1.1**	**-**	**-**	**0.4**	**1.1**
3500	0	0	0.4	0.4	-	-	0.4	0.4
≥4000	0	0	0	0	-	-	0	0

Mid-Atlantic - Establishing a commercial trip limit of 3,000 will not reduce hand line rod and reel trips or landed weight; will reduce longline trips by 2% and landed weight by 7%; and will reduce all commercial trips by 2% and landed weight by 7% (Table 59). Tables 60-64 present reductions by Mid-Atlantic State.

South Atlantic - Establishing a commercial trip limit of 3,000 pounds in North Carolina will reduce total landed weight by 4% (Table 53). Establishing a commercial trip limit of 3,000 pounds in South Carolina will reduce trips by 3% and landed weight by 16% (Table 54). Establishing a commercial trip limit in Georgia of 3,000 south of 31° N. Latitude and 1,000 north of 31° N. Latitude will reduce trips by between 0% and 1% and landed weight by between 0% and 2% (Table 68). Establishing a commercial trip limit of 1,000 in Florida east coast will reduce trips by 1% and landed weight by 13% (Table 69).

Table 55. Cumulative reduction in commercial dolphin landings in Maine from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	-	-	100	100	-	-	100	100
100	-	-	85.7	84.7	-	-	85.7	84.7
200	-	-	57.1	73.7	-	-	57.1	73.7
300	-	-	57.1	64.8	-	-	57.1	64.8
400	-	-	42.9	56.7	-	-	42.9	56.7
500	-	-	42.9	50.1	-	-	42.9	50.1
600	-	-	28.6	45.5	-	-	28.6	45.5
700	-	-	28.6	41.1	-	-	28.6	41.1
800	-	-	28.6	36.6	-	-	28.6	36.6
900	-	-	28.6	32.2	-	-	28.6	32.2
1000	-	-	28.6	27.8	-	-	28.6	27.8
1500	-	-	14.3	8.7	-	-	14.3	8.7
2000	-	-	0	0	-	-	0	0
3000	**-**	**-**	**0**	**0**	**-**	**-**	**0**	**0**
3500	-	-	0	0	-	-	0	0
≥4000	-	-	0	0	-	-	0	0

Table 56. Cumulative reduction in commercial dolphin landings in Massachusetts from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	-	-	100	100	-	-	100	100
100	-	-	56.9	65.2	-	-	56.9	65.2
200	-	-	37.4	44.7	-	-	37.4	44.7
300	-	-	27.6	30.3	-	-	27.6	30.3
400	-	-	23.6	18.9	-	-	23.6	18.9
500	-	-	18.7	9.4	-	-	18.7	9.4
600	-	-	7.3	3.1	-	-	7.3	3.1
700	-	-	2.4	1.1	-	-	2.4	1.1
800	-	-	0.8	0.4	-	-	0.8	0.4
900	-	-	0.8	0.1	-	-	0.8	0.1
1000	-	-	0	0	-	-	0	0
1500	-	-	0	0	-	-	0	0
2000	-	-	0	0	-	-	0	0
3000	**-**	**-**	**0**	**0**	**-**	**-**	**0**	**0**
3500	-	-	0	0	-	-	0	0
≥4000	-	-	0	0	-	-	0	0

Table 57. Cumulative reduction in commercial dolphin landings in Rhode Island from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	-	-	100	100	-	-	100	100
100	-	-	75.6	78.6	-	-	75.6	78.6
200	-	-	57.8	63.2	-	-	57.8	63.2
300	-	-	51.1	49.7	-	-	51.1	49.7
400	-	-	42.2	38.2	-	-	42.2	38.2
500	-	-	26.7	29.1	-	-	26.7	29.1
600	-	-	17.8	24	-	-	17.8	24
700	-	-	11.1	21.1	-	-	11.1	21.1
800	-	-	6.7	18.6	-	-	6.7	18.6
900	-	-	6.7	16.9	-	-	6.7	16.9
1000	-	-	4.4	15.7	-	-	4.4	15.7
1500	-	-	2.2	12.3	-	-	2.2	12.3
2000	-	-	2.2	9.5	-	-	2.2	9.5
3000	**-**	**-**	**2.2**	**4.1**	**-**	**-**	**2.2**	**4.1**
3500	-	-	2.2	1.4	-	-	2.2	1.4
≥4000	-	-	0	0	-	-	0	0

Table 58. Cumulative reduction in commercial dolphin landings in Connecticut from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	100	100	-	-	-	-	100	100
100	0	0	-	-	-	-	0	0
200	0	0	-	-	-	-	0	0
300	0	0	-	-	-	-	0	0
400	0	0	-	-	-	-	0	0
500	0	0	-	-	-	-	0	0
600	0	0	-	-	-	-	0	0
700	0	0	-	-	-	-	0	0
800	0	0	-	-	-	-	0	0
900	0	0	-	-	-	-	0	0
1000	0	0	-	-	-	-	0	0
1500	0	0	-	-	-	-	0	0
2000	0	0	-	-	-	-	0	0
3000	**0**	**0**	**-**	**-**	**-**	**-**	**0**	**0**
3500	0	0	-	-	-	-	0	0
≥4000	0	0	-	-	-	-	0	0

Table 59. Cumulative reduction in commercial dolphin landings in the Mid-Atlantic from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	100	100	100	100	-	-	100	100
100	23.4	12.6	64.8	78.9	-	-	64.8	78.9
200	0	0	47.5	64.4	-	-	47.5	64.4
300	0	0	39.4	53.2	-	-	39.4	53.2
400	0	0	31.2	44	-	-	31.2	44
500	0	0	23.7	37.1	-	-	23.7	37.1
600	0	0	17.4	31.7	-	-	17.4	31.7
700	0	0	12.1	28.1	-	-	12.1	28.1
800	0	0	8.1	25.2	-	-	8.1	25.2
900	0	0	7.1	23.3	-	-	7.1	23.3
1000	0	0	6	21.6	-	-	6	21.6
1500	0	0	3.1	15.5	-	-	3.1	15.5
2000	0	0	2.5	12	-	-	2.5	12
3000	**0**	**0**	**1.7**	**6.5**	**-**	**-**	**1.7**	**6.5**
3500	0	0	1.3	4.5	-	-	1.3	4.5
≥4000	0	0	0.8	3.4	-	-	0.8	3.4

Table 60. Cumulative reduction in commercial dolphin landings in New York from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	100	100	100	100	-	-	100	100
100	0	0	63.4	82.9	-	-	63.4	82.9
200	0	0	47.7	71.3	-	-	47.7	71.3
300	0	0	38.8	62.1	-	-	38.8	62.1
400	0	0	32.6	54.6	-	-	32.6	54.6
500	0	0	26.6	48.3	-	-	26.6	48.3
600	0	0	22.4	43.1	-	-	22.4	43.1
700	0	0	17.6	38.9	-	-	17.6	38.9
800	0	0	11.8	35.5	-	-	11.8	35.5
900	0	0	10.8	33.1	-	-	10.8	33.1
1000	0	0	9.1	31	-	-	9.1	31
1500	0	0	5.4	23.6	-	-	5.4	23.6
2000	0	0	4.6	18.4	-	-	4.6	18.4
3000	**0**	**0**	**3.1**	**10.4**	**-**	**-**	**3.1**	**10.4**
3500	0	0	2.6	7.4	-	-	2.6	7.4
≥4000	0	0	1.5	5.5	-	-	1.5	5.5

Table 61. Cumulative reduction in commercial dolphin landings in New Jersey from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	-	-	100	100	-	-	100	100
100	-	-	67	72.5	-	-	67	72.5
200	-	-	47.8	53.5	-	-	47.8	53.5
300	-	-	41	38.8	-	-	41	38.8
400	-	-	30.4	26.9	-	-	30.4	26.9
500	-	-	21.5	18.7	-	-	21.5	18.7
600	-	-	12.8	12.9	-	-	12.8	12.9
700	-	-	6.7	10.1	-	-	6.7	10.1
800	-	-	4.5	8.2	-	-	4.5	8.2
900	-	-	3.5	6.8	-	-	3.5	6.8
1000	-	-	2.9	5.7	-	-	2.9	5.7
1500	-	-	0.6	1.8	-	-	0.6	1.8
2000	-	-	0.3	1.2	-	-	0.3	1.2
3000	-	-	0.3	0.2	-	-	0.3	0.2
3500	-	-	0	0	-	-	0	0
≥4000	-	-	0	0	-	-	0	0

Table 62. Cumulative reduction in commercial Dolphin Landings in Pennsylvania from Trip Limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	-	-	100	100	-	-	-	-
100	-	-	67.9	86.3	-	-	-	-
200	-	-	50.3	76.7	-	-	-	-
300	-	-	41.2	69.2	-	-	-	-
400	-	-	36.4	62.9	-	-	-	-
500	-	-	31.5	57.2	-	-	-	-
600	-	-	26.1	52.6	-	-	-	-
700	-	-	23	48.6	-	-	-	-
800	-	-	21.2	45	-	-	-	-
900	-	-	19.4	41.7	-	-	-	-
1000	-	-	18.2	38.6	-	-	-	-
1500	-	-	13.9	25.3	-	-	-	-
2000	-	-	7.3	16.7	-	-	-	-
3000	**-**	**-**	**3.6**	**8.4**	**-**	**-**	**-**	**-**
3500	-	-	3.6	5.4	-	-	-	-
≥4000	-	-	2.4	3.3	-	-	-	-

Table 63. Cumulative reduction in commercial dolphin landings in Maryland from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	100	100	100	100	-	-	100	100
100	0	0	62.2	74.6	-	-	62.2	74.6
200	0	0	45.6	57.5	-	-	45.6	57.5
300	0	0	33.9	44.7	-	-	33.9	44.7
400	0	0	25.8	34.8	-	-	25.8	34.8
500	0	0	17.7	28.1	-	-	17.7	28.1
600	0	0	11	23.9	-	-	11	23.9
700	0	0	6.4	21.2	-	-	6.4	21.2
800	0	0	3.5	19.4	-	-	3.5	19.4
900	0	0	3.5	18.3	-	-	3.5	18.3
1000	0	0	3.5	17.2	-	-	3.5	17.2
1500	0	0	3.2	12	-	-	3.2	12
2000	0	0	1.8	8.3	-	-	1.8	8.3
3000	**0**	**0**	**1.1**	**3.1**	**-**	**-**	**1.1**	**3.1**
3500	0	0	1.1	1.4	-	-	1.1	1.4
≥4000	0	0	0.4	0.7	-	-	0.4	0.7

Table 64. Cumulative reduction in commercial dolphin landings in Virginia from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	100	100	100	100	-	-	100	100
100	75	19.3	35	66.1	-	-	35.3	65.9
200	0	0	18.3	49.9	-	-	18.2	49.7
300	0	0	15	39.7	-	-	14.9	39.5
400	0	0	8.3	33.3	-	-	8.3	33.2
500	0	0	3.3	29.8	-	-	3.3	29.6
600	0	0	3.3	27.7	-	-	3.3	27.6
700	0	0	3.3	25.7	-	-	3.3	25.6
800	0	0	3.3	23.6	-	-	3.3	23.5
900	0	0	3.3	21.6	-	-	3.3	21.5
1000	0	0	3.3	19.5	-	-	3.3	19.5
1500	0	0	1.7	13.2	-	-	1.7	13.1
2000	0	0	1.7	8.1	-	-	1.7	8
3000	**0**	**0**	**0**	**0**	**-**	**-**	**0**	**0**
3500	0	0	0	0	-	-	0	0
≥4000	0	0	0	0	-	-	0	0

Table 65. Cumulative reduction in commercial dolphin landings in the South Atlantic from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	100	100	100	100	100	100	100	100
100	19.2	39.3	52	81.1	7.5	65.3	24.6	60.7
200	8.4	21.4	37.9	69.4	7.4	54.7	13.3	46
300	3.8	13.5	31.2	60.3	3.8	48.8	8.4	37.4
400	2.4	9.2	25.7	52.8	3.8	43.4	6.3	31.5
500	1.6	6.4	20.1	46.7	3.7	38	4.7	27.1
600	1.1	4.5	15.6	42	3.7	32.8	3.6	23.7
700	0.8	3.1	12.3	38.3	3.5	27.7	2.7	21.1
800	0.6	2.1	8.5	35.3	3.5	22.7	1.9	19.1
900	0.3	1.5	8	33.2	3.5	17.6	1.6	17.7
1000	**0.2**	**1.2**	**7.5**	**31.1**	**3.5**	**12.6**	**1.4**	**16.5**
1500	0	0.2	5.3	22.7	0	0	0.9	11.7
2000	0	0	3.4	17.1	0	0	0.6	8.8
3000	**0**	**0**	**2.3**	**9.9**	**0**	**0**	**0.4**	**5.1**
3500	0	0	1.8	7.2	0	0	0.3	3.7
≥4000	0	0	1.3	5.3	0	0	0.2	2.7

Table 66. Cumulative reduction in commercial dolphin landings in North Carolina from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	100	100	100	100	100	100	100	100
100	16	37.7	56	81.7	42.9	71.4	23.4	63.9
200	6.5	21.7	42.2	69.6	28.6	51.7	13.2	50.2
300	3.6	14.1	32.5	60.4	28.6	37.9	9	41.6
400	2	9.9	26.9	53	28.6	24.1	6.6	35.5
500	1.2	7.5	21.7	46.9	14.3	11.7	5	30.9
600	0.8	5.9	18	42	14.3	4.8	4.1	27.3
700	0.7	4.7	15.8	37.8	0	0	3.5	24.4
800	0.6	3.7	10.2	34.2	0	0	2.4	21.8
900	0.4	2.9	10	31.7	0	0	2.2	20
1000	0.4	2.3	9.4	29.2	0	0	2.1	18.3
1500	0.1	0.5	7.5	19.1	0	0	1.5	11.6
2000	0	0	3	13.8	0	0	0.6	8.2
3000	**0**	**0**	**2.7**	**7**	**0**	**0**	**0.5**	**4.1**
3500	0	0	2.2	3.9	0	0	0.4	2.3
≥4000	0	0	1.3	2	0	0	0.2	1.2

Table 67. Cumulative reduction in commercial dolphin landings in South Carolina from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	100	100	100	100	100	100	100	100
100	27.4	55.3	63.5	87.3	25	29.4	46.1	82.6
200	16.1	37.9	50.5	78.2	0	0	33.9	72.3
300	10.3	26.8	45.2	70.5	0	0	28.4	64.1
400	7.2	19.5	38.1	63.8	0	0	23.2	57.3
500	4.4	14.6	28.5	58.4	0	0	16.9	52
600	3.6	11.1	22.8	54.4	0	0	13.6	48
700	2.8	8.4	17.1	51.2	0	0	10.2	44.9
800	1.9	6.4	15.1	48.6	0	0	8.7	42.3
900	1.5	4.9	13.9	46.3	0	0	7.9	40.1
1000	1	3.8	12.1	44.3	0	0	6.8	38.3
1500	0.3	1.5	10	35.4	0	0	5.3	30.4
2000	0.1	0.7	7.3	28.4	0	0	3.8	24.3
3000	**0.1**	**0**	**5.7**	**18.2**	**0**	**0**	**3**	**15.5**
3500	0	0	3.7	14.4	0	0	1.9	12.3
≥4000	0	0	3	11.9	0	0	1.5	10.2

Table 68. Cumulative reduction in commercial dolphin landings in Georgia from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	100	100	100	100	-	-	100	100
100	36.6	57.3	60	59.1	-	-	36.6	57.3
200	20.9	37	20	46.1	-	-	20.9	37
300	12.9	24.9	20	36.3	-	-	12.9	24.9
400	8.5	17.2	20	26.5	-	-	8.5	17.2
500	6	11.8	20	16.7	-	-	6	11.8
600	3.7	8.2	20	6.9	-	-	3.7	8.2
700	2.5	6.1	0	0	-	-	2.5	6.1
800	1.7	4.5	0	0	-	-	1.7	4.5
900	1.5	3.3	0	0	-	-	1.5	3.3
1000	**1.2**	**2.3**	**0**	**0**	**-**	**-**	**1.2**	**2.3**
1500	0.2	0.2	0	0	-	-	0.2	0.2
2000	0	0	0	0	-	-	0	0
3000	**0**	**0**	**0**	**0**	**-**	**-**	**0**	**0**
3500	0	0	0	0	-	-	0	0
≥4000	0	0	0	0	-	-	0	0

Table 69. Cumulative reduction in commercial dolphin landings in Florida East Coast from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	100	100	100	100	100	100	100	100
100	19.4	38.7	49.4	79.2	7.1	65.1	23.9	56.8
200	8.5	20.6	35.1	66.8	7.1	54.8	12.4	41.2
300	3.7	12.8	28.7	57.2	3.6	49.1	7.4	32.6
400	2.3	8.7	23.6	49.5	3.6	44	5.4	26.9
500	1.6	6	18.4	43.2	3.6	38.8	4.1	22.6
600	1.1	4.1	14	38.3	3.6	33.6	3	19.4
700	0.8	2.7	10.9	34.6	3.6	28.5	2.3	16.9
800	0.5	1.8	7.2	31.7	3.6	23.3	1.5	15.1
900	0.3	1.2	6.7	29.7	3.6	18.2	1.2	13.9
1000	**0.2**	**0.9**	**6.4**	**27.7**	**3.6**	**13**	**1.1**	**12.9**
1500	0	0.2	4.2	19.7	0	0	0.6	8.9
2000	0	0	2.8	14.6	0	0	0.4	6.5
3000	0	0	1.7	8.2	0	0	0.3	3.7
3500	0	0	1.4	5.8	0	0	0.2	2.6
≥4000	0	0	1	4.1	0	0	0.2	1.8

Economic Impacts

Trip limit impacts presented in Tables 54 to 69 are based on data collected by Dr. Phil Goodyear from several sources that include data supplied by states in the Atlantic. Confidential data (cells with less than three observations) on the distribution of trips by poundage category for the State of North Carolina were not provided to Dr. Goodyear when these tables were originally compiled. Recently, this information was supplied to Council staff and it revealed that there are trips where landings exceed 5,000 pounds in North Carolina (Table 70a). Thus, the data on reduction in harvest from the various trip limits (Table 66) are underestimates for North Carolina.

Data on landings by trip category (1994 to 1999) for North Carolina that were recently supplied to the council, and impacts from various dolphin trip limits based on analysis of each year's data, are presented in Table 70a.

Trip limit impacts for North Carolina are also calculated from a pooled data set spanning 1994 to 1997 instead of each year individually (Table 70b). The pooled data indicate that a 3,000 pound trip limit will reduce revenue by 18% in the North Carolina fishery.

Table 70c presents estimates of the potential loss in ex-vessel revenue to the commercial harvesting sector from the proposed trip limits. Estimates were calculated by assuming that future expected harvests will be at or around the average from 1994 to 1997 (Table 8), and that no additional trips will be taken to earn additional revenue. An ex-vessel price of $1.55 per pound was used in this analysis, the price per pound for dolphin in 2000 (NMFS web site). For the Mid-Atlantic and New England regions the trip limit will be 3,000 pounds.

Reductions in revenue for the South Atlantic were recalculated using the new data for North Carolina (Table 70b) where the trip limit will be 3,000 pounds. A 3,000 pound trip limit will apply to South Carolina, and Georgia North of 31° N. latitude. A 1,000 pound trip limit will apply to Georgia south of 31° N. latitude, and the Florida east coast. There is no further refinement of landings data for Georgia that will allow separation of harvests by the 31° N. latitude line, thus two estimates of the trip limit impact were calculated for Georgia.

Assuming no increase in price, the total expected loss in ex-vessel revenue could vary between $325,053 and $325,563 from the trip limits proposed in this measure (Table 70c). Even if vessels increase the number of trips taken to meet some gross revenue target, net revenue will be lower because of the increased total costs incurred from additional trips. If this measure is

necessary to prevent growth overfishing, prevent localized depletion, or to regulate market supply throughout the year, then economic benefits will increase.

Table 70a. Expected decrease in ex-vessel landings to the commercial dolphin fishery in North Carolina from various trip limits (Data Source: The Division of Marine Fisheries, NC Dept. Env., Health, and Nat. Res.**)**

1994			Reduction in Weight			
Dolphin per Trip	**# of Trips**	**Landings**	**Trip Limit**	**Lb.**	**%**	**Red. In Revenue**
Less than 1000	2,283	125,178	1000	16,564	10%	$25,674
1001-2000	12	15,523	2000	6,041	4%	$9,363
2001-3000	4	9,288	3000	1,753	1%	$2,717
More than 3000 lbs.	3	10,753				
Total Landings	2,302	160,742				
1995			**Reduction in Weight**			
Dolphin per Trip	**# of Trips**	**Landings**	**Trip Limit**	**Lb.**	**%**	**Red. In Revenue**
Less than 1000	2,766	197,404	1000	112,344	31%	$174,134
1001-2000	23	34,738	2000	76,606	21%	$118,739
2001-3000	6	13,653	3000	56,953	16%	$88,277
3001-4000	4	13,785	4000	41,168	12%	$63,810
4001-5000	3	12,914	5000	29,254	8%	$45,343
5000+	11	84,254				
Total Landings	2,813	356,748				
1996			**Reduction in Weight**			
Dolphin per Trip	**# of Trips**	**Landings**	**Trip Limit**	**Lb.**	**%**	**Red. In Revenue**
Less than 1000	1,721	96,315	1000	22,271	17%	$34,520
1001-3000	7	15,976	3000	7,295	6%	$11,308
More than 3000 lbs.	3	16,295				
Total Landings	1,731	128,586				
1997			**Reduction in Weight**			
Dolphin per Trip	**# of Trips**	**Landings**	**Trip Limit**	**Lb.**	**%**	**Red. In Revenue**
Less than 1000	1,814	112,767	1000	103,023	45%	$159,685
1001-2000	7	8,539	2000	94,484	41%	$146,450
More than 2000 lbs.	7	108,484				
Total Landings	1,828	229,790				
1998			**Reduction in Weight**			
Dolphin per Trip	**# of Trips**	**Landings**	**Trip Limit**	**Lb.**	**%**	**Red. In Revenue**
Less than 1000	1,519	91,310	1000	48,680	32%	$75,454
1001-2000	5	7,300	2000	41,380	28%	$64,139
More than 2000 lbs.	5	46,395				
Total Landings	1,529	149,990				
1999			**Reduction in Weight**			
Dolphin per Trip	**# of Trips**	**Landings**	**Trip Limit**	**Lb.**	**%**	**Red. In Revenue**
Less than 1000	1,579	108,735	1000	79,918	38%	$123,873
1001-2000	12	15,491	2000	67,427	32%	$104,512
More than 2000 lbs.	9	85,427				
Total Landings	1,600	209,653				

Table 70b. Expected decrease in ex-vessel revenue in the North Carolina commercial dolphin fishery from trip limits.

Trip Limit	Reduction in Landings (lb.) - NC	Proportional Reduction in Landings - NC	Reduction in Revenue – NC
1000	66,637	29%	$103,287
2000	50,552	22%	$78,356
3000	41,361	18%	$64,110

*Pooled data from 1994-1997 supplied by the NC Div. of Mar. Fisheries are used to calculate proportional reduction from various trip limits

Table 70c. Expected decrease in ex-vessel revenue to the commercial dolphin fishery from the proposed trip limits.

Area	Trip limit	Reduction in landings	Average landings 1994-1997	Reduction in Revenue
New England	3,000 lb.	1.10%	13,570	$231
Mid Atlantic	3,000 lb.	6.50%	131,933	$13,293
North Carolina	3,000 lb. off NC			$64,110
South Carolina	3,000 lb. off SC	15.50%	205,544	$49,382
Georgia	1,000 lb. N 31°N off GA 3,000 lb. S 31°N off GA	2.30% 0.00%	14,334	$511 $0
Florida	1,000 lb. Florida	12.90%	990,440	$198,038
Total				**$325,053** **$325,563**

Social Impacts

The Council discussed various trip limit options before settling on different trip limits for different geographical areas of the South Atlantic. Concern was expressed that a longline fishery exists in North Carolina, and that having a 1,000 pound trip limit will unfairly penalize this fishery. However, commercial catches south of 31° N. latitude have traditionally been taken by hook and line, and rarely exceed 1,000 pounds. In order to better serve the local needs of the fishery's participants, it was decided to split the trip limit to 3,000 pounds north of 31° N. latitude and 1,000 pounds south of that demarcation.

By delineating two trips limits, the social impacts of this measure are somewhat mitigated; the longline fishery off of the North Carolina coast will experience the greatest impact. Their reduction in landings will cause an economic and psychological hardship. Traditional commercial hook and line fisheries south of 31° N. latitude are predicted to experience few social impacts, if any. The longline industries in North Carolina, South Carolina, and Florida will experience the greatest social and economic impacts from this action. The impact will be somewhat mitigated for this industry in North and South Carolina due to a 3000 pound trip limit (although it should be noted that as of this writing in 2002; South Carolina has a 4500 pound commercial trip limit but is prevented from enforcing it due to a court injunction). Long line vessels (estimated to number at approximately 10 vessels) ported along the east coast of Florida will have no such relief given a 1000 pound trip limit. At this amount, the hook and line fishers will experience only a .9 percent reduction in weight of dolphin landed, however, the long line fishery will experience a 27.7 percent reduction in weight of dolphin landed. This reduction is comparable to what would have been lost in the North Carolina long line fishery had the 1000 pound trip been imposed there.

Hook and line fishing (practiced mostly by the private recreational and charter boat sectors) will be allowed to continue on with the ability to sell fish bag limit caught fish with the proper permits. While this action has little negative impact on one allowable gear type (hook and line), it has a negative impact on another (long line). While the recreational sector enjoys a long and well-defined history in the dolphin fishery, there is no indication at this point that this role is being threatened by the commercial sector. It is difficult to predict future human behavior/shift in effort, especially when there is little data about the type of people who make up the different sectors of the dolphin and wahoo fishery.

Significantly, for this action the social impacts are determined to be cumulative – this one action by itself may bring no great damage to the fishery, but when combined with all of the other regulations and declining domestic market conditions, it is reasonable to predict a considerable negative impact on the commercial sector. The long line fishery in the South Atlantic, according to field reports, is not a healthy fishery at the current time.

Conclusion

The Councils concluded establishing a trip limit is an appropriate method to regulate and cap commercial harvest of dolphin, insure highly efficient gear are not employed in the fishery, and prevent a rapid increase in commercial landings which could shift allocation from the recreational sector to the commercial sector. This action is supported by the fact that a longline fishery exists in North Carolina where a 1,000 pound trip limit will unfairly penalize this fishery and commercial catches south of 31° N. latitude have traditionally been taken by hook and line, and rarely exceed 1,000 pounds.

The Councils determined a split trip limit of 3,000/1,000 pounds best achieves the goals of the FMP and the management objectives to: (1) address localized reduction in fish abundance, (2) minimize market disruption, (3) minimize conflict and/or competition between recreational and commercial user groups, (4) optimize the social and economic benefits, and (5) reduce bycatch in the dolphin fishery.

Rejected Options for Action 14:

Option 1. No action.

Biological Impacts

Not implementing trip limits could result in additional effort and gear being introduced into the fishery, unrestrained commercial harvest, and the potential for overfishing.

Economic Impacts

This option would not result in a loss of revenue to the commercial harvesting sector constrained by trip limits proposed by Action 14 and Option 2. However, a trip limit could prevent a sector from exceeding its allocation. If this sector exceeds its allocation there could be reduced net economic benefits. In addition, a management measure that restricts harvest per trip could spread harvest of the "available resource" throughout a longer period and among a larger number of fishermen. If current harvesting practices result in localized "market flooding" net benefits would decrease under this no action option.

Social Impacts

The commercial sector would experience few negative social impacts from the lack of a trip limit. However, should they exceed historical catches and cause a shift in the commercial/recreational allocations, there will be negative impacts on all sectors in the fishery. Such impacts would be increased social conflict both on and off the water between recreational and commercial interests and higher management costs due to having to revisit the regulations. It may also lead to more stringent trip and bag limits for both sectors, which would presumably lead to negative social impacts.

Conclusion

The Councils rejected this option because they felt there was a need to establish a trip limit to regulate and cap commercial harvest of dolphin, both to protect the resource and maintain historical harvest levels by recreational and commercial fishermen. In addition, establishing a trip limit would discourage the introduction of highly efficient gear in the fishery and prevent a rapid increase in commercial landings which could shift allocations from the recreational sector to the commercial sector**.** The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Option 2. Establish a commercial dolphin trip limit of 1,000-5,000 pounds or an equivalent number of fish with no transfer at sea allowed in the Atlantic EEZ.

Note: The analyses from Goodyear (1999) were presented with an upper range of all trips ≥4,000 pounds; above this level, no significant change in impact was observed.

Biological Impacts

New England - Establishing a commercial trip limit of 1,000- ≥4,000 would reduce longline trips by between 1% and 0% and landed weight by between 6% and 0%; and would reduce all commercial trips by between 1% and 0% and landed weight by between 6% and 0% (Table 54). Tables 55-58 present reductions by New England State.

Mid-Atlantic - Establishing a commercial trip limit of 1,000- ≥4,000 would not reduce hand line rod and reel trips or landed weight; would reduce longline trips by between 6% and 1% and landed weight between 22% and 3%; and would reduce all commercial trips by between 6% and 1% and landed weight between 22% and 3% (Table 59). Tables 60-64 present reductions by Mid-Atlantic State.

South Atlantic - An average trip for the directed fishery off North and South Carolina has been reported to be between 1,800 to 2,000 pounds and trips may average two days in length (NMFS, 1997). Establishing a commercial trip limit of 1,000- ≥4,000 would reduce hand line rod and reel landed weight by between 1% and 0%; would reduce longline trips by between 8% and 1% and landed weight between 31% and 5%; and would reduce all commercial trips by between 1% and 0% and landed weight between 17% and 3%. Tables 66-69 present reductions by South Atlantic State.

Economic Impacts

If the chosen trip limit for each region constrains catch per trip and if price does not increase, there would be a loss of revenue to the commercial sector provided vessels do not increase the number of trips taken. Even if vessels increase the number of trips taken to meet some gross revenue target, net revenue would be lower because of the increased total costs incurred from additional trips. Table 70d presents estimates of the potential loss in ex-vessel revenue to the commercial harvesting sector from a 1,000 pound and a 5,000 pound trip limit. Estimates were calculated by assuming that future expected harvests would be at or around the average from 1994 to 1997 (Tables 8 and 9), and that no additional trips would be taken to compensate for the shortfall in revenue. An ex-vessel price of $1.55 per pound was used in this analysis, the price per pound for dolphin in 2000 (NMFS web site). Impacts for North Carolina came from Table 70b based on data from the State of North Carolina. The proportional reduction in harvest from a 5,000 pound trip limit was not presented separately in the analysis conducted by Goodyear (Tables 54-69). The trip frequency by landings category data for North Carolina did not always separate out the number of trips in the 5,000 pound grouping (Table 70a). Thus, it was not possible to calculate the short term expected loss of revenue from a 5,000 pound trip limit (Table 70d).

Table 70d. Expected decrease in ex-vessel revenue to the commercial dolphin fishery from the 1,000 and 5,000 lb. trip limits.

Area	**Average landings 1994-1997**	**Trip Limit = 1,000 LB.**		**Trip Limit = 5,000 LB.**
		Reduction in landings	**Reduction in Revenue**	**Reduction in landings**
New England	13,570	5.8%	1,220	0%
Mid Atlantic	131,933	21.6%	44,171	less than 3.4%
North Carolina		29.0%	103,287	unknown but for some trips landings exceed 5,000 pounds
South Carolina	205,544	38.3%	122,021	less than 10.2%
Georgia	14,334	2.3%	510	0%
Florida	990,440	12.9%	198,038	less than 1.8%
Total			**469,248**	

Assuming no increase in price and that the trip would be taken, the total expected loss in ex-vessel revenue could amount to $469,248 from a 1,000 pound trip limit. Even if vessels increase the number of trips taken to meet some gross revenue target, net revenue would be lower because of the increased total costs incurred from additional trips. If this measure is necessary to prevent localized depletion, or to regulate market supply throughout the year, then benefits will increase.

Social Impacts

This option would present the least impacts to the commercial fishing sector (refer to Table 70d). In particular, North Carolina, South Carolina and Florida would experience fewer social impacts under this more liberal trip limit of 5,000 pounds. However, since it is a range being proposed, it is difficult to know how such a measure would be implemented and/or enforced. If a 1,000 pound trip limit were applied to all of the South Atlantic states the impacts may be severe for the commercial sector; the opposite would be true for the higher, 5,000 pound limit. Social impacts cannot be determined specifically when a range is proposed since the impacts will depend on the final values chosen.

Conclusion

The Councils concluded establishing a trip limit is an appropriate method to regulate and cap commercial harvest of dolphin, insure highly efficient gear are not employed in the fishery and prevent a rapid increase in commercial landings which could shift allocation from the recreational sector to the commercial sector. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP. The Council responded to public comment to maintain the status quo and historical landings, and therefore rejected this option.

4.2.15 ACTION 15. Establish a minimum size limit for dolphin of 20 inches fork length off Florida and Georgia and no minimum size limit north of Georgia.

Biological Impacts

Most dolphin are mature by the time they reach a size of 18 inches (450 mm). All dolphin are mature by the time they reach a size of 24 inches (600 mm). Implementing a size limit will prevent the targeting of small "peanut" or "chicken" dolphin, discourage waste by overharvest and discard, and relay a conservation ethic to both sectors of the fishery. One complicating factor is the presence of pompano dolphin in the catch. These dolphin seldom grow larger than 16 inches, and anecdotal information indicates there is harvest in Florida and North Carolina. A 20 inch size limit could reduce the allowable catch of pompano dolphin.

The impact of size limits, if applied to the entire South Atlantic recreational fishery, are presented in Table 71. However, the size limit is only applicable to the States of Georgia and the east coast of Florida, so the impacts will be reduced. A minimum size limit of 20 inches (508 mm) is not expected to reduce landings from the commercial fishery or recreational sector (Table 72) off Georgia. A recreational minimum size limit of 20 inches will reduce Florida east coast landings from the headboat sector by 34% in number and 13% in weight, the party/charter boat sector by 37% in number and 15% in weight, the private/rental sector by 18% in number and 4% in weight, and from all recreational sectors by 21% in number and 6% in weight (Table 73).

A 20 inch minimum size limit will reduce commercial landings from the hand line fishery off Florida by 2% in weight (Table 74). The fact that slightly more than 3% of the commercial landings in the South Atlantic (Table 75) fall below the proposed size limit confirms testimony at public hearing that the commercial fishery does not depend on small fish. This measure will only minimally impact the hand line fishery.

[Note: Table 74 totals are missing; they were inadvertently not reported in the original work (Goodyear, 1999). The totals in Tables 71-75 are calculated by weighting the percentages by landings for each sector. Given that the longline landings are quite low, the totals only change slightly from the handline numbers (e.g., Table 75).]

Table 71. Reduction in South Atlantic recreational dolphin landings from size limits. (Source: Goodyear, 1999).

Size	Headboat		Party/Charter		Private/Rental		Total	
mm FL	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
< 300	1.3	0.1	0	0	0	0	0	0
301-350	2.6	0.4	0	0	0.2	0	0.1	0
351-400	7.9	1.6	0.9	0.2	3	0.5	1.2	0.2
401-450	17.5	4.9	3.3	0.8	8.5	1.6	4.2	0.9
451-500	**32.7**	**11.8**	**14.4**	**4.4**	**17.2**	**4.1**	**14.9**	**4.4**
501-550	51.8	22.9	37.3	14.2	28.7	8.4	35.9	13.2
551-600	64.4	32.4	51.7	22	38.9	13.2	49.6	20.4
601-650	71	38.7	60.6	28.1	49.5	19.6	58.8	26.5
651-700	76	44.6	65.9	32.5	56.8	24.9	64.4	31.1
701-750	81.5	52.5	69.7	36.4	63.9	31.3	68.8	35.5
751-800	84.4	57.3	74.2	42.1	68.2	35.8	73.2	40.9
801-850	89.2	67.1	78.7	48.7	73	41.9	77.8	47.5
851-900	92	73.6	84	57.7	79	50.9	83.2	56.5
901-1000	96.5	86.3	92.7	76.2	92.9	77.8	92.8	76.5

Table 72. Reduction in recreational dolphin landings in Georgia from size limits (Source: Goodyear, 1999).

Size	Headboat		Party/Charter		Private/Rental		Total	
mm FL	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
< 300	0	0	0	0	0	0	0	0
301-350	0	0	0	0	0	0	0	0
351-400	0	0	0	0	0	0	0	0
401-450	0	0	0	0	0	0	0	0
451-500	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
501-550	0	0	0	0	0	0	0	0
551-600	0	0	14	7	0	0	6	4
601-650	0	0	14	7	100	100	62	45
651-700	0	0	29	17	100	100	68	50
701-750	33	27	29	17	100	100	69	51
751-800	67	55	86	73	100	100	93	84
801-850	67	55	86	73	100	100	93	84
851-900	100	100	86	73	100	100	94	85
901-1000	100	100	100	100	100	100	100	100

Table 73. Reduction in recreational dolphin landings in Florida East Coast from size limits (Source: Goodyear, 1999).

Size	Headboat		Party/Charter		Private/Rental		Total	
mm FL	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
< 300	1	>1	0	0	0	0	0	0
301-350	3	>1	0	0	>1	0	>1	0
351-400	8	2	1	>1	3	1	3	1
401-450	18	5	9	3	9	2	9	2
451-500	**34**	**13**	**37**	**15**	**18**	**4**	**21**	**6**
501-550	53	25	57	26	29	9	33	10
551-600	66	35	69	34	39	14	44	16
601-650	73	42	77	41	50	20	54	23
651-700	78	48	81	46	58	26	61	28
701-750	84	56	85	51	65	33	68	35
751-800	87	61	87	55	69	37	72	39
801-850	91	71	89	58	74	43	76	45
851-900	93	76	91	63	80	52	81	53
901-1000	97	87	95	75	93	79	93	78

Table 74. Reduction in Florida East Coast commercial dolphin landings from size limits (Source: Goodyear, 1999).

	Hand Line		Long Line		Other		Total	
Size	Number	Weight	Number	Weight	Number	Weight	Number	Weight
mm FL	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %
< 500	**7**	**2**	**0**	**0**	**0**	**0**	**-**	**-**
501-600	28	11	4	1	0	0	-	-
601-650	42	19	6	2	0	0	-	-
651-700	49	25	10	3	0	0	-	-
701-750	61	35	17	6	0	0	-	-
751-800	67	43	25	10	0	0	-	-
801-850	77	54	40	20	0	0	-	-
851-900	81	61	54	31	0	0	-	-
901-950	88	73	64	39	0	0	-	-
951-1000	88	73	67	43	100	100	-	-
1001-1050	98	94	69	46	100	100	-	-
1051-1100	100	100	75	53	100	100	-	-
1101-1150	100	100	85	68	100	100	-	-
1151-1200	100	100	87	71	100	100	-	-
1201-1250	100	100	100	71	100	100	-	-
1251-1300	100	100	100	100	100	100	-	-
1301-1350	100	100	100	100	100	100	-	-
1351-1400	100	100	100	100	100	100	-	-
1401-1450	100	100	100	100	100	100	-	-
1451-1500	100	100	100	100	100	100	-	-

Table 75. Reduction in South Atlantic commercial dolphin landings from size limits (Source: Goodyear, 1999).

	Hand Line		Long Line		Other		Total	
Size	Number	Weight	Number	Weight	Number	Weight	Number	Weight
Mm FL	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %
< 500	**11.4**	**3.3**	**0**	**0**	**-**	**-**	**11.4**	**3.3**
501-600	43.4	16.7	21.2	6.3	-	-	43.4	16.7
601-650	50.7	21.1	21.2	6.3	-	-	50.7	21.1
651-700	55.7	25	27.3	9.1	-	-	55.7	24.9
701-750	59.2	28.3	33.3	12.8	-	-	59.2	28.3
751-800	64.8	34.5	39.4	17.4	-	-	64.8	34.5
801-850	71.3	42.8	51.5	28.1	-	-	71.2	42.8
851-900	80.9	57.9	57.6	34.1	-	-	80.9	57.8
901-950	88.3	70.9	63.6	40.8	-	-	88.2	70.9
951-1000	93.3	81.4	75.8	57.1	-	-	93.2	81.4
1001-1050	96.8	89.8	90.9	80.3	-	-	96.8	89.8
1051-1100	98.2	93.7	93.9	85.9	-	-	98.2	93.7
1101-1150	98.5	94.6	93.9	85.9	-	-	98.5	94.6
1151-1200	99.4	97.5	97	92.4	-	-	99.4	97.5
1201-1250	99.7	98.7	100	100	-	-	99.7	98.7
1251-1300	100	100	100	100	-	-	100	100
1301-1350	100	100	100	100	-	-	100	100
1351-1400	100	100	100	100	-	-	100	100
1401-1450	100	100	100	100	-	-	100	100
1451-1500	100	100	100	100	-	-	100	100

Economic Impacts

Based on the size distribution of dolphin catches in the South Atlantic region, a size limit could constrain harvest in both the recreational and commercial fisheries. If both recreational anglers and commercial fishermen respond by increasing effort to meet some harvest goal, then it is likely that there will be increases in cost of fishing for both sectors and a loss in net economic benefits. If fishermen do not increase effort or change standard operating procedures to target larger fish, and total harvest of dolphin is reduced, there will be a loss in short-term gross benefits to both sectors. The subsequent analysis utilizes these assumptions in calculating decreased harvest and economic benefits.

A 20 inch minimum size limit by itself could reduce commercial landings by at least 3% in the South Atlantic (Table 75), and this measure will mostly impact the hand line fishery. In calculating impacts, it is assumed that this percentage reduction will apply to Florida and Georgia, unconstrained expected future harvest will equate to average landings between 1994-1997, and ex-vessel price is set at $1.55 per pound (average price per pound in 2000). Under these assumptions expected short-term reduction in gross revenue from a 20 inch minimum size limit will amount to at least $46,908 (Table 76). This represents the effect of this regulation by itself and not in combination with other proposed actions in this document such as trip limits.

Table 76. Impacts of a 20 inch minimum size limit on the commercial sector in Georgia and Florida*.

Area	Average landings 1994-199	Reduction in Revenue
Georgia	14,334	$668
Florida	990,440	$46,241
	Total	**$46,908**

For the recreational sector the minimum size limit will not be a constraint for the Georgia recreational fishery (Table 72). However, for the east coast of Florida this size limit could reduce numbers and weight of fish harvested by 21% and by 6% respectively (Table 73). This percentage reduction was applied to average numbers and of weight fish harvested during 1994-1997 (896,726 and 6,398,917 pounds respectively) in order to calculate expected reductions in future harvest. Under the stated assumptions a 20 inch minimum size limit could reduce recreational harvest by 188,312 fish (383,935 pounds) (Table 77a), if anglers do not respond by targeting larger fish. If anglers do not respond by increasing effort in this fishery to harvest more fish, there will be a loss in total angler benefits. Even if effort increases, there is likely to be higher costs and thus lower short-term net economic benefits. Long-term benefits could increase if in the future this measure results in higher quality fishing that is sustainable. If this measure is necessary to prevent growth overfishing then long term benefits will increase.

Table 77a. Impacts of a 20 inch dolphin minimum size limit on the recreational sector in Georgia and Florida.

Area	Average landings 1994-1997 (lb.)	Reduction in Weight of Fish (lb.)	Average number of fish landed 1994-1997	Reduction in Numbers of Fish
Georgia	2,684	0	461	0
Florida	6,398,917	383,935	896,726	188,312
Total		**383,935**		**118,312**

Social Impacts

Setting an 20 inch size limit may have a negative impact on both the commercial and recreational sectors, especially when combined with bag and/or trip limits. According to economic analyses, the reduction in landings and income from sales will be considerable, and may precipitate social impacts on the fishery's participants (e.g., a loss of income may increase stress levels for the fisherman; such stress may lead to negative impacts on the household, etc.). Public hearing testimony questions the effectiveness of releasing undersize fish after bringing them to the boat. Many persons commented that it was impossible to measure a fish like a dolphin without injuring the fish. Whether anglers will actually target smaller fish is not known. Not having an allowable incidental bycatch will create regulatory discards. Having size limits for the EEZ that match existing size limits for the States of Georgia and Florida enhances law enforcement efforts and makes for less confusion, hence better compliance by all fishermen.

Conclusion

Establishing a 20 inch size limit off Georgia and the east coast of Florida for dolphin will prevent the targeting of peanut or chicken dolphin, reduce waste, and increase yield in the fishery. This action was adopted in part to establish like regulations off states which already had minimum size limit regulations. In addition, this action will allow harvest only after most female dolphin are sexually mature and have spawned. While the Councils concluded that other proposed measures (i.e., bag limit, trip limit, etc.) will be the primary measures to protect and conserve the resource, implementing a minimum size limit off Georgia and the east coast of Florida will provide additional benefits to the stock and enhance existing state regulations.

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (1) address localized reduction in fish abundance, (3) minimize conflict and/or competition between recreational and commercial user groups, and (4) optimize the social and economic benefits.

Rejected Options for Action 15:

Option 1. No Action.

Biological Impacts

Dolphin grow rapidly, the benefits of a minimum size limit may not outweigh the costs to the fishery (except for consistent regulations off Georgia and the Florida east coast). In addition, other proposed measures (i.e., bag limit) would prevent the continued targeting of small "peanut" or "chicken" dolphin, prevent waste by overharvest and discards, relay a conservation ethic to the fishery, and reduce loss in yield to the fishery. This action could reduce regulatory discards with certain gear types, such as passive gear (e.g., longlines) where fish remain on the line for extended periods of time and do not survive. Florida presently has a 20 inch commercial size limit in place. Georgia presently has an 18 inch size limit for both recreational and commercial harvest. South Carolina has recently proposed no size limit for dolphin to reduce the amount of regulatory discards.

Economic Impacts

There would be no short-term economic losses from this option, however long-term benefits may not be optimized if a minimum size limit is needed to "improve" the stock status or to prevent growth overfishing.

Social Impacts

Not restricting the size of fish landed would allow more freedom for fishers to harvest the dolphin resource. The benefits of this action come from giving the fishermen a degree of autonomy and furthermore, the lack of a size limit would have worked well in conjunction with proposed bag limits and boat limits.

Conclusion

The Councils rejected taking no action and concluded establishing a size limit for dolphin was necessary to complement state regulations and other actions including a bag limit to prevent the targeting of "peanut" or "chicken" dolphin, reduce waste, and increase yield in the fishery. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Option 2. Establish an 18-24 inch fork length minimum size limit for dolphin.

Biological Impacts

Most dolphin are mature by the time they reach a size of 18 inches (450 mm). All dolphin are mature by the time they reach a size of 24 inches (600 mm). Implementing a size limit would prevent the targeting of small "peanut" or "chicken" dolphin, discourage waste by overharvest and discard, and relay a conservation ethic to both sectors of the fishery.

New England - A recreational minimum size limit of between 18 and 24 inches (450 and 600 mm) would not reduce landings from the headboat sector; would reduce landings from the party/charter boat sector by between 30% and 53% in number and 8% and 21% in weight; would reduce landings from the private/rental sector by between 0% and 53% in number and 0% and 17% in weight; and would reduce landings from all recreational sectors by between 22% and 53% in number and 5% and 20% in weight (Table 77b).

Table 77b. Reduction in New England recreational dolphin landings (pounds) from size limits (Source: Goodyear, 1999).

Size	Headboat		Party/Charter		Private/Rental		Total	
mm FL	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
< 300	-	-	2.6	0.2	0	0	1.9	0.1
301-350	-	-	7.8	1	0	0	5.8	0.6
351-400	-	-	10.4	1.6	0	0	7.7	1
401-450	**-**	**-**	**29.6**	**7.8**	**0**	**0**	**21.9**	**5**
451-500	-	-	34.8	9.8	15.8	4.1	29.9	7.8
501-550	-	-	43.1	14.2	52.6	17.1	45.6	15.2
551-600	**-**	**-**	**52.8**	**21.2**	**52.6**	**17.1**	**52.8**	**19.7**
601-650	-	-	67.8	34.2	57.9	19.9	65.2	29.1
651-700	-	-	67.8	34.2	57.9	19.9	65.2	29.1
701-750	-	-	78.7	48.8	63.2	24.6	74.6	40.2
751-800	-	-	83.9	57.4	68.4	30	79.8	47.7
801-850	-	-	86.5	62.5	73.7	36.4	83.1	53.2
851-900	-	-	86.5	62.5	94.7	67	88.6	64.1
901-1000	-	-	99.5	96.6	94.7	67	98.3	86

Mid-Atlantic - A recreational minimum size limit of between 18 and 24 inches would not reduce landings from headboats; would reduce landings from the party/charter boat sector by between 15% and 62% in number and 4% and 29% in weight; would reduce landings from the private/rental sector by between 19% and 56% in number and between 5% and 22% in weight; and would reduce landings from all recreational sectors by between 17% and 60% in number and 4% and 26% in weight (Table 77c).

Table 77c. Reduction in Mid-Atlantic recreational dolphin landings (pounds) from size limits (Source: Goodyear, 1999).

Size	Headboat		Party/Charter		Private/Rental		Total	
mm FL	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
< 300	-	-	0	0	0.3	0	0.1	0
301-350	-	-	1.4	0.2	0.9	0.1	1.2	0.1
351-400	-	-	3.5	0.7	4.2	0.8	3.8	0.7
401-450	**-**	**-**	**14.7**	**4.1**	**19.4**	**4.8**	**16.5**	**4.4**
451-500	-	-	31.9	11.5	32	9.4	32	10.6
501-550	-	-	51.3	21.9	49.2	17.4	50.5	20
551-600	**-**	**-**	**61.7**	**29.2**	**56.3**	**21.6**	**59.6**	**26**
601-650	-	-	70.6	36.8	64.3	27.6	68.1	32.9
651-700	-	-	75.9	42.4	68.8	31.9	73.1	38
701-750	-	-	80.3	48.1	72.1	35.7	77.1	42.8
751-800	-	-	84.3	54.4	75.8	40.6	80.9	48.6
801-850	-	-	88	61.3	82.5	51.5	85.8	57.1
851-900	-	-	91.7	69.4	86.8	59.9	89.8	65.4
901-1000	-	-	96.3	81.6	94.1	76.8	95.4	79.6

South Atlantic - A recreational minimum size limit of between 18 and 24 inches would reduce landings from the headboat sector by between 18% and 64% in number and 5% and 32% in weight; would reduce landings from the party/charter boat sector by between 3% and 52% in number and 1% and 22% in weight; would reduce landings from the private/rental sector by between 9% and 39% in number and 2% and 13% in weight; and would reduce landings from all recreational sectors by between 4% and 50% in number and 1% and 20% in weight (Table 71).

A commercial minimum size limit between 18 and 24 inches would reduce landings from the hook and line sector by between 11% and 43% in number and 3% and 17% in weight; would reduce landings from the longline sector by between 0% and 21% in number and 0% and 6% in weight; would reduce landings from all commercial sectors in the South Atlantic by between 11% and 43% in number and 3% and 17% in weight (Table 71).

Since a separate size limit analysis is not available for New England and the Mid-Atlantic, results from all areas were utilized for these regions (Table 77d). A commercial minimum size limit between 18 and 24 inches would reduce landings from the hook and line sector by between 7% and 10% in number and 1% in weight; would reduce landings from the longline sector by between 2% and 5% in number and less than 1% in weight; would reduce landings from all commercial sectors in the Mid-Atlantic and New England by between 7% and 10% in number and 1% in weight.

One complicating factor is the presence of pompano dolphin in the catch. These dolphin seldom grow larger than 16 inches and anecdotal information indicates there is harvest in Florida and North Carolina and an 18 to 24 inch size limit could significantly reduce the allowable catch.

Table 77d. Reduction in commercial dolphin landings (pounds) across all areas (Atlantic, Caribbean and Gulf of Mexico) from size limits (Source: Goodyear, 1999).

	Hand Line		Long Line		Other		Total	
Size	Number	Weight	Number	Weight	Number	Weight	Number	Weight
mm FL	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %
< 500	**7.3**	**0.8**	**2.3**	**0.2**	**-**	**-**	**7.3**	**0.8**
501-600	**10.3**	**1.4**	**5.1**	**0.7**	**-**	**-**	**10.3**	**1.4**
601-650	11.6	1.7	6.1	0.9	-	-	11.6	1.7
651-700	14.1	2.6	7.1	1.2	-	-	14.1	2.6
701-750	15.8	3.3	8.3	1.7	-	-	15.8	3.3
751-800	19.1	5	13.6	4	-	-	19.1	5
801-850	23.2	7.5	14.2	4.3	-	-	23.2	7.5
851-900	26	9.5	14.6	4.5	-	-	26	9.5
901-950	30.3	13.1	25.1	12.1	-	-	30.3	13.1
951-1000	38.4	20.9	31.7	17.2	-	-	38.4	20.9
1001-1050	59.7	44.2	45.9	30.3	-	-	59.7	44.2
1051-1100	79.3	68.7	62.5	47.8	-	-	79.3	68.7
1101-1150	92.4	86.9	69	55.4	-	-	92.3	86.9
1151-1200	95.9	92.5	89.5	83.1	-	-	95.9	92.5
1201-1250	99.4	98.8	94.7	90.7	-	-	99.4	98.8
1251-1300	100	100	99.7	99.3	-	-	100	100
1301-1350	100	100	99.8	99.6	-	-	100	100
1351-1400	100	100	99.8	99.6	-	-	100	100
1401-1450	100	100	99.9	99.8	-	-	100	100
1451-1500	100	100	99.9	99.8	-	-	100	100

Economic Impacts

Based on the size distribution of dolphin catches in each region, a size limit could constrain harvest in both the recreational and commercial fisheries. The expected reduction in harvest from this measure would depend on the actual limit chosen, and would vary depending on the gear used and mode of fishing. Refer to the biological impacts section for data on the proportional reduction in landings by mode, region, and gear in the Atlantic.

If both recreational anglers and commercial fishermen respond by increasing effort to meet some harvest goal, then it is likely that there will be increases in the cost of fishing for both sectors and a loss in net economic benefits. If fishermen do not increase effort or change standard operating procedures to target larger fish, and total harvest of dolphin is reduced, there will be a loss in short-term gross benefits to both sectors (except in the case where a price increase is high enough to avoid this situation in the commercial fishery). The subsequent analysis utilizes this assumption in calculating decreased harvest and economic benefits.

Estimates of potential decreases in the weight of fish harvested by the recreational sector was calculated assuming that expected future harvest would amount to the average harvest from 1994-1997 in the absence of this regulation. In addition, to determine the effects of an 18" minimum size limit the results of the 401-450 size category was used in this calculation and the results from the 501-600 category was used to estimate the effect of the 24 inch size category. Under these assumptions expected short-term reduction in weight of fish harvested could vary as shown in Table 77e depending on the size limit chosen.

Table 77e. Impacts of an 18 inch and 24 inch dolphin minimum size limit on the recreational sector.

Area	Average landings 1994-1997 (lb.)	Reduction from an 18" min. size limit		Reduction from a 24" min. size limit	
		%	Weight (lb.)	%	Weight (lb.)
New England	22,747	5.0%	1,137	19.7%	4,481
Mid Atlantic	497,504	4.4%	21,890	26.0%	129,351
South Atlantic	9,788,662	0.9%	88,098	20.4%	1,996,887
Total			**111,125**		**2,130,719**

Estimates of potential decreases in ex-vessel value of commercial landings were calculated assuming that expected future harvest would amount to the average harvest from 1994-1997 in the absence of this regulation, and ex-vessel price is set at $1.55 per pound (price per pound in 1998; NMFS, 1998 and 1999a). In addition, to determine the effects of an 18" minimum size limit the results of the <500mm size category was used in this calculation and the results from the 501-600 category was used to estimate the effect of the 24 inch size category. Data on the impact of minimum size limits were available for the South Atlantic region but not separately for the Mid-Atlantic and New England. The proportional reduction in landings for these two regions was calculated by using the impact of size limits across all areas (Table 77d). Under these assumptions and using data described, the expected short term reduction in gross revenue could vary between $74,872 and $372,921 depending on the size limit chosen (Table 77f).

Table 77f. Impacts of an 18 inch and 24 inch dolphin minimum size limit on the commercial sector.

Area	Average landings 1994-1997 (lb.)	Reduction in Weight of Fish (lb.) from an 18" min. size limit		Reduction in Weight of Fish (lb.) from a 24" min. size limit	
New England	13,570	0.80%	$169	1.40%	$294
Mid Atlantic	131,933	0.80%	$1,636	1.40%	$2,863
South Atlantic	1,428,484	3.30%	$73,067	16.70%	$369,763
Total			**$74,872**		**$372,921**

Refer to the economic impact section under Action 15 for further discussion on the potential short-term and long-term economic effects of establishing a minimum size limit.

Social Impacts

Setting an 18-24 inch (fork length) minimum size limit on the catch of dolphin may have a negative impact on both the commercial and recreational sectors, especially if combined with bag and/or trip limits. According to economic analyses, the reduction in landings and income from sales would be considerable, and may precipitate social impacts on the fishery's participants (e.g., a loss of income may increase stress levels for the fisherman; such stress may lead to negative impacts on the household, etc.). One of the most important reasons the Council came to consider size limits for dolphin was that the public had widely requested these limits at public hearings.

Conclusion

Establishing an 18-24 inch minimum size limit for dolphin would prevent the targeting of "peanut" or "chicken dolphin", reduce waste, and increase yield in the fishery. In addition, this action would allow harvest only after most female dolphin are sexually mature and have spawned. The Councils determined the 20 inch limit is most appropriate at this time, and the other sizes considered are not the best way to achieve the goals and management objectives of the FMP.

4.2.16 ACTION 16. Establish a commercial trip limit for wahoo (landed head and tail intact) of 500 pounds with no transfer at sea allowed.

The Councils considered trip limits ranging from 0 to 2,400 pounds as shown in Tables 78-80. In order to reduce repetition only the proposed action and no action options are included. The administrative record contains discussion of the full range considered.

Biological Impacts

New England - Establishing a commercial trip limit of 500 pounds will not reduce any commercial trips; reductions do not begin to occur until a 200 pound trip limit is considered (Table 78).

Mid-Atlantic - Establishing a commercial trip limit of 500 pounds will reduce longline trips by 1% and landed weight by 3% (Table 79).

South Atlantic - Establishing a commercial trip limit of 500 pounds will reduce hand line/rod and reel trips by <1% in number and landed weight by <1%; (Table 80); will reduce longline trips by 1% in number and landed weight by 9%; will reduce landings from the total commercial sector by <1% in number and by 2% in weight (Table 80).

Economic Impacts

If this trip limit reduces catch per trip and if price remains constant there will be a loss of revenue to the commercial sector, provided vessels do not increase the number of trips taken. A 500 pound trip limit could reduce commercial landings in the South Atlantic by 1.7% and in the Mid-Atlantic by 2.9%. The average annual harvest of wahoo from 1994 to 1997 in the South Atlantic region amounted to 85,264 pounds and 3,890 pounds in the Mid-Atlantic. Assuming future expected harvest without this regulation will amount to the average harvest between 1994 and 1997, it is expected that this measure will reduce total commercial harvest by 1,450 pounds (85,264 x .017) in the South Atlantic, and 113 pounds (3,890 x 0.029) in the Mid-Atlantic. The total reduction in landings could amount to 1,563 pounds and total revenue will be $3,641 annually (using an average price of $2.33/pound; the average price of wahoo in 2000). If this measure is necessary to prevent overfishing, prevent localized depletion, or to regulate market supply throughout the year, then economic benefits will increase.

Social Impacts

It is predicted that setting a commercial trip limit for wahoo of 500 pounds will not have a negative impact upon the participants in this fishery.

Conclusion

The Council adopted a 500 pound trip limit to cap the fishery and prevent expansion. Considering total landings will be reduced by 2% or less, little impact on present harvest is expected. The Councils determined this action best achieves the goals of the FMP and the management objectives to: (1) address localized reduction in fish abundance, (2) minimize market disruption, (3) minimize conflict and/or competition between recreational and commercial user groups, and (4) optimize the social and economic benefits.

Rejected Options for Action 16:

Option 1. No action.

Biological Impacts

Not establishing a commercial trip limit would leave the fishery unrestrained and a significant increase in harvest could occur if fishermen targeted wahoo with some type of highly efficient gear.

Economic Impacts

There would be no reduction in commercial ex-vessel revenue from this option. It is difficult to speculate on long term benefits without information on the sustainability of current levels of harvest. Economic benefits could decrease if "no action" results in local market flooding and/or overfishing occurs in the future.

Social Impacts

There would be no social impacts from this option.

Conclusion

The Councils concluded taking no action would not provide a cap or limitation on commercial wahoo harvest possibly allowing unchecked expansion of the fishery and redirection of effort toward wahoo. The Councils rejected this option in order to limit the fishery and prevent expansion. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Table 78. Reduction in commercial wahoo landings in New England from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	-	-	100	100	-	-	100	100
50	-	-	55.1	30.2	-	-	55.1	30.2
100	-	-	6.9	7.2	-	-	6.9	7.2
150	-	-	3.4	3.4	-	-	3.4	3.4
200	-	-	3.4	0.4	-	-	3.4	0.4
250	-	-	0	0	-	-	0	0
300	-	-	0	0	-	-	0	0
350	-	-	0	0	-	-	0	0
400	-	-	0	0	-	-	0	0
450	-	-	0	0	-	-	0	0
500	**-**	**-**	**0**	**0**	**-**	**-**	**0**	**0**
750	-	-	0	0	-	-	0	0
1000	-	-	0	0	-	-	0	0
1500	-	-	0	0	-	-	0	0
2000	-	-	0	0	-	-	0	0
2500	-	-	0	0	-	-	0	0

Table 79. Reduction in commercial wahoo landings in the Mid-Atlantic from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	-	-	100	100	-	-	100	100
50	-	-	45	47.4	-	-	45	47.4
100	-	-	19.8	28	-	-	19.8	28
150	-	-	9.9	19.1	-	-	9.9	19.1
200	-	-	6.2	13.5	-	-	6.2	13.5
250	-	-	4.2	10.1	-	-	4.2	10.1
300	-	-	2.5	8	-	-	2.5	8
350	-	-	2.2	6.3	-	-	2.2	6.3
400	-	-	1.9	5	-	-	1.9	5
450	-	-	1.5	3.8	-	-	1.5	3.8
500	**-**	**-**	**1.4**	**2.9**	**-**	**-**	**1.4**	**2.9**
750	-	-	0	0	-	-	0	0
1000	-	-	0	0	-	-	0	0
1500	-	-	0	0	-	-	0	0
2000	-	-	0	0	-	-	0	0
2500	-	-	0	0	-	-	0	0

Table 80. Reduction in commercial wahoo landings in the South Atlantic from trip limits (Source: Goodyear, 1999).

	Hand Line/Rod& Reel		Long Line		Other		Total	
Trip	Trips	Weight	Trips	Weight	Trips	Weight	Trips	Weight
Limit	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction	% Reduction
0	100	100	100	100	100	100	100	100
50	27	23.8	41.9	47	10.5	6.7	28.7	27.9
100	5.1	8.9	17.6	27.6	0	0	6.6	12.2
150	2.2	5.3	7.7	18.9	0	0	2.8	7.7
200	1.5	3.3	4.2	14.7	0	0	1.8	5.3
250	0.6	2.1	2.3	12.5	0	0	0.8	3.9
300	0.5	1.5	1.4	11.2	0	0	0.6	3.2
350	0.4	1	1.3	10.2	0	0	0.5	2.6
400	0.2	0.7	0.9	9.6	0	0	0.3	2.2
450	0.2	0.4	0.8	9	0	0	0.3	1.9
500	**0.2**	**0.2**	**0.5**	**8.5**	**0**	**0**	**0.2**	**1.7**
750	0	0	0.4	6.9	0	0	0	1.2
1000	0	0	0.1	6	0	0	0	1.1
1500	0	0	0.1	5.5	0	0	0	1
2000	0	0	0.1	5	0	0	0	0.9
2500	0	0	0.1	4.5	0	0	0	0.8

4.2.17 ACTION 17. Do not establish a size limit for wahoo in the Atlantic EEZ.

Biological Impacts

Most wahoo are mature by the time they reach a size of 45 inches (1,125 mm). Not implementing a size limit will allow the harvest of fish prior to spawning. However, the majority of testimony at public hearings indicated there will be a problem with releasing wahoo safely and the associated hooking/gaffing mortality may outweigh the intended benefit.

Economic Impacts

There will be no short-term economic impact from this measure. Size limits can create regulatory discards with certain gear types, such as passive gear (e.g., longlines) where fish remain on the line for extended periods of time and do not survive. However, long-term benefits will decrease if this situation results in growth overfishing.

Social Impacts

By regulating the catch of wahoo with commercial trip limits and a recreational bag limit, the utility of further restricting catches with a size limit provides no substantial social benefit. This action will not burden either the recreational or commercial sector.

Conclusion

The Council considered a size limit to allow wahoo to grow to maturity prior to harvest however, the benefit from this action was outweighed by the more random nature of harvest and the potential safety problem fishermen encounter in releasing wahoo due to the potential for being cut by the large number of teeth. In addition, the harvest of wahoo will be managed through the recreational bag limit and the commercial trip limit.

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (2) minimize market disruption, (3) minimize conflict and/or competition between recreational and commercial groups, and (4) optimize the social and economic benefits.

Rejected Options for Action 17:

Option 1. Establish a 35-45 inch minimum size limit for wahoo in the Atlantic EEZ.

Biological Impacts

Most wahoo are mature by the time they reach a size of 45 inches (1,125 mm). Implementing a size limit could prevent the harvest of fish prior to spawning and relay a conservation ethic to both sectors of the fishery.

New England - A recreational minimum size limit of between 35 and 45 inches (875 - 1,125 mm) would not reduce landings from any recreational sector.

Mid-Atlantic - A recreational minimum size limit of between 35 and 45 inches would reduce landings from the party/charter boat sector by between 0% and 33% in number and 0% and 19% in weight; would reduce landings from the private/rental sector by between 0% and 92% in number and 0% and 81% in weight; and would reduce landings from all recreational sectors by between 0% and 61% in number and 0% and 33% in weight (Table 81).

South Atlantic - A recreational minimum size limit of between 35 and 45 inches would reduce landings from the headboat sector by between 36% and 91% in number and 20% and 82% in weight; would reduce landings from the party/charter boat sector by between 7% and 47% in number and 2% and 31% in weight; would reduce landings from the private/rental sector by

between 2% and 50% in number and 1% and 31% in weight; and would reduce landings from all recreational sectors by between 7% and 48% in number and 2% and 31% in weight (Table 82).

A commercial minimum size limit of between 35 and 45 inches would reduce South Atlantic landings from the handline sector between 0% and 39% in number and between 0% and 25% in weight; would reduce landings from the longline sector by between 0% and 31% in number and between 0% and 16% in weight; and would reduce landings from all sectors by between 0% and 39% in number and between 0% and 25% in weight (Table 83).

Table 81. Reduction in Mid-Atlantic recreational wahoo landings from size limits (Source: Goodyear, 1999).

Size	Headboat		Party/Charter		Private/Rental		Total	
Mm FL	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
< 601	-	-	-	-	-	-	-	-
601-800	-	-	-	-	-	-	-	-
801-900	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
901-1000	-	-	-	-	91.7	80.8	43.7	18.9
1001-1050	-	-	-	-	91.7	80.8	43.7	18.9
1051-1100	-	-	-	-	91.7	80.8	43.7	18.9
1101-1150	**-**	**-**	**33.3**	**18.9**	**91.7**	**80.8**	**61.1**	**33.4**
1151-1200	-	-	33.3	18.9	91.7	80.8	61.1	33.4
1201-1250	-	-	33.3	18.9	91.7	80.8	61.1	33.4
1251-1300	-	-	33.3	18.9	100	100	65.1	37.8
1301-1350	-	-	33.3	18.9	100	100	65.1	37.8
1351-1400	-	-	66.7	50	100	100	82.5	61.7
> 1400	-	-	100	100	100	100	100	100

Table 82. Reduction in South Atlantic recreational wahoo landings from size limits (Source: Goodyear, 1999).

Size	Headboat		Party/Charter		Private/Rental		Total	
Mm FL	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
< 601	-	-	0.1	0	0.5	0.1	0.1	0
601-800	27.2	12.9	2.8	0.7	0.5	0.1	2.7	0.7
801-900	**36.3**	**19.9**	**7.1**	**2.4**	**2.2**	**0.7**	**6.8**	**2.3**
901-1000	72.6	58	16.2	7.4	19.6	9.4	16.6	7.5
1001-1050	90.8	82	25.4	13.5	27.5	14.2	25.7	13.6
1051-1100	90.9	82.1	36.3	21.8	39.3	22.4	36.6	21.9
1101-1150	**90.9**	**82.1**	**47.2**	**31.2**	**50.3**	**31.1**	**47.5**	**31.2**
1151-1200	99.9	99.6	60	43.7	57.3	37.4	59.9	43.3
1201-1250	99.9	99.6	70.5	55.2	65	45.1	70.2	54.5
1251-1300	99.9	99.6	81.2	68.5	75.3	56.7	80.9	67.7
1301-1350	99.9	99.6	86.8	76.1	78.4	60.8	86.3	75
1351-1400	99.9	99.6	90.1	81.2	82.3	66.2	89.6	80.2
> 1400	100	100	100	100	100	100	100	100

Table 83. Reduction in South Atlantic commercial wahoo landings from size limits (Source: Goodyear, 1999).

	Hand Line		Long Line		Other		Total	
Size	Number	Weight	Number	Weight	Number	Weight	Number	Weight
Mm FL	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %	Cumulative %
< 600	0	0	0	0	-	-	0	0
601-800	0	0	0	0	-	-	0	0
801-900	**0**	**0**	**0**	**0**	**-**	**-**	**0**	**0**
901-1000	4.9	2.5	7.7	3.3	-	-	5.1	2.6
1001-1050	20.3	11.7	23.1	11.8	-	-	20.4	11.7
1051-1100	27.8	16.4	30.8	16.3	-	-	27.9	16.4
1101-1150	**39.3**	**25**	**30.8**	**16.3**	**-**	**-**	**38.8**	**24.5**
1151-1200	45.7	30.4	30.8	16.3	-	-	45	29.7
1201-1250	53.2	37.4	44.9	28.4	-	-	52.8	37
1251-1300	70	55.1	52.6	35.6	-	-	69.1	54.1
1301-1350	75	60.8	68.1	51.9	-	-	74.7	60.3
1351-1400	75.2	61	78.2	64.5	-	-	75.3	61.2
1401-1450	87.6	78.6	84.6	72.9	-	-	87.4	78.3
1451-1500	90.1	82.5	84.6	72.9	-	-	89.8	82

Economic Impacts

Based on the size distribution from catches of wahoo in each region, a size limit could reduce harvest in both the recreational and commercial fisheries provided fishermen do not respond by targeting larger fish. If both recreational anglers and commercial fishermen respond by increasing effort to meet some harvest goal, then it is likely that there will be increases in cost of fishing for both sectors and no change in total harvest. In both cases short-term net benefits will decrease.

If fishermen do not increase effort then total harvest will be reduced from 3.8% to 33.5% in the commercial sector and 3.1% to 31.1% in the recreational sector, as a result of a minimum size regulation (Table 84). The extent of this reduced harvest and reduced economic benefits depends on the size limit chosen. For the commercial wahoo fishery in the Atlantic, size limit restrictions in the range from 35" to 45" could lower ex-vessel revenue from $8,272 to $72,920 per year (using a price per pound of $2.33) and assuming that future expected landings in the absence of a regulation would amount to the average landings from 1994 to 1997 = 93,421 pounds) (Table 26). A size limit regulation could reduce landings by 27,360 pounds to 274,478 pounds annually in the recreational sector catching wahoo in the Atlantic (based on future expected harvest of 882,566 pounds per year in the absence of a size limit regulation; average harvest between 1994 and 1997).

Table 84. Proportional reduction in total harvest from various minimum size limits.

Minimum Size Limit		**Commercial**		**Recreational**		
Inches	**Reporting Interval**	**South Atlantic**	**All Areas**	**South Atlantic**	**Mid Atlantic**	**All Areas**
35	**801-900**	**0%**	**3.8%**	**2.3%**	**0%**	**3.1%**
40	901-1000	2.6%	10.8%	7.5%	18.9%	8.2%
42	1001-1050	11.7%	17.5%	13.6%	18.9%	14.1%
45	**1101-1150**	**24.5%**	**33.5%**	**31.2%**	**33.4%**	**31.1%**

Note: The percentage reductions for all areas are from Goodyear (1999).

Under the stated assumptions a minimum size limit could reduce recreational and commercial harvest if fishermen do not respond by targeting larger fish (Table 84). Even if effort increases, there is likely to be higher costs and thus lower short-term net economic benefits. Long-term benefits could increase if in the future this measure results in higher quality fishing that is sustainable. If this measure is necessary to prevent growth overfishing then long term benefits would increase from implementation of the "optimal" minimum size limit.

Social Impacts

Based on comments received in public hearings from all sectors of the fishing public, the Council decided to not impose size limits on wahoo. Fishermen commenting claimed that it is almost impossible to release a hooked wahoo without killing it, and thus it would constitute waste in the fishery. It was also noted that it was rare to catch an undersized wahoo, so it was not much of a problem to begin with. There would be no social impacts from this action.

Conclusion

The Councils rejected this option because the recreational bag limit and commercial trip limit will meet the overall goal and objectives of the FMP.

4.2.18 ACTION 18. Establish a recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.

Biological Impacts

Implementing a 2 fish bag limit will reduce the potential for excessive harvest and relay a conservation ethic to fishermen.

New England - A recreational bag limit of 2 fish will not reduce landings from the headboat sector; will reduce landings from the party/charter boat sector 9% in number and 7% in weight; will reduce landings from the private/rental sector 6% in number and 5% in weight; and will reduce landings from all recreational sectors 7% in number and 6% in weight (Table 85).

Mid-Atlantic - A recreational bag limit of 2 fish will not reduce landings from the headboat or party/charter boat sectors; will reduce landings from the private/rental sector 10% in number and 8% in weight; and will reduce landings from all recreational sectors 10% in number and 8% in weight (Table 86).

South Atlantic - A recreational bag limit of 2 fish will reduce landings from the headboat sector 35% in number and 27% in weight; will reduce landings from the party/charter boat sector by 9% in number and 6% in weight; will reduce landings from the private/rental sector by 14% in number and 9% in weight; and will reduce landings from all recreational sectors by 20% in number and 14% in weight (Table 87).

Table 85. Reduction in New England recreational wahoo landings from bag limits (Source: Goodyear, 1999).

Bag	Headboat		Party/Charter		Private/Rental		Total	
Limit	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
0	-	-	100	100	100	100	100	100
1	-	-	22.3	18.9	21.1	17.9	21.5	18.2
2	**-**	**-**	**8.7**	**6.9**	**6.4**	**5**	**7.1**	**5.6**
3	-	-	3.3	2.5	2.6	1.9	2.8	2.1
4	-	-	1	0.8	1.2	0.8	1.1	0.8
5	-	-	0.4	0.3	0.5	0.4	0.5	0.3
6	-	-	0.2	0.1	0.4	0.2	0.3	0.2
7	-	-	0.1	0	0.2	0.2	0.2	0.1
8	-	-	0	0	0.1	0.1	0.1	0.1
9	-	-	0	0	0	0	0	0
10	-	-	0	0	0	0	0	0
11	-	-	0	0	0	0	0	0
12	-	-	0	0	0	0	0	0
13	-	-	0	0	0	0	0	0
14	-	-	0	0	0	0	0	0
15	-	-	0	0	0	0	0	0
20	-	-	0	0	0	0	0	0
25	-	-	0	0	0	0	0	0

Table 86. Reduction in Mid-Atlantic recreational wahoo landings from bag limits (Source: Goodyear, 1999).

Bag	Headboat		Party/Charter		Private/Rental		Total	
Limit	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
0	-	-	-	-	100	100	100	100
1	-	-	-	-	23.6	19.5	23.6	19.5
2	**-**	**-**	**-**	**-**	**10.3**	**7.9**	**10.3**	**7.9**
3	-	-	-	-	5.3	3.9	5.3	3.9
4	-	-	-	-	3.3	2.3	3.3	2.3
5	-	-	-	-	1.6	1.1	1.6	1.1
6	-	-	-	-	1	0.7	1	0.7
7	-	-	-	-	0.7	0.5	0.7	0.5
8	-	-	-	-	0.3	0.2	0.3	0.2
9	-	-	-	-	0	0	0	0
10	-	-	-	-	0	0	0	0
11	-	-	-	-	0	0	0	0
12	-	-	-	-	0	0	0	0
13	-	-	-	-	0	0	0	0
14	-	-	-	-	0	0	0	0
15	-	-	-	-	0	0	0	0
20	-	-	-	-	0	0	0	0
25	-	-	-	-	0	0	0	0

Table 87. Reduction in South Atlantic recreational wahoo landings from bag limits (Source: Goodyear, 1999).

Bag	Headboat		Party/Charter		Private/Rental		Total	
Limit	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction	%Reduction
0	100	100	100	100	100	100	100	100
1	56.2	48.6	19.5	14.5	21.5	15.9	34.9	27.3
2	**34.5**	**26.8**	**9.3**	**5.7**	**13.7**	**8.8**	**20**	**13.7**
3	23.7	16.7	7.1	3.9	11	6.7	14.2	8.8
4	17.2	11	6.3	3.4	10.1	6.2	11	6.4
5	13	7.4	5.8	3.1	9.2	5.6	9	4.8
6	10.2	5	5.3	2.9	8.3	5	7.5	3.8
7	8.2	3.4	4.9	2.7	7.4	4.4	6.4	3
8	7.3	2.7	4.6	2.5	6.6	4	5.8	2.6
9	7.1	2.6	4.2	2.2	5.8	3.5	5.5	2.4
10	6.9	2.5	3.8	2	5	3	5.2	2.3
11	6.9	2.5	3.4	1.8	4.2	2.5	4.9	2.1
12	6.8	2.5	3	1.6	3.4	2.1	4.6	1.9
13	6.7	2.4	2.6	1.4	2.6	1.6	4.3	1.8
14	6.6	2.4	2.2	1.2	1.8	1.1	4	1.6
15	6.6	2.4	1.8	1	1.1	0.6	3.8	1.5
20	6.2	2.2	0	0	1.2	2.6	0.6	0.8
25	5.8	2.1	0	0	0.2	2.4	0.1	0.8

Economic Impacts

A bag limit of 2 fish will result in an overall 14% reduction in recreational landings of wahoo, provided anglers do not increase the number of trips targeting wahoo in the Atlantic (Table 88). The average wahoo recreational harvest in the Atlantic between 1994-1997 was 882,566 pounds (Table 88). Thus, it is expected that a 2 fish bag limit could reduce recreational landings by 119,970 pounds annually, and thus also reduce short-term net recreational benefits (consumer surplus).

Data on catch and landings trip frequency distribution in the South Atlantic Region, taken from the MRFSS intercept survey in 1997, indicate that on 99% of all trips where wahoo were caught, two or fewer fish were landed (Holiman, 1999a). This information does not capture data from other regions in the Atlantic nor the headboat sector in the South Atlantic region.

Table 88. Reduction in recreational wahoo landings (pounds) from a two fish bag limit (Data Source: Goodyear, 1999).

Region	Average Harvest 1994-1997 (lb.)	% Reduction in Landings from a 2 Fish Bag Limit	Reduction in Harvest (lb.)
New England	0	5.60%	-
Mid Atlantic	16,239	7.90%	1,283
South Atlantic	866,327	13.70%	118,687
Total	**882,566**		**119,970**

As described previously there would be some loss of recreational (non market) benefits for those anglers/trips that are constrained by this two fish bag limit. There may be some gain in economic benefits to other anglers if a restriction in the bag limit allows for more angler trips to catch the available resource in a local area. In comparison to Option 2 this measure would not allow the captain and crew of for hire vessels to land in excess of the bag limit unless they had a commercial permit for sale of these species. The net economic benefits overall will depend on the relative changes in these angler benefits.

Social Impacts

Setting a low bag limit for wahoo may decrease fishing satisfaction for those in the recreational fishing sector. The impact will vary by region. However, public testimony and landings data suggest that catching more than two wahoo per recreational trip is uncommon, therefore, the impact is predicted to be minimal, at least in the South Atlantic region.

Setting a low bag limit for wahoo may decrease fishing satisfaction for those in the recreational fishing sector. As reflected in Table 88, this change in satisfaction will vary by region, and leads to the prediction that greater dissatisfaction would be held in the South Atlantic than other regions (as landings would decrease by a greater percentage). However, public testimony tended to support the two fish bag limit, indicating that catching more than two wahoo is a fairly uncommon event. It is predicted that this action will have few negative social impacts.

Conclusion

The Councils concluded establishing a recreational bag limit for wahoo will establish conservation measures in the fishery and distribute the resource among various recreational sectors.

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (1) address localized reduction in fish abundance, (3) minimize conflict and/or competition between recreational and commercial user groups, and (4) optimize the social and economic benefits.

Rejected Options for Action 18:

Option 1. No action.

Biological Impacts

No bag limit could result in overfishing if there is no cap on total allowable catch and effort were to expand.

Economic Impacts

There will be no change to the status quo and thus no change in short-term economic benefits. If unrestricted harvest results in overfishing, there could be long-term negative impacts.

Social Impacts

There will be no change to the status quo and thus no change in short-term social benefits.

Conclusion

The Councils rejected no action and are establishing conservation measures for the recreational fishery which equitably distribute the resource among various recreational sectors. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

Option 2. Establish a recreational bag limit of 2 wahoo per person per day for the recreational fishery, excluding the captain and crew of for-hire boats in the Atlantic EEZ.

Biological Impacts

See the Biological Impacts of the proposed action. Under this option there would be an additional reduction in catches from excluding the captain and crew of for-hire boats in the Atlantic EEZ.

Economic Impacts

The effect of a 2 wahoo bag limit was described under the economic impact of Action 18. The difference here is that the captain and crew of for-hire vessels would forgo benefits from not being included in the bag limit catch. It is a common practice for customers to "tip" the crew of for-hire vessels with fish caught on these trips. These fish are then sold and the revenue received augments the salary of these crew members. Once the vessel qualifies for a commercial permit, this option would not allow the crew to sell bag limit caught wahoo and thus there would be forgone income.

Social Impacts

Setting a low bag limit for wahoo may decrease fishing satisfaction for those in the recreational fishing sector. Excluding the captain and crew may impact the total number of wahoo landed on charter vessels thus lowering the satisfaction of the anglers purchasing the trip. The impact would vary by region.

Conclusion

The Councils concluded prohibiting the captain and crew from retaining the bag limit was an unnecessary burden and this option is not the best way to achieve the goals and management objectives of the FMP. Therefore, the Councils rejected this option.

4.2.19 ACTION 19. Specify allowable gear for dolphin and wahoo in the Atlantic EEZ as longline; hook and line gear including manual, electric, or hydraulic rod and reels; bandit gear; handline; and spearfishing gear (including powerheads).

This option was presented at hearing to receive public input and allow the Council to chose any combination (other options) of the listed gears. The Council considered but rejected including additional gears authorized in other fisheries (e.g., trawls) and considered and rejected restricting (in any way) the allowable gear identified in the preferred alternative. All gear currently allowed in the dolphin fishery under the Coastal Migratory Pelagics FMP were included as allowable gear and spearfishing gear was added.

Biological Impacts

Specifying allowable gear will prevent new gear from being introduced into the fishery and exacerbating the potential for localized depletion, increased bycatch, and problems associated with conflict/competition between gear types.

Economic Impacts

There will be no immediate economic impact since this option does not place restrictions on current gear types in the dolphin and wahoo fisheries.

Social Impacts

There will be no impact since this option does not place restrictions on current gear types in the dolphin and wahoo fisheries. Specifying allowable gear will prevent gear from being introduced into the fishery and exacerbating the potential for conflict between recreational and commercial fishermen.

Conclusion

The Councils concluded establishing allowable gear will limit the fishery to existing gear, prevent the expansion of the commercial fishery and shift in harvest patterns between sectors through use of new highly efficient gear. In addition, the Councils, pursuant to the Magnuson-Stevens Act, are required to specify allowable gear for managed species.

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (1) address localized reduction in fish abundance, (2) minimize market disruption, (3) minimize conflict and/or competition between recreational and commercial user groups, (4) optimize the social and economic benefits, and (5) reduce bycatch in the dolphin fishery.

Rejected Options for Action 19:

Option 1. No action.

Biological Impacts

Taking no action to specify allowable gear would not prevent gear from being introduced into the fishery and would provide the potential for overfishing to occur.

Economic Impacts

There would be no economic impact since this option would not place restrictions on gear types to be used in the dolphin and wahoo fisheries.

Social Impacts

There would be no impact since this option would not place restrictions on current gear types in the dolphin and wahoo fisheries.

Conclusion

The Councils rejected this option because specifying gear is a required provision of the Magnuson-Stevens Act and taking this action would be effective in preventing redirection of effort from other fisheries, using new highly efficient gear. The Councils are also concerned that a shift in allocation from the recreational sector to the commercial sector could occur if new fisheries began using highly efficient gear. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

4.2.20 ACTION 20. Prohibit the use of surface and pelagic longline gear for dolphin and wahoo within any "time or area closure" in the South Atlantic Council's area of jurisdiction (Atlantic Coast) which is closed to the use of pelagic gear for highly migratory pelagic species.

The proposed action tracks the HMS regulations as requested by NMFS. The Council considered but rejected an even broader restriction on the use of longlines to fish for dolphin and wahoo. However, the Council determined that implementation of any different alternatives would complicate management for the HMS species.

Biological Impacts

Observer data and vessel logbooks indicate that pelagic longline fishing for Atlantic swordfish and tunas results in catch of non-target finfish species such as bluefin tuna, billfish, and undersized swordfish, and of protected species, including threatened and endangered sea turtles. Also, this fishing gear incidentally hooks marine mammals and sea birds during tuna and swordfish operations. The bycatch of animals that are hooked but not retained due to economic or regulatory factors contributes to overall fishing mortality. Such bycatch mortality may significantly impair rebuilding of overfished finfish stocks or the recovery of protected species. Atlantic blue marlin, white marlin, sailfish, bluefin tuna, and swordfish are overfished. The concurrent closure in this FMP was deemed necessary by NMFS to reduce bycatch and incidental catch of overfished and protected species by pelagic longline fishermen who target highly migratory pelagic species (HMS).

Appendix C (FSEIS for HMS Regulatory Amendment 1) contains data on dolphin-wahoo pelagic longline fishery analysis. The data presented on page C-66 and in Table C-4 indicate that pelagic longlines targeting dolphin do in fact result in a bycatch of HMS species.

Prohibiting the use of pelagic longlines for dolphin and wahoo within any "time or area closure" in the Atlantic for harvest of Highly Migratory Pelagic Species (HMS) will protect the integrity of the management measures implemented to reduce bycatch and regulatory discards in the HMS fishery. It will also prevent directed and potential increases in dolphin and wahoo fishing from causing additional bycatch mortality of non-target and undersized HMS species. In addition, a prohibition may prevent a shift in the present ages harvested by sector.

Pelagic longlines are classified as a Category I fishery under the Marine Mammals Protection Act indicating the gear used in this fishery is associated with frequent serious injury or mortality of marine mammals. In addition, under the endangered species consultation process a Biological Opinion prepared by NMFS for the HMS plan identified significant interaction between pelagic longlines and threatened and endangered sea turtles and recommended measures to reduce bycatch. Goodyear (1998) indicated the majority of fishing mortality on billfish results from bycatch in the pelagic longline fishery and that fishing mortality on blue marlin is 3.19 times higher than that which will produce MSY and 1.88 times greater than that which will produce MSY for white marlin. The assessment was updated (NMFS, 2000) and fishing mortality in blue marlin is now 4 times higher than that which will produce MSY and greater than 7 times that which will produce MSY for white marlin.

Economic Impacts

Regulatory Amendment 1 to the Atlantic Tunas, Swordfish, and Shark Fishery Management Plan established time/area closures for pelagic longline fishing targeting HMS species in the South Atlantic and Gulf of Mexico (HMS closed areas). The HMS closed areas in the South Atlantic region are the Florida Straits (Area between 31^{o} N and 24^{o} N latitude, and 79^{o} W longitude) year round and the Charleston Bump (the area between 31^{o} N and 34^{o} N latitude,

and 76^{o} W longitude) from February 1 to April 30 (Map on page 44 and page 165 of Appendix D). The economic effect of a prohibition on the use of longlines for dolphin and wahoo in these closed areas will depend on whether effort is redistributed to other areas where dolphin are caught during the closure period (NMFS, 2000).

Estimates on the expected proportional reductions in dolphin longline harvests were taken from the NMFS Final Environmental Impact Statement, which were calculated from the HMS logbook data. Table 89 presents an analysis for the case where effort is displaced to other "open" fishing areas during the closure period and estimates for the situation where there is no displacement of effort.

The average annual longline harvest in the South Atlantic region from 1994-2000 of 375,383 pounds (Table 38) was used to calculate the reduction in annual longline landings from the proposed closed areas. Also, an average price of $1.55 per pound was applied to harvest reductions to determine the change in annual gross revenue (NMFS, 1998 & 1999b). Thus, this action could result in a short-term reduction of $95,655 to $154,770 (Table 89). These estimates only represent the expected losses from reduction in dolphin harvests and not the total reduction in ex-vessel revenue from all species.

Table 89. Impact of potential closed areas in the South Atlantic region on dolphin longline harvests.

ITEM	No Displacement of Effort	Displacement of Effort to Other Areas
% Reduction in Dolphin Harvest*	26.60%	16.44%
Reduction In Longline Landings (lb.)	99,852	61,713
Reduction In Revenue	$154,770	$95,655
% Reduction in Total Dolphin Commercial Landings (Average of 1994-2000)	6%	4%

*NMFS (2000)

In the future the affected longline vessels could respond by increasing effort to target dolphin and other species outside of the closed area in an effort to make up this lost revenue. This action could result in higher net benefits in the future only if these measures reduce the rebuilding time of the depleted HMS populations such that the future benefits outweigh these costs to the longline industry.

Social Impacts

This action will present the most potentially significant social impacts to the commercial dolphin and wahoo fishing sector. While there are no specific data on the commercial dolphin/wahoo longline fishery or communities, there is a report entitled "Social and Cultural Impact Assessment of the Highly Migratory Species Fisheries Management Plan and the Amendment to the Atlantic Billfish Fisheries Management Plan," (Wilson and McCay, 1998) which examines impacts of the proposed closure of federal waters to the longline fishing and its associated communities. These data overlap with dolphin and wahoo commercial fishing and related longlining communities in the South Atlantic, Gulf of Mexico, and the U.S. Caribbean.

In speaking about the pelagic longline fleet and related businesses, the report's authors write:

> *"Five sources of pressure on this fleet are apparent. We list them in no particular order. The first is imports. Increasing power of foreign fishing fleets in combination with increased political emphasis on free trade have placed downward pressure on the prices of most of this fleet's products. The second is land values. As recreational fishing and other coastal activities become more popular the cost of dockage and coastal community land climbs. The third is personnel. Every fishing community reports ever increasing problems with finding and holding quality employees. The magnitude of this problem, and its accompanying social dislocations, is such that if any one of these pressures is to be selected as the most ominous for the future of these communities it will be this one. The fourth is increasing distances that boats have to steam to find fish. The last is increasing regulation. While this latter category is very important, and almost always gets the most ire from fishers, many admit that it is not the worst of the problems. One of the most prominent fishers in this fleet told us, and we agree with his assessment, that if no regulations were promulgated by these fisheries management plans the relative decline of the longline fleet in comparison with its foreign competitors would continue. Only government subsidies, which many competing fleets enjoy, would make a difference.*
>
> *The central message is that the most stringent regulations of the longline fleet being considered in these plans would substantially accelerate the U.S. fleet's current decline and the movement offshore of its assets. In communities where the longline fleet is the main commercial fishery, the changes described above, particularly the inability of the fishing communities to recruit future fishers, are undermining these communities' sustained access to the resource."*

Because most of the commercial fishermen that longline for dolphin do so as an alternative to fishing for other species such as tuna, Action 20 will have some impacts on the fishermen and communities that support them. In effect, it closes the one alternative that would have been left to longliners that depended on HMS and used dolphin as a back-up fishery. But, for those boats and businesses already operating in a marginal manner, the proposed time and area closures for HMS longlining will have the most substantial impacts, perhaps forcing them out of business. Those boats that remain will supposedly have enough alternative resources to not be substantially impacted by closing them off to longlining for dolphin. However, due to the lack of data on those who longline for dolphin, it is difficult to predict what specific social impacts might follow this action. Much depends on how the closure is mitigated by alternative employment strategies and/or any federal "buyback" program for HMS boats.

Finally, consideration in this case should be given to social impacts that are harder to quantify but are nonetheless real. By closing the longline dolphin fishery in conjunction with the proposed HMS closure, fishers may suffer a heightened loss of identity and loss of self-esteem as their way of life is altered or ended. Psychological stress on the fishers, their related families, crews, and communities may also increase, having unpredictable consequences. There will most likely be an increase in tension between fishers and fishery managers, effecting a strain on political relationships in the management sector.

Conclusions

The Councils concluded tracking HMS area/season closures will enhance the enforceability and the intended long-term benefits for non-target, as well as, HMS species. In addition, it will prevent a shift in commercial effort targeting dolphin and wahoo.

This action was taken because a "time or area closure" affecting the use of pelagic longline gear for Highly Migratory Pelagic Species (HMS) in the Atlantic has been implemented. Impacts on HMS species from proposed closures are presented in the NMFS Final Supplemental Environmental Impact Statement (NMFS, 2000). The Councils could have chosen to only adopt a closure in the South Atlantic EEZ but determined closing it in all HMS closure areas where they have jurisdiction for dolphin and wahoo was more appropriate.

Effective March 1, 2001, areas were to be closed to use of pelagic gear for highly migratory pelagic species; the 2001 closures became effective on March 1 and were not extended into May (other than the Florida closure that is year round). For subsequent years, the closure will be February 1 through April 30. The East Florida Coast year round closed area means the Atlantic Ocean area seaward of the inner boundary of the U.S. EEZ from a point intersecting the inner boundary of the U.S. EEZ at 31°00' N. lat. near Jekyll Island, GA, and proceeding due east to connect by straight lines the following coordinates in the order stated: 31°00' N. lat., 78°00' W. long.; 28°17' N. lat., 79°12' W. long.; then proceeding along the outer boundary of the EEZ to the intersection of the EEZ with 24°00' N. lat.; then proceeding due west to the following coordinates: 24°00' N. lat., 81°47' W. long.; then proceeding due north to intersect the inner boundary of the U.S. EEZ at 81°47' W. long. near Key West, FL, year round. The Charleston Bump closed area is the area between 31° N and 34° N lat., and 76°W long. from February 1 to April 30 (Map on page 7-16 in Appendix D; Appendix E presents the HMS Final Rule and a Technical Amendment to that rule).

Another alternative the Councils considered and subsequently approved was to request emergency action to implement some measures. This could be considered an additional SubOption. Pursuant to Section 305(c)(2)(A) of the Magnuson-Stevens Act, the South Atlantic Council requested implementation through emergency action of the following measures for the dolphin wahoo fishery in the Atlantic EEZ: 1) Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed; 2) Specify allowable gear for dolphin and wahoo in the Atlantic EEZ as longline and hook and line gear including manual, electric, or hydraulic rod and reels, bandit gear, handline, and spearfishing gear (including powerheads); and 3) Prohibit the use of surface and pelagic longline gear for dolphin and wahoo within any "time or area closure" in the South Atlantic Council's area of jurisdiction (Atlantic Coast) which is closed to the use of pelagic gear for highly migratory pelagic species. The Councils' rationale is shown below:

"In December 1999, NMFS requested the Councils consider a complimentary action to enhance the bycatch reduction afforded by the HMS rule (Appendix D). The South Atlantic Council concurred with the NMFS findings that if longline vessels redirect effort to dolphin and wahoo in the HMS closed areas, it may compromise the biological basis and enforceability of the regulations established to reduce by-catch of juvenile highly migratory species.

The Council is concerned that sufficient latent effort exists in the longline fishery to: (1) disrupt the traditional commercial and recreational fisheries for dolphin and wahoo in the HMS closed areas, (2) impede efforts to reduce the bycatch of juvenile HMS species, and (3) cause other management problems. This latent effort consists of three categories of vessels:

(1) longline vessels forced to or willing to give up the HMS permit (e.g., that can no longer economically fish for HMS species and/or find it more economically beneficial to fish in the closed HMS areas for dolphin and wahoo), (2) longline or other vessels that did not meet the qualifying criteria for obtaining the limited access HMS permit, and (3) vessels capable of gearing up to longline for dolphin and wahoo.

It is difficult to determine an exact number of vessels included in these three categories, however, the Final Supplemental Environmental Impact Statement of Regulatory Amendment 1 to the Atlantic Tunas, Swordfish, and Sharks Fishery Management Plan (FSEIS) and the Federal Register HMS final regulations provide a rough estimate of vessels in the first category. The revised final regulatory flexibility analysis (FRFA) indicates that the final time/area closure actions will cause approximately 14% of HMS permitted longline vessels (based on 208 vessels reporting landings in 1998) to be forced out of business. Table 8-2 in the FSEIS shows that 9 percent or 19 of these vessels will be forced out of business by the South Atlantic closures. These 19 vessels would represent the low-end number for the latent longline effort that could target dolphin and wahoo in the southern HMS closed areas. The FRFA states that as of March 23, 2000 there were 450 HMS limited access longline permits. There is no break down as to how these permit holders will be affected by the various time/area closures, however, by extrapolating the 450 permits in 2000 with the 208 permits in 1998 an approximate number of vessels that may be forced out of the HMS fishery by the South Atlantic closures can be calculated. Nine percent of the 450 permits or 40 vessels would represent the high-end number for the latent longline effort in the South Atlantic.

From this it can be inferred that for the first category of vessels mentioned above, some 19 to 40 vessels could potentially target dolphin and wahoo off of the Carolinas, Georgia and Florida.

Accurately determining the potential number of vessels in the second category becomes more difficult. According to information provided by the NMFS's HMS staff, there were approximately 1440 swordfish and shark permits issued to vessels in Florida over the period 1998 - May 1999 (prior to the limited access program). Currently there are 413 vessels with swordfish and shark limited access permits in Florida, of which about 215 (52%) are on the east coast. How many of the 1440 previously permitted vessels in Florida that did not receive HMS limited access permits could or would target dolphin and wahoo in the South Atlantic is unknown. However, if the ratio between the east and west coast limited access permit holders that exists today is applied to those 1440 vessels, the upper limit of the number of vessels in the second category is about 749 (1440 x .52). If as few as 10% of these vessels decided to direct part of their fishing effort to longline for dolphin and wahoo it would have a significant adverse impact on the fishery as it now exists.

Numbers are not available for the third category of vessels. Many of the commercial vessels fishing in the South Atlantic participate in a number of different fisheries. Some of these vessels have the capability of gearing up to longline for dolphin and wahoo. If economic incentives were sufficient, an unknown, but potentiality large number of vessels could enter the fishery.

Senate Bill 1911 identifies 68 vessels in the voluntary buyout program, many of which are located in South Atlantic ports. It is our understanding Bill 1911 may be dead in its present form. However, if this legislation is resurrected and the buyout occurs, a number of these vessels could enter the dolphin and wahoo fisheries if allowed for in the legislative language. This Bill does identify 68 longline vessels that are prepared to get out of the HMS fishery. If the buyout does not occur, some of these vessels could potentially redirect their fishing effort to dolphin and wahoo.

In addition, the Council is concerned that without the proposed trip limits and allowable gear regulations an uncontrolled redirection of effort toward dolphin and wahoo and HMS species by displaced HMS vessels in areas not covered by the HMS closure (e.g., the areas north of Florida) could result in localized reduction in fish abundance, market disruption, increased conflict between recreational and commercial sectors, increased bycatch and a shift in historic allocations between commercial and recreational user groups. On page 9-5 of the FSEIS it is stated "NMFS received a number of comments that indicated communities in the mid-Atlantic Bight, particularly recreational communities, would also be negatively impacted and may experience increased user conflicts if all the vessels from the Charleston Bump and East Coast areas move north". It is further stated that 52 of the 78 permit holders that reported landings from these areas might move north."

The Council approved this request at the November 30, 2000 Council meeting in Atlantic Beach, North Carolina and submitted the request to NMFS on January 11, 2001. NMFS rejected the request on September 12, 2001.

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (1) address localized reduction in fish abundance, (2) minimize market disruption, (3) minimize conflict and/or competition between recreational and commercial user groups, (4) optimize the social and economic benefits, and (5) reduce bycatch in the dolphin fishery.

Rejected Options for Action 20:

Option 1. No action.

Biological Impacts

Not prohibiting the use of pelagic longlines in areas closed to Highly Migratory Pelagic Species (HMS) would not protect the integrity of the management measures implemented to reduce bycatch and regulatory discards in the HMS fishery. It would also not prevent new commercial effort shifting to target dolphin and wahoo and additional bycatch mortality of non-target and undersized HMS species.

Economic Impacts

There could be economic consequences from not prohibiting the use of longlines for dolphin and wahoo in time/area closures for highly migratory species (HMS). If longline vessels redirect effort to dolphin and wahoo in the HMS closed area, there would not be a reduction in the bycatch of juvenile highly migratory species. In addition, this situation could result in excessive harvest of dolphin and wahoo. Both situations may not optimize benefits to society. Keeping the HMS closed areas open to longlining for dolphin and wahoo could lead to increased enforcement costs from monitoring the activities of these vessels to ensure that they are not harvesting HMS in these areas.

Social Impacts

As noted above, the longline fleet is already under substantial pressure from other factors besides increasing government regulation. Even if the status quo is maintained, many boats and associated businesses may close down shortly because other economic and social pressures.

Conclusions

The Councils concluded not tracking HMS area/season closures would compromise the enforceability and the intended long-term benefits for non-target, as well as, HMS species. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP.

4.2.21 ACTION 21. Establish a fishing year of January 1 to December 31 for the dolphin and wahoo fishery in the Atlantic EEZ.

The Council considered but rejected other fishing years such as April 1 - March 31 (the current fishing year for dolphin under the Coastal Migratory Pelagics FMP) and other possible combinations because where feasible the Council is trying to have the fishing year coincide with the calendar year.

Biological Impacts

There will be no biological impacts from establishing a fishing year.

Economic Impacts

There will be no economic impacts from establishing a fishing year since it will not have a direct or indirect effect on fishing activity or harvest.

Social Impacts

There will be no social impacts from establishing a fishing year.

Conclusion

Establishing a fishing year will provide the basis for collection of necessary biological, economic, and social data. In addition, specifying a fishing year of January 1 to December 31 will be useful in future stock assessments. A fishing year would be necessary in the future if allocations or quotas were established in the fishery.

The Councils determined this action best achieves the goals of the FMP and the management objectives to (4) optimize the social and economic benefits, and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

Rejected Options for Action 21:

Option 1. No action.

Biological Impacts

There would be no biological impacts from not establishing a fishing year.

Economic Impacts

There would be no economic impacts from not establishing a fishing year. Establishing a fishing year would not have a direct or indirect effect on fishing activity or harvest.

Social Impacts

There would be no social impacts from not establishing a fishing year.

Conclusion

The Councils concluded not establishing a fishing year would prevent the creation of a benchmark for use in collection of data, assessment of the resources, and in tracking quotas if implemented in the future. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP and rejected this option.

4.2.22 ACTION 22. Expand the list of Essential Fish Habitat (EFH) definitions that were approved for dolphin by the Secretary of Commerce to apply to dolphin and wahoo throughout the Atlantic.

EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum*.

Note: This EFH definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the South Atlantic Council's Comprehensive Habitat Amendment (SAFMC, 1998b) (dolphin was included within the Coastal Migratory Pelagics FMP). This definition does not apply to extra-jurisdictional areas. A detailed description of the pelagic habitats used by dolphin and wahoo is presented in Section 3.0 Affected Environment.

Biological Impacts

The identification of essential habitat for dolphin and wahoo 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 in yield in fish stocks.

As required by the Magnuson-Stevens Act and Final Rule for Essential Fish Habitat, the Council is defining EFH for dolphin and wahoo. The following builds on material presented in the South Atlantic Council's Habitat Plan (SAFMC, 1998b) to elaborate on the ecological role of dolphin and wahoo (by life stage) in the habitats described. A general description of species and distribution; reproductive characteristics; age and growth; mortality and longevity; movement patterns and stock structure; and feeding, food, and trophic relationships is presented in Section 3.1.

Available information indicates dolphin (common and pompano) and wahoo use basically the same pelagic habitats, both species are caught using the same gears by the same fisheries and there is very limited information on habitat use by life stage. Therefore, the Council has determined the most appropriate definition of EFH for all life stages of dolphin and wahoo is to group them together as provided by the EFH Final Rule, into an assemblage. Once additional research is conducted to identify habitat preferences, species and habitat distribution and species abundance by life stage, the present EFH definitions will be refined. In addition, the following describes where possible specific geographic locations and boundaries and locational maps where definable for dolphin and wahoo EFH.

The Gulf Stream (see Figure 9) and Florida Current (see Figure 11)

The Gulf Stream and associated gyres and eddies occurring in the Atlantic EEZ are EFH for all life stages of dolphin and wahoo. The Florida Current and associated gyres and eddies are EFH for all life stages of dolphin and wahoo as shown in Figure 11. The geographic extent encompasses the EEZ from the southern most tip of the Florida Keys along the east coast to approximately Biscayne Bay where it converges with the Gulf Stream. Along the entire length of the Gulf Stream and Florida Current, cold cyclonic eddies are imbedded in meanders along the western front. Three areas of eddy amplification are known: Downstream of Dry Tortugas and downstream of Jupiter Inlet (27°N to 30°N latitude) ("The Point" or "Amberjack Hole"). Similarly, further downstream, the Gulf Stream encounters the "Charleston Bump" (32°N to 34°N latitude), a topographic rise on the upper Blake Ridge. Here the current is often deflected offshore, again resulting in the formation a cold, quasi-permanent cyclonic gyre "The Charleston Gyre", and associated upwelling (Brooks and Bane, 1978). Meanders propagate northward (i.e., downstream) as waves. The crests and troughs represent the onshore and offshore positions of the Gulf Stream front. Cross-shelf amplitudes of these waves are on the order 10 to 100 km.

Upwelling within meander troughs is the dominant source of 'new' nutrients to the southeastern U.S. shelf and supports primary, secondary and ultimately fisheries production (Yoder, 1985; Menzel 1993). Off Cape Hatteras the Gulf Stream turns offshore to the northeast. Here, the confluence of the Gulf Stream, the Western Boundary Under Current (WBUC), Mid-Atlantic Shelf Water (MASW), Slope Sea Water (SSW) , CCW and VCW create a dynamic and highly productive environment, known as the "Hatteras Corner" or "The Point".

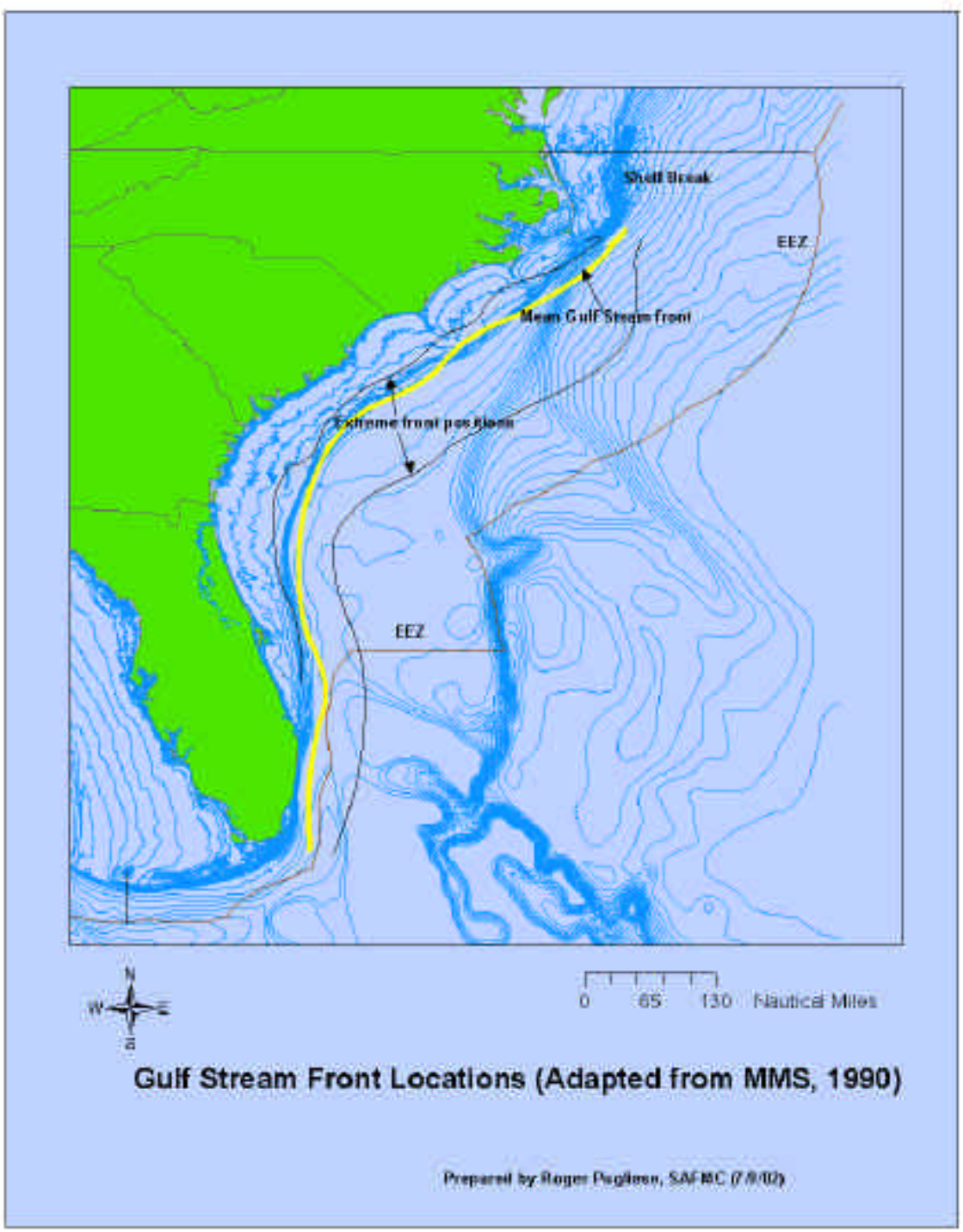
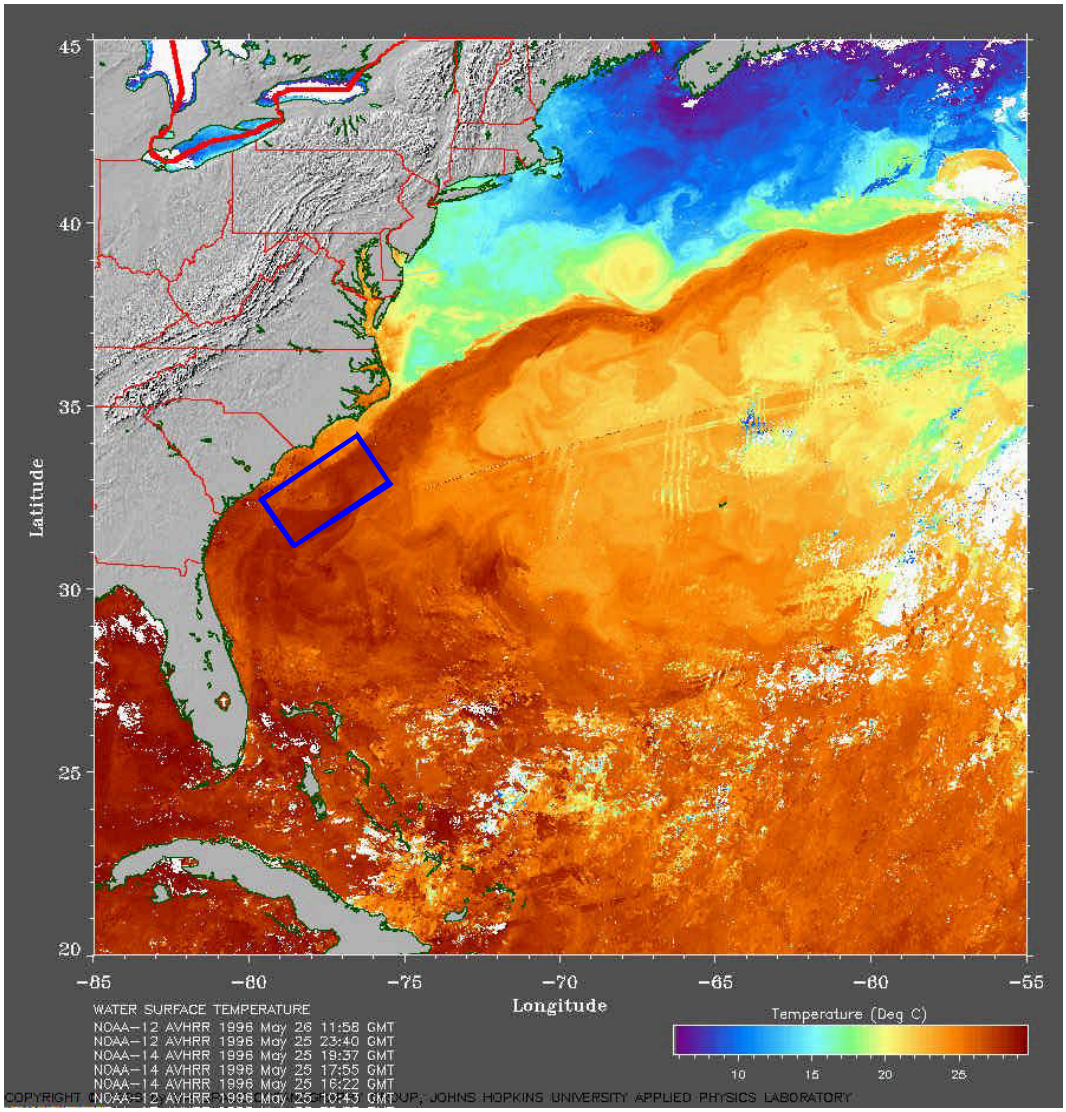


Figure 9. Gulf Stream Front Locations (Adapted from MMS, 1990).

The Charleston Gyre as EFH for Dolphin and Wahoo (see Figure 10)

The Charleston Gyre is a quasi-permanent, cyclonic eddy with attendant upwelling of nutrient-rich deepwater sets-up in the wake of the Charleston Bump (Sedberry et al., 2000). Upwelling results in persistent primary and secondary production that may well result in an important, if not essential feeding environment for the larvae of fishes that congregate to spawn there. The hydrodynamics of the eddy may well serve in the retention of fish propagules that are lost from local populations elsewhere through entrainment into the Gulf Stream. A description of the pelagic habitats including the Gyre that make up the South Atlantic ecosystem is presented in Section 3.3.1.



Approximate Corner Points of - Area Encompassing Charleston Gyre Occurrence

NW	79° 30' W 32° 30' N	NE	77° W 34°20' N
SW	78° 45' W 31° 20' N	SE	75° 30' W 33° N

Figure 10. Composite sea surface temperature image (3 day image, ending May 26, 2002). Deflection of the Gulf Stream offshore and downstream of the Charleston Bump creates the "The Charleston Gyre". The Gyre is visible at 32°N latitude (Source: Johns Hopkins University / Applied Physics Laboratory, Ocean Remote Sensing Group recording Advanced High Resolution Radiometer (AVHRR) on the NOAA polar-orbiting satellite).

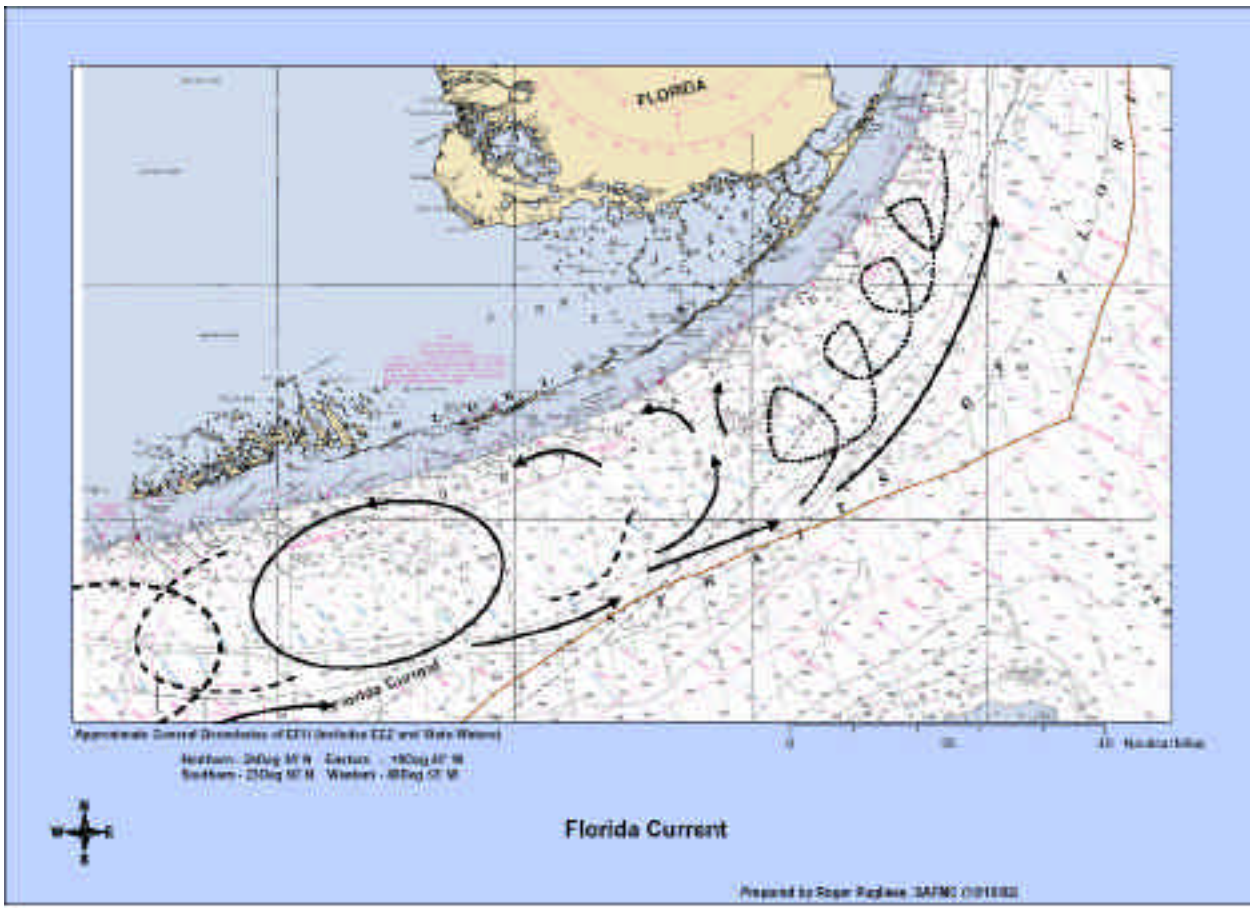


Figure 11. The Florida Current.

Pelagic *Sargassum* as EFH for Dolphin and Wahoo (see Figure 12)

The geographic extent of pelagic Sargassum as EFH and EFH-HAPC for all life stages of dolphin and wahoo is presented in Figure 12. Dolphin and wahoo and other fishes associated with pelagic *Sargassum* in the western North Atlantic have been studied by a number of investigators (Adams, 1960; Parin, 1970; Zaitzev, 1971; Dooley, 1972; Bortone et al., 1977; Fedoryako, 1980, 1989; Gorelova and Fedoryako, 1986; Settle, 1993; Moser et al., in press). Similar research has also addressed the ichthyofauna of drift algae in the Pacific (Uchida and Shojima, 1958; Besednov, 1960; Hirosaki, 1960b; Shojima and Ueki, 1964; Anraku and Azeta, 1965; Kingsford and Choat, 1985; Kingsford and Milicich, 1987; Nakata et al., 1988). In all cases, juvenile fishes were numerically dominant. Sampling designs and gear avoidance have no doubt contributed to the poorly described adult fish fauna. However, studies by Gibbs and Collette (1959), Beardsley (1967), Parin (1970), Manooch and Hogarth (1983), Manooch and Mason (1983), Manooch et al. (1984; 1985), and Fedoryako (1989) clearly indicate that large pelagic adult fishes including dolphin and wahoo utilize *Sargassum*. This is supported by the practice of recreational fishermen targeting dolphin, wahoo and other pelagic species by fishing "weedlines".

Dolphin and wahoo and other pelagic fish found in association with *Sargassum* are not restricted to that habitat and are known to frequent various types of drift material and fish aggregating devices (Besednov, 1960; Mansueti, 1963; Hunter and Mitchell, 1967; Kojima, 1966;

Kulczycki et al., 1981; Lenanton et al., 1982; Robertson, 1982; Nakata et al., 1988; Fedoryako, 1989; Rountree, 1989; 1990). Sargassum provides dolphin and wahoo and other pelagic species protection, feeding opportunity, shade, structural affinity, visual reference, tactile stimulation, historical accident, passive drift and is used as a spawning substrate for at least one prey species, flying fish have all (Hirosaki, 1960a; Hunter and Mitchell, 1968; Senta, 1966a; 1966b; 1966c; Dooley, 1972; Helfman, 1981).

The surface residence time, season and geographic location of *Sargassum* affect the species composition and abundance of fishes associated with it. Most of the young fishes that associate with the algae are surface forms (Fahay, 1975; Powles and Stender, 1976) and it is not known if they remain near the alga when it is submerged. Research determining the associations of fish and *Sargassum* at various depths is needed. Recruitment of dolphin and other pelagic fish to drift algae and flotsam is initially rapid and continues to increase over time (Senta, 1966a; Hunter and Mitchell; 1968; Kingsford and Choat, 1985; Kingsford, 1992). The abundance of larval and juvenile dolphin and other species of fishes varies seasonally and regionally, both in terms of numbers of fish and fish biomass (Dooley, 1972; Settle, 1993). The invertebrate fauna which may serve as important prey for early life stages of dolphin is similarly variable (Weis, 1968; Fine, 1970; Stoner and Greening, 1984). Regional trends in the mean abundance and biomass of young fish including dolphin and wahoo show decrease in abundance across the continental shelf and into the Gulf Stream and Sargasso Sea, and a decrease from spring through winter (Settle, 1993). Species richness is generally highest on the outer shelf during spring and summer and further offshore during the fall and winter. Overall, diversity is greatest in offshore waters (Bortone et al., 1977; Fedoryako, 1980; 1989; Settle, 1993).

The types of *Sargassum* habitats (e.g., individual clumps, small patches, large rafts, and weedlines) and the "age" (i.e., growth stage and degree of epibiont colonization) also affect the distribution and abundance of associated fishes. Ida et al. (1967a & 1967b), Fedoryako (1980), Gorelova and Fedoryako (1986) and Moser et al. (in press) described the spatial distribution of fishes in and around clumps and rafts of *Sargassum*. Juvenile dolphin (*Coryphaena), Diodon, Lobotes* and the exocoetids occupy the outer periphery, whereas *Canthidermis, Balistes, Kyphosus, Abudefduf, Caranx* and *Seriola* are distributed below the algae. Other species such as *Histrio* and *Syngnathus* are typically hidden within the foliage. Larger juvenile dolphin and adult dolphin and wahoo and other species associated with this habitat occupy nearby waters out to several 10's of meters from the patches. With regard to algal age, Conover and Sieburth (1964) and Sieburth and Conover (1965) suggest that the community could be significantly controlled by the effects of exogenous metabolites on algal epibionts. These substances, which are released during periods of new algal growth, inhibit epibiotic colonization, and could alter the trophic resources available to associated macrofauna, including fish (Gorelova and Fedoryako, 1986). Stoner and Greening (1984) concluded that algal age did affect the macrofaunal composition, but the abundance of carnivores remained stable. However, since their study dealt primarily with the invertebrate fauna, the effects of these substances on other trophic links remains unknown, although similar compounds are known to deter some herbivores (Paul, 1987; Hay and Fenical, 1988; Hay et al., 1988; Steinberg, 1988).

Fish abundance of which dolphin constitutes a significant portion, has been found to be positively correlated with *Sargassum* biomass. Correlations were significant over the middle shelf throughout the year. Fish biomass was also positively correlated over the outer shelf during the fall (Settle, 1993). No correlation was observed in the Gulf Stream or Sargasso Sea (Dooley, 1972; Fedoryako, 1980; Settle, 1993). The abundance of motile macrofauna (mostly invertebrates) has also been shown to be related to *Sargassum* biomass (Stoner and Greening, 1984).

Dolphin and wahoo are among the over 100 species of fishes collected or observed associated with the *Sargassum* habitat (Table 17- Appendix E). The carangids and balistids are the most conspicuous, being represented by 21 and 15 species respectively. Many species serve as prey for various life stages of dolphin including the planehead filefish, *Monacanthus hispidus*, which is clearly the most abundant species in shelf waters off the southeastern U.S. (Dooley, 1972; Bortone et al., 1977; Settle, 1993; Moser et al., in press).

Seasonal abundance of other species including *Caranx* spp., *Elagatis bipinnulata, Seriola* spp., *Pagrus pagrus*, *Mugil* spp., *Peprilus triacanthus*, and *Balistes capriscus* illustrates the ecological importance of the habitat to the early-life-stages of many species. The intraspecies relationships between dolphin, wahoo other fishes and *Sargassum* habitat have not been quantified. As with many other of these fishes dolphin and wahoo are found in convergence zones even in the absence of *Sargassum.*

Economic Impacts

This action will not have a direct economic impact as it only identifies EFH. However, other actions that protect habitat should result in increased net economic benefits to society in the long-term but may have some negative short term economic consequences for the sectors that are affected.

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 definition. The assumption is that such definition will provide protection for dolphin and wahoo and eventually improve stocks through protection of habitat. In that case, the social impacts will be positive in the long run. Harvesting restrictions may impose short-term, negative social impacts on these fishermen. However, in the long run, the restrictions should bring about increased biological productivity, which will be of benefit to not only the participants in this fishery, but many others as well. 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. Defining essential fish habitat will likely alter the process by which permits for activities that 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 are unknown and will undoubtedly vary depending upon the individual and/or agency.

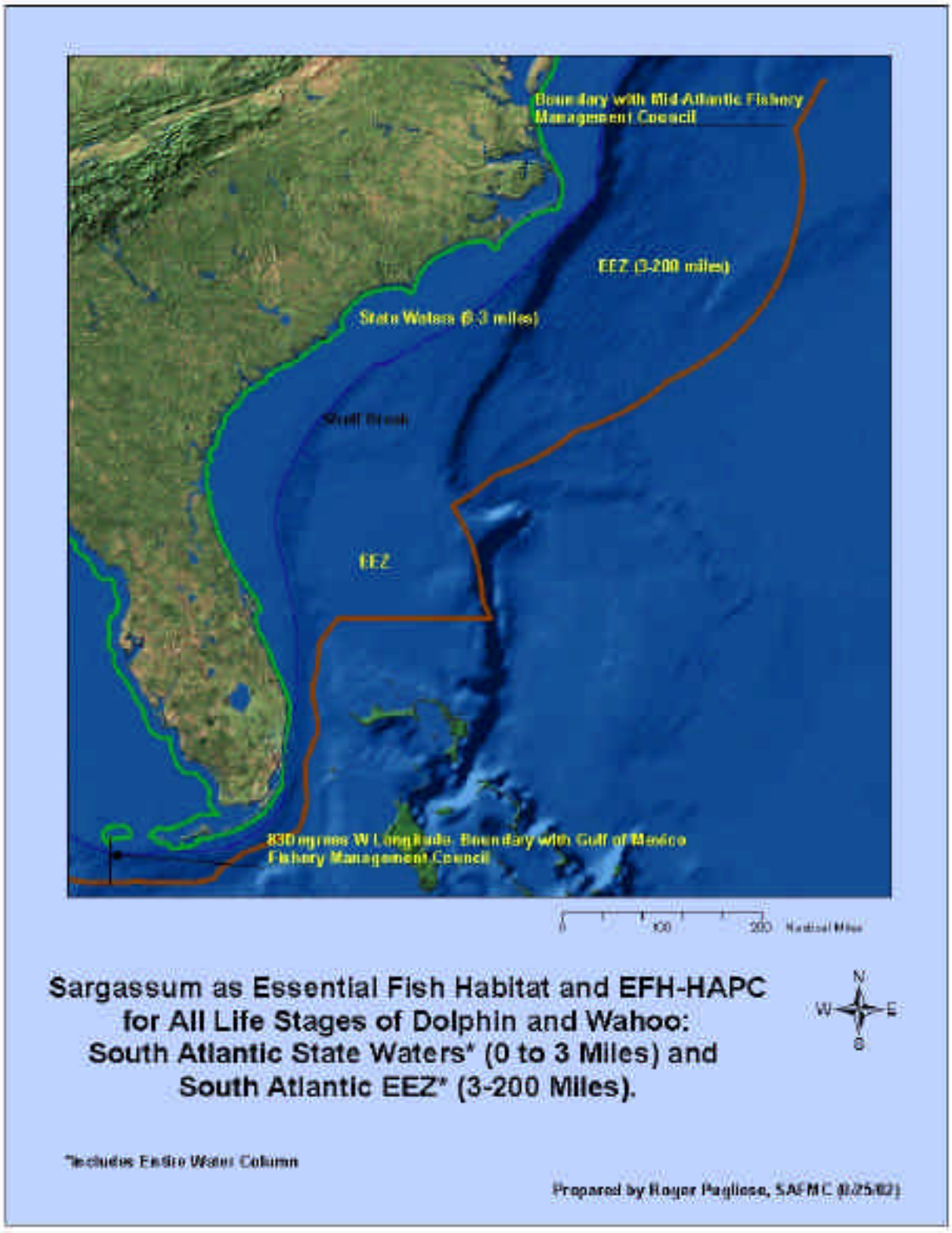


Figure 12. Pelagic *Sargassum* as EFH and EFH-HAPC for all life stages of dolphin and wahoo.

Conclusion

Amendments to the Magnuson-Stevens Act (1996) and the EFH Final rule published January 2002 requires the Councils identify essential fish habitat. This action meets that mandate. Any activities impacting essential fish habitat will come under the review process described by the Councils. This process (identification and commenting) will allow the Councils to provide additional protection for habitat important to species for which the Council has management authority.

The identification of essential fish habitat for dolphin and wahoo will enable the Councils to protect their 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.

The Councils concluded establishing EFH for dolphin and wahoo best achieves the goals of the FMP and management objectives to: (4) optimize the social and economic benefits, and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries. This action will also protect habitat essential to the survival and growth to maturity of dolphin and wahoo.

Rejected Options for Action 22:

Option 1. No action.

Biological Impacts

The Councils would be limited in the future in terms of protecting the long-term biological productivity of the dolphin and wahoo fisheries and minimizing gear related habitat damage from occurring in these fisheries. Currently, dolphin in the South Atlantic Council's area of jurisdiction is covered under the EFH definitions of the Coastal Migratory Pelagics FMP. This Dolphin Wahoo FMP contains the directive to remove dolphin in the Atlantic from the Coastal Migratory Pelagics FMP. If no action were taken dolphin would continue to be managed under the Coastal Migratory Pelagics FMP within the South Atlantic Council's area of jurisdiction.

Economic Impacts

There would be no direct economic impacts from this option. However, the Magnuson-Stevens Act stipulates that EFH must be specified as a component of any fishery management plan (FMP) and this option would not allow for development of this FMP and future management of the dolphin and wahoo fisheries. Also, not specifying EFH would limit the Council from taking action in the future to minimize fishing related habitat damage. Degradation of essential fish habitat could threaten the long-term economic viability of the dolphin and wahoo fishery and thus lead to reduced net economic benefits to society.

Social Impacts

Adopting the no action alternative would not comply with 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 Councils and fishermen to identify this habitat. Defining essential fish habitat can facilitate expeditious action by the Councils in the future to protect habitat for dolphin and wahoo.

Conclusion

The Councils are directed by the Magnuson-Stevens Act to identify, describe, and protect EFH for all managed species or species proposed for management. Therefore, the Councils are using the information compiled during development of the Habitat Plan (SAFMC, 1998b) that pertains to dolphin and wahoo. This option is not available because the Councils must describe EFH. The Councils determined this option does not meet the requirements of the Act and is not the best way to achieve the goals and management objectives of the FMP and rejected this option.

Option 2. Expand the EFH definitions to include *Sargassum* where it may occur in the north Atlantic GYRE in the Sargasso Sea and the EEZ between 20° N. latitude and 40° N. latitude and 30° W. longitude and the western edge of the Gulf Stream.

Biological Impacts

The identification of EFH will enable the Councils 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

This action by itself will not have an economic impact as it only identifies EFH. Other actions taken to protect EFH will have associated economic effects to entities involved in harvest of Sargassum but should result in increased net economic benefits to society in the long-term.

Social Impacts

Presumably there would be few social impacts from identifying EFH. The social impacts would most likely come from the actions that were associated with such a definition. The assumption would be that such definition would provide protection for habitat. In that case, the social impacts would be positive in the long-term. However, in some cases, protection of habitat may mean harvesting restrictions in areas where harvesting presently takes place or other actions which may impose constraints on those who harvest habitat. This would certainly impose negative short-term impacts that may be mitigated in the long term if productivity is increased.

Conclusion

The Councils rejected this option because it includes *Sargassum* that is beyond the outer limit of the EEZ. NMFS and NOAA GC have advised that the Councils do not have authority beyond the EEZ. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP and rejected this option.

4.2.23 ACTION 23. Expand the list of Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) that were approved for dolphin by the Secretary of Commerce to apply to dolphin and wahoo throughout the Atlantic.

EFH-HAPCs for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and The Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic *Sargassum*.

Note: This EFH-HAPC definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the South Atlantic Council's Comprehensive Habitat Amendment (dolphin was included within the Coastal Migratory Pelagics FMP).

Biological Impacts

The Council is designating EFH-HAPCs for dolphin and wahoo as is encouraged by the Final Rule for Essential Fish Habitat, the Council is designating EFH-HAPCs for dolphin and wahoo. The following builds on material presented in the South Atlantic Council's Habitat Plan (SAFMC, 1998b) to elaborate on the ecological role of dolphin and wahoo (by life stage) in the habitats described. A general description of species and distribution; reproductive characteristics; age and growth; mortality and longevity; movement patterns and stock structure; and feeding, food, and trophic relationships is presented in Section 3.3.1.

Available information indicate that the various life stages of dolphin (common and pompano) and wahoo use basically the same pelagic habitats, both species are caught using the same gears by the same fisheries but there is very limited information on habitat use by life stage. Therefore, the Council has determined the most appropriate designation of EFH-HAPCs for dolphin and wahoo is to group them together as provided by the EFH Final Rule, into an assemblage. Once additional research is conducted to identify habitat preferences, species and habitat distribution and species abundance by life stage, the present EFH-HAPCs definitions will be refined. In addition, the following describes where possible specific geographic locations and boundaries and locational maps where definable for dolphin and wahoo EFH-HAPCs.

Due to their important ecological function, areas of the offshore pelagic environments represent essential fish habitat-habitat areas of particular concern (EFH-HAPC) for dolphin (common and pompano) and wahoo; these include The Point (Figure 13), The Ten-Fathom Ledge (Figure 14), and Big Rock (Figure 14) (North Carolina); The Charleston Bump (Figure 15a) and the Georgetown Hole (Figure 15b)(South Carolina); Amberjack Hole (The Point) (Figure 16) off Jupiter Inlet (Florida); The Hump off Islamorada (Figure 17), Florida; The Marathon Hump (Figure 18)off Marathon, Florida; "The Wall" off of the Florida Keys (located along the shelf break between 81° 54' W and 81° 48' longitude). These areas are productive and highly dynamic oceanic areas.

Other water column habitats with high production or dynamic bottom habitats include "Big Rock" and "The Ten Fathom Ledge". Other areas where water flow is affected by bottom habitat concentrating bait and increasing availability of pelagic habitat like Sargassum, include "The Georgetown Hole" off South Carolina.

Section 600.815 (a) (8) of the final rule on essential fish habitat determinations recognizes that subunits of EFH may be of particular concern. Such areas, termed Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs), can be identified using *Identification of habitat areas of particular concern*. FMPs should identify specific types or areas of habitat within EFH as habitat areas of particular concern based on one or more of the following considerations: (i) The importance of the ecological function provided by the habitat; (ii) The extent to which the habitat is sensitive to human-induced environmental degradation; (iii) Whether, and to what extent, development activities are, or will be, stressing the habitat type; and (iv) The rarity of the habitat type. The following is a summary evaluation of the EFH-HAPC as it relates to the criteria:

EFH-HAPC and Criteria Evaluation	Ecological Function	Sensitivity to Environmental Degradation	Threat from Development Activities	Rarity of Habitat
The Point	High	Medium	Medium	High
The Ten Fathom Ledge	High	Medium	Low	Medium
Big Rock	High	Medium	Medium	High
The Charleston Bump	High	Low	Medium	High
The Georgetown Hole	High	Low	Low	High
The Point off Jupiter Inlet	High	Medium	Low	High
The Hump off Islamorada	High	Low	Low	High
The Marathon Hump	High	Medium	Low	High
The Wall off of the Florida Keys	Medium	Medium	Low	Medium
Pelagic *Sargassum*	High	Medium	Low	High

The proposed EFH-HAPCs for dolphin and wahoo all meet at least one or more of the above criteria. This action enables the Councils to protect these EFH-HAPCs effectively and take timely actions when necessary. This could prevent further decreases in biological productivity and may lead to possible increases in yield of fish stocks.

This evaluation is based in part on information presented in this Action and Section 3.3.1.2.1 describing the general characteristics of the unique habitat type and where available specific descriptions of the habitat associated with the area proposed for designation as an EFH-HAPC. In addition, supporting rationale for designation including identified threats from fishing and non-fishing activities is presented in Habitat Plan (SAFMC, 1998b), the Comprehensive Habitat Amendment (SAFMC, 1998c) and the *Sargassum* Fishery Management Plan (SAFMC 2002) and included by reference. The *Sargassum* FMP is under Secretarial Review for approval and implementation.

The following figures present locational maps for areas which for dolphin and wahoo ranked high in terms of ecological function, sensitivity, probability of stressor introduction, and/or (criteria established for designation of EFH-HAPCs). Based on the criteria in Section 600.815 (a) (9), it is concluded that they represent Essential Fish Habitat-Habitat Areas of Particular Concern for species managed under the Fishery Management Plan for Dolphin Wahoo of the Atlantic Region.

The Point

"The Point" off Cape Hatteras is also highly productive due to the confluence of as many as four water masses. Adults of highly migratory species congregate in this area, while the diversity of larval fishes found there is truly astounding (Table 18b of the Habitat Plan (SAFMC, 1998b).

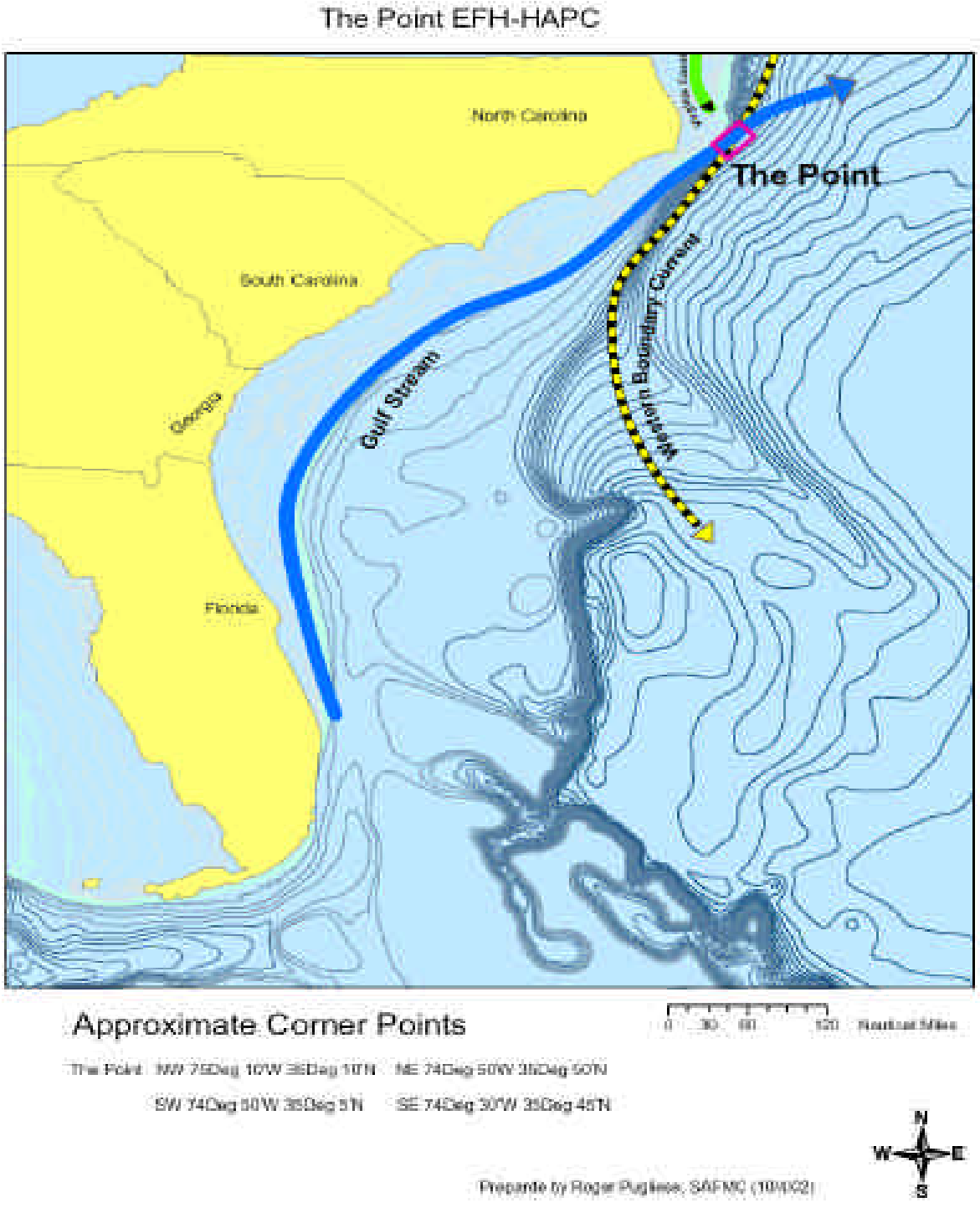


Figure 13. "The Point" Essential Fish Habitat-Habitat Area of Particular Concern.

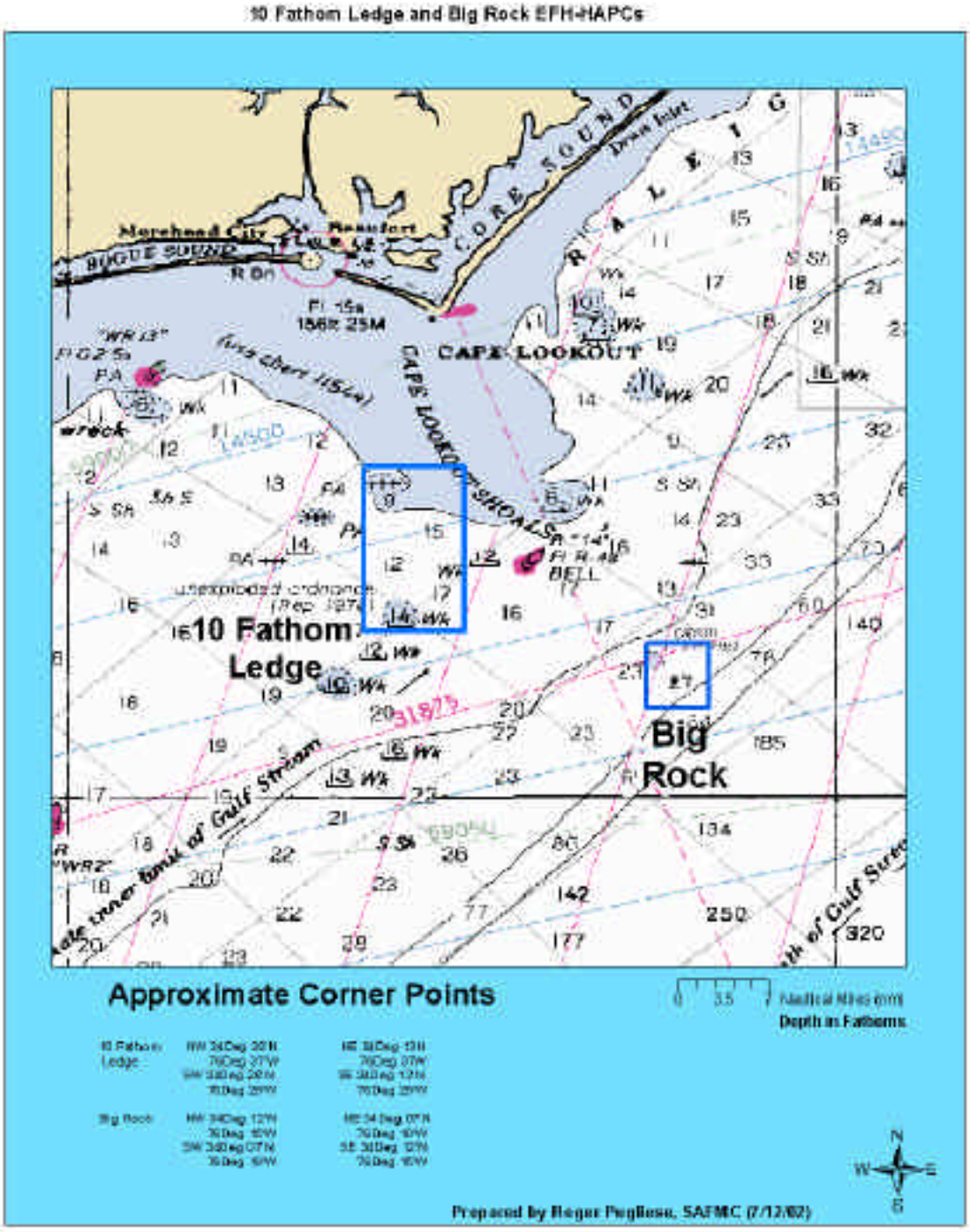


Figure 14. The 10 Fathom Ledge and Big Rock EFH-HAPCs. Note: The 10-Fathom Ledge is within the bounds of extreme front locations and eddies from the Gulf Stream as presented in Figure 8c.

The Charleston Bump Complex

The Charleston Bump is a bottom feature of great topographic relief located southeast of Charleston South Carolina (Sedberry et al., 2000) The Bump complex includes a quasi-permanent, cyclonic eddy the "Charleston Gyre" with attendant upwelling of nutrient-rich deep water sets-up in the wake of the "Charleston Bump". Upwelling results in persistent primary and secondary production that results in an important, if not essential feeding environment for larvae of fishes and the adults that congregate to spawn there. The hydrodynamics of the eddy, thermal fronts associated with the Gulf Stream and the benthic habitat contribute to attract pelagic fish and retain and concentrate larvae, juvenile, prey for larger fish (Sedberry et al., 2000) and pelagic *Sargassum*. Therefore this area is an EFH-HAPC for all life stages of dolphin and wahoo.

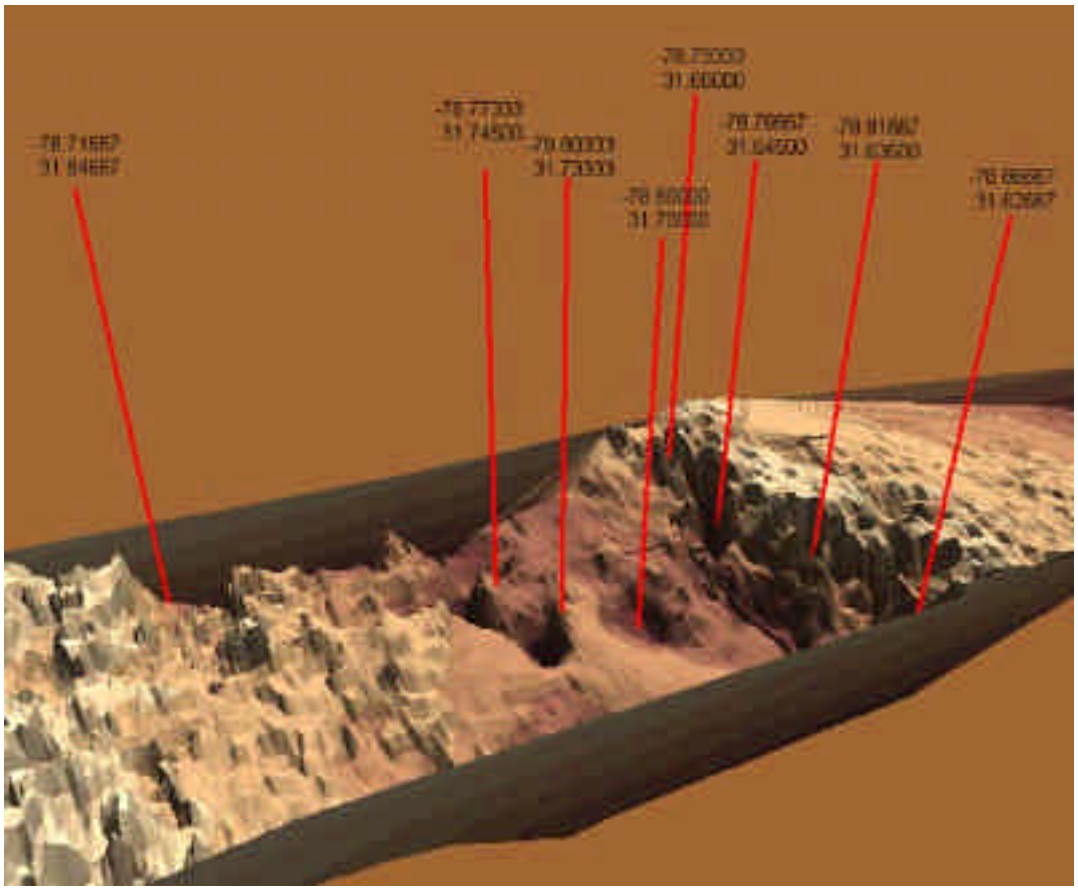


Figure 15a. Three-Dimensional Multibeam Map of a section of the Charleston Bump derived from a survey conducted by the NOAA shipWhiting during research cruises conducted in 1999 and 2000 (Source: NOAA, 2002).

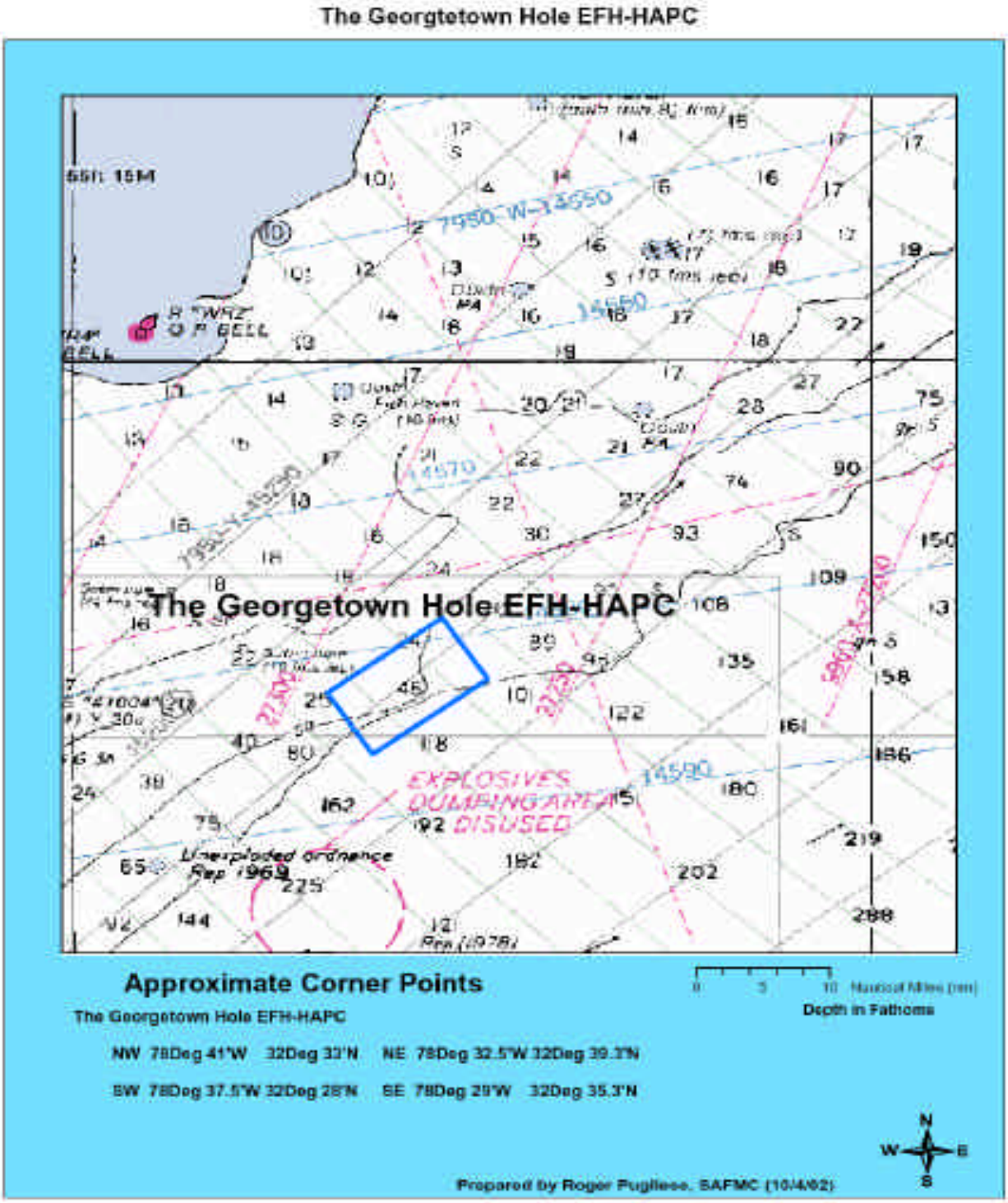


Figure 15b. The Georgetown Hole Essential Fish Habitat Habitat Area of Particular Concern.

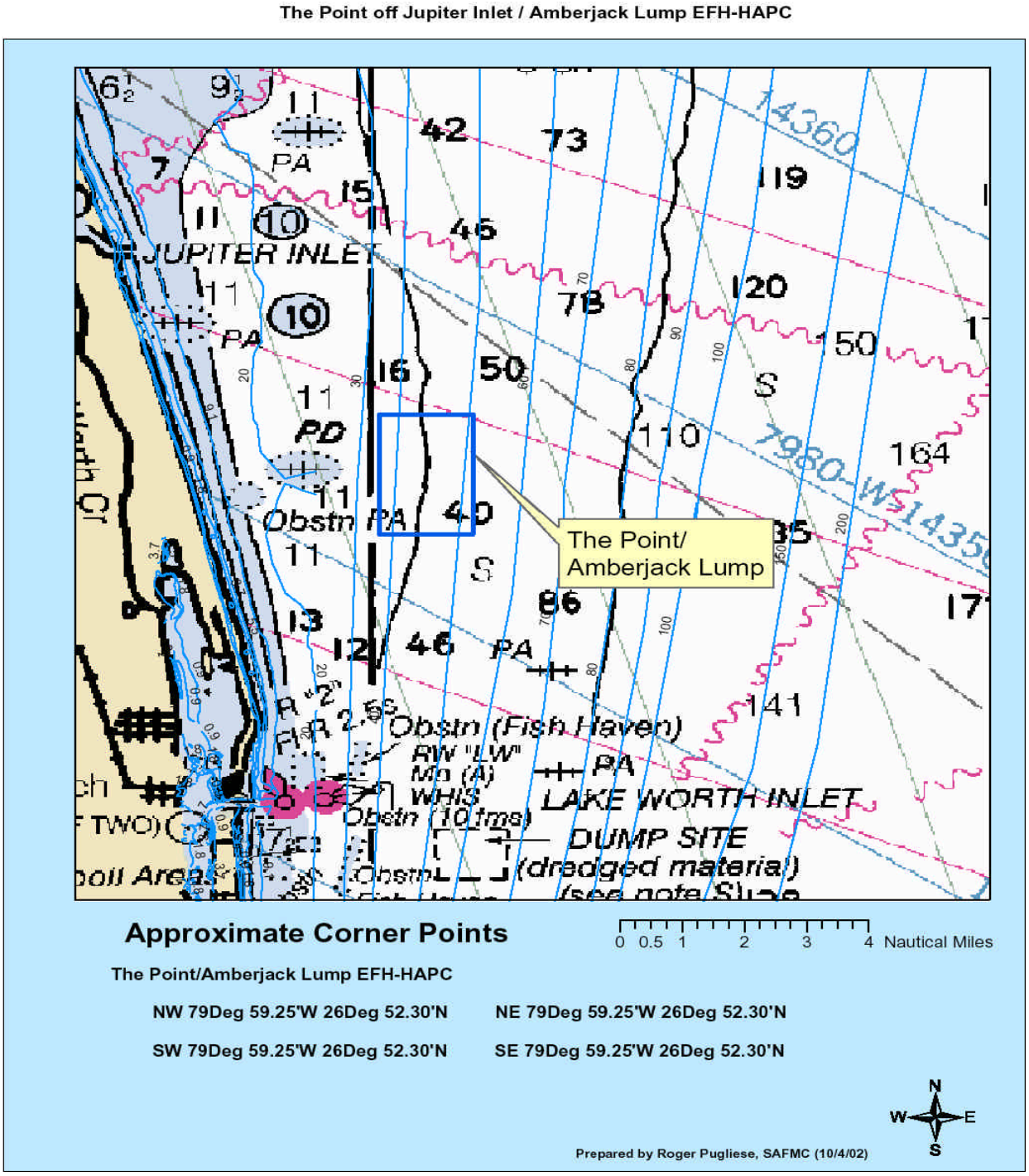


Figure 16. The Amberjack Lump (The Point) Essential Fish Habitat-Habitat Area of Particular Concern.

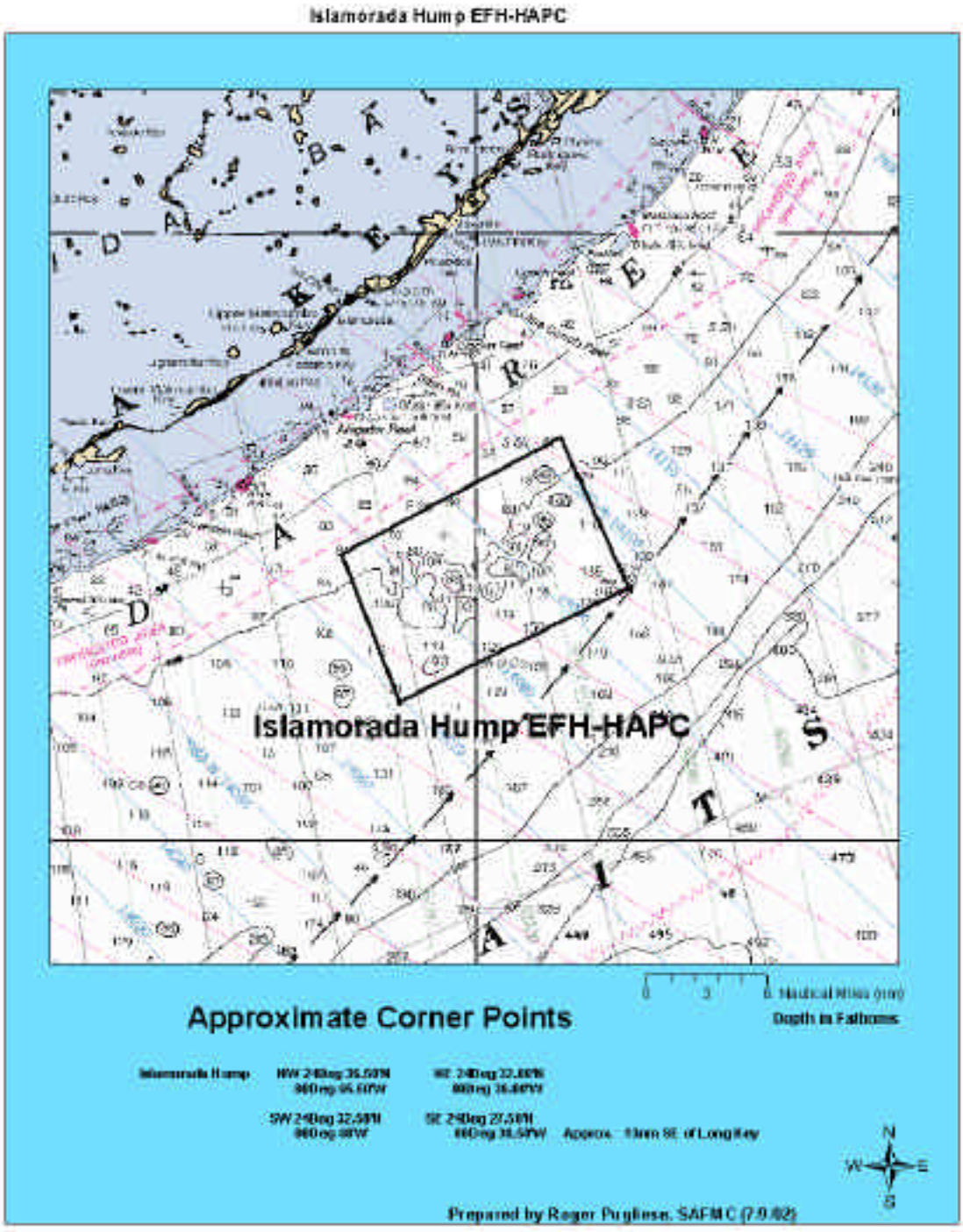


Figure 17. The Islamorada Hump Essential Fish Habitat-Habitat Area of Particular Concern.

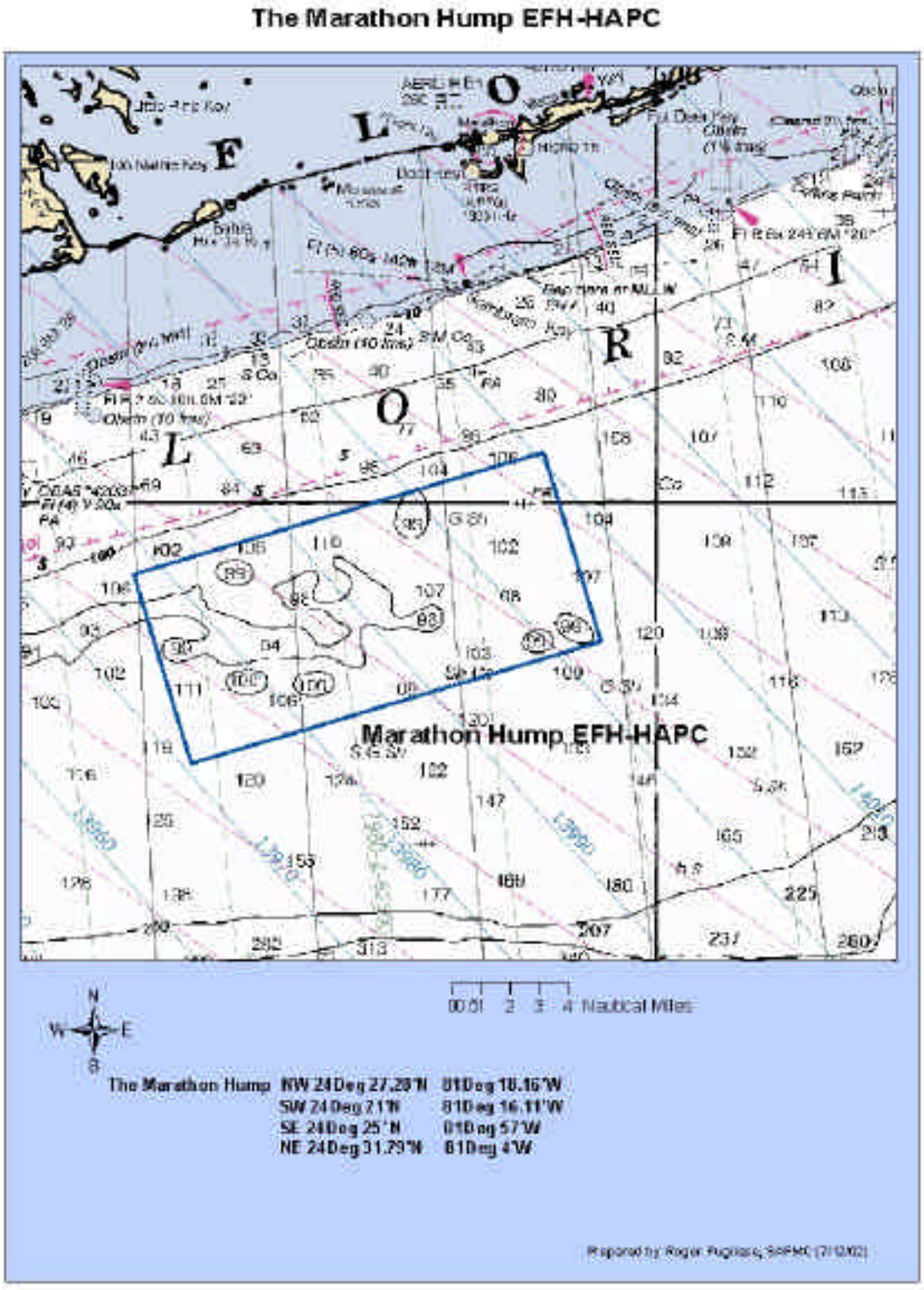


Figure 18. The Marathon Hump Essential Fish Habitat-Habitat Area of Particular Concern.

Economic Impacts

This action by itself will not have an economic impact as it only identifies EFH-HAPCs. Other actions taken to protect EFH-HAPCs will have associated economic effects but should result in increased net economic benefits to society in the long-term.

Social Impacts

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

Conclusion

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

The establishment of EFH-HAPCs will enable the Councils 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.

The Councils concluded establishing EFH-HAPCs for dolphin and wahoo will enhance protection of vital components of essential fish habitat which are especially important to various life stages of these pelagic species. The Councils determined this action best achieves the goals of the FMP and the management objectives to: (3) minimize conflict and/or competition between recreational and commercial user groups, (4) optimize the social and economic benefits, (5) reduce bycatch in the dolphin fishery, (6) direct research to evaluate the role of dolphin and wahoo as prey and predators in the pelagic ecosystem, and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

Rejected Options for Action 23:

Option 1. No action.

Biological Impacts

The Councils would be limited in the future in terms of protecting the long-term biological productivity of the dolphin and wahoo fisheries and minimizing gear related habitat damage from occurring in these fisheries.

Economic Impacts

There would be no direct economic impacts from this option. Also, not specifying EFH-HAPCs would limit the Council from taking action in the future to minimize fishing related habitat damage. Degradation of essential fish habitat could threaten the long-term economic viability of the dolphin and wahoo fishery and thus lead to reduced net economic benefits to society.

Social Impacts

Although there would be few social impacts from no action, it is in the best interest of the Councils and fishermen to identify this habitat. Designation of EFH-HAPCs can facilitate expeditious action by the Councils in the future to protect habitat for dolphin and wahoo.

Conclusion

The Councils are directed by the Magnuson-Stevens Act to identify, describe, and protect EFH and encouraged to designate, describe, and protect EFH-HAPCs for all managed species or species proposed for management. Therefore, the Councils are using the information compiled during development of the Habitat Plan (SAFMC, 1998b) that pertains to dolphin and wahoo. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP and rejected this option.

Option 2. Expand the EFH-HAPC definitions to include *Sargassum* where it occurs in the north Atlantic GYRE in the Sargasso Sea and the EEZ between 20° N. latitude and 40° N. latitude and 30° W. longitude and the western edge of the Gulf Stream.

Biological Impacts

The identification of EFH-HAPC's will enable the Councils 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

This action by itself will not have an economic impact as it only identifies EFH-HAPCs. Other actions taken to protect EFH-HAPCs will have associated economic effects to entities involved in harvest of Sargassum but should result in increased net economic benefits to society in the long-term.

Social Impacts

Presumably there would be few social impacts from identifying EFH-HAPC's. The social impacts would most likely come from the actions that were associated with such a designation. The assumption would be that such designation would provide protection for habitat. In that case, the social impacts would be positive in the long-term. However, in some cases, protection of habitat may mean harvesting restrictions in areas where harvesting presently takes place or other actions which may impose constraints on those who harvest habitat. This would certainly impose negative short-term impacts that may be mitigated in the long term if productivity is increased.

Conclusion

The Councils rejected this option because it includes *Sargassum* that is beyond the outer limit of the EEZ. NMFS and NOAA GC have advised that the Councils do not have authority beyond the EEZ. The Councils determined this option is not the best way to achieve the goals and management objectives of the FMP and rejected this option.

4.2.24 ACTION 24. Assessment of the Impacts of Present Fishing Activities on EFH. No action to implement additional management measures to reduce impacts of fishing on dolphin wahoo EFH. Defer to measures in the *Sargassum* Fishery Management Plan (presented below) which has been submitted to the Secretary of Commerce for formal review, and incorporate by reference the Comprehensive Habitat Amendment approved by the Secretary of Commerce on June 3, 1999.

The Council determined that all other fishing impacts would be temporary and/or minimal.

Biological Impacts

After an extensive fishery management plan development and public hearing process, the Councils have determined no other fishing activities significantly impact dolphin wahoo habitat (EFH) and essential fish habitat - habitat areas of particular concern (EFH-HAPC) and no additional action is necessary to protect dolphin and wahoo essential fish habitat. The fishing gear used for dolphin and wahoo (hand line, rod and reel, longlines) do not significantly impact the EFH of dolphin and wahoo because dragging hooks through the water does not damage the water molecules. Further, any *Sargassum* inadvertently "caught" on hooks can be immediately released with little to no release mortality. Pelagic fishing gear is fished in the water column and as such does not contact or impact the sea bed.

Traps (used in other fisheries), when being hauled to the surface have been seen to tangle *Sargassum* on the top face of the trap, these strands of *Sargassum* being returned to the Ocean to prevent accidents on board the fishing vessels because of the slippery nature of their texture.

Strong support for protecting dolphin and wahoo habitat and more specifically *Sargassum* as the Council has proposed in the Fishery Management Plan for Pelagic *Sargassum* Habitat, was provided during the hearing process. The following summarizes the South Atlantic Council's actions to address fishing gear impacts on *Sargassum* and to protect EFH and EFH-HAPCs for dolphin and wahoo.

The Council, through a revised Fishery Management Plan for Pelagic *Sargassum* Habitat (SAFMC, 2002) will prohibit all harvest and possession of *Sargassum* from the South Atlantic EEZ south of the 34° N. latitude line and within 100 miles of shore between the 34°N. latitude and the latitude line representing the NC/VA border. The plan caps annual harvest at 5,000 pounds wet weight (determined dockside after being off-loaded). In addition, harvesters will be required to: (a) take onboard observers on each trip, (b) limit harvest to the months of November through June, and (c) use of four inch stretch mesh or larger on a frame no larger than four feet by six feet. It is the Council's intent to protect to the maximum extent practicable *Sargassum* as essential fish habitat by immediately prohibiting harvest and possession of *Sargassum* in all areas of the South Atlantic EEZ where harvest has not previously occurred. In addition, the Council is minimizing harvest with no intent to allow an increase because of the value as EFH and EFH-HAPCs to dolphin/wahoo and other managed species including threatened and endangered sea turtles.

The *Sargassum* community represents a highly evolved ecotype with organisms (e.g., *Sargassum* fish, *Sargassum* pipefish, *Sargassum* shrimp, and *Sargassum* crab) which have evolved cryptic coloration and feeding mechanisms to survive and thrive in this habitat. In addition, many organisms (e.g., bryozoans) live attached to the *Sargassum* and feed on phytoplankton in the water column and associated with the habitat. These species will be lost in any removal of this habitat. Recent research indicates the essential nature of the fish and other marine organisms using pelagic *Sargassum* in providing the nutrients for growth of the algae. Therefore, the determination that all *Sargassum* is essential fish habitat, as well as an essential

fish habitat area of particular concern, is further supported by this interrelationship between the inhabitants and the growth of *Sargassum*.

The Council concluded the removal of pelagic *Sargassum* habitat constitutes a net loss of essential fish habitat in the South Atlantic region. Also, the Council concluded that the harvest of pelagic *Sargassum* is a violation of Council, NMFS, and NOAA habitat policies. The harvest of *Sargassum* is contradictory to the goals and objectives of the Habitat Plan (SAFMC, 1998b), the Habitat Comprehensive Amendment (SAFMC, 1998c), and the Revised Pelagic *Sargassum* Habitat Plan (SAFMC, 2002). An experimental fishing provision was considered but dropped because the Council determined this activity constituted a violation of Council habitat policy and goes against the intent of the Magnuson-Stevens Act mandate to address essential fish habitat. This action will meet the directive to identify, describe, and protect essential fish habitat. An acceleration of harvest could degrade the quality of habitat.

Apart from increases in the non-consumptive values discussed below, the Council concluded severe limitations on harvest are likely to increase productivity of marine life in the ecosystem. In particular, dolphin-fish and turtles will be protected to the extent possible from any potential negative impacts and could result in increased abundance depending on additional measures implemented.

No additional measures have been identified as necessary to reduce the impact of any Atlantic fishery on dolphin and wahoo EFH. Therefore no biological impacts will result from taking no action at this time. The Council will monitor the fishery and take additional action to reduce fishing impacts if deemed necessary through framework provisions established in this plan.

Economic Impacts

The Council revised and submitted a Fishery Management Plan for Pelagic *Sargassum* Habitat to the Secretary of Commerce that will address the direct harvest of the *Sargassum* resource (a more detailed discussion of this plan is contained under the biological impacts section). At this time the Council does not require additional action be taken to protect EFH for dolphin and wahoo in this FMP.

In the *Sargassum* FMP the Council's recommended action will result in increased direct and indirect benefits to society not only through protection of dolphin and wahoo populations but benefits will accrue from protection of other species. Society derives benefit from the ecosystem services provided by *Sargassum* that translates into use value to sport fishing and commercial fishing sectors, non-consumptive use value, and non-use benefits (existence value). Concurrently, implementation of this plan will also result in reduced revenue for the firm harvesting *Sargassum*.

Social Impacts

By deferring to measures listed in the *Sargassum* Fishery Management Plan, there is more consistency across all Fishery Management Plans of the SAFMC.

Public hearing testimony and written testimony received by the Council overwhelmingly supported the measures set out in the *Sargassum* FMP. Comments were received from 33 States and Puerto Rico, and from 16 foreign countries. A total of 235 comments were received on the original FMP (175 from individuals and 60 from agencies/organizations). All comments were in favor of the Council's proposed actions except for two. The Council's preferred option is as close to the total prohibition as is feasible, and the many non-use stakeholders would derive social benefits from this action.

The protection of this habitat and thus of the dolphin and wahoo habitat is readily accepted by almost all members of the public who hold a stake in this fishery. Hence, there will be both short and long term positive social impacts from this option.

Conclusion

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (4) optimize the social and economic benefits, (6) direct research to evaluate the role of dolphin and wahoo as prey and predators in the pelagic ecosystem, and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

The original *Sargassum* FMP was sent to the Secretary of Commerce for formal review and implementation on December 14, 1998. The Secretary of Commerce disapproved the original *Sargassum* FMP on November 24, 1999 because there was insufficient justification for setting the Optimum Yield (OY) at zero harvest and because no Maximum Sustainable Yield (MSY) was included. The Council modified their plan to allow limited harvest and added a MSY. The Revised *Sargassum* FMP (SAFMC, 2002) was sent to the Secretary of Commerce in 2002. Management measures in the Sargassum FMP reduce the impact of the only fishery known to impact EFH or EFH-HAPCs for dolphin and wahoo. The Council will monitor the fishery and take additional action to reduce fishing impacts if deemed necessary, through framework provisions established in this plan.

Rejected Options for Action 24:

Option 1. Prohibit any impacts from current fishing activities on EFH for dolphin and wahoo and oppose future use of fishing gears that are likely to negatively impact such EFH.

Biological Impacts

The fishing gear used for dolphin and wahoo do not significantly impact EFH or EFH-HAPCs for dolphin and wahoo. There are no biological impacts from this option at this time. If the Council deemed it necessary to take additional action to reduce fishing impacts on EFH through the framework provisions established in this plan, the biological impacts of such action would have to be determined.

Economic Impacts

At this time the direct harvest of *Sargassum* was identified as the only additional action the Council needs to take in protecting dolphin/wahoo EFH from the effects of fishing. There may not be any increase in benefits derived from further action over and above what is expected from implementation of the Council's recommendations in the revised Sargassum FMP. Additional actions that restrict activities of other fisheries could result in reduced overall net economic benefits.

Social Impacts

There are no social impacts from this option at this time. If the Council after monitoring the fishery, deemed it necessary to take additional action to reduce fishing impacts on EFH through the framework provisions established in this plan would have to determine the social impacts of such action.

Conclusion

The Council rejected this option upon determine establishing additional management measures to reduce the effect of fishing on EFH was not deemed necessary at this time.

4.2.25 Existing SAFMC Habitat Policies & Procedures

Atlantic Essential Fish Habitat Conservation Recommendations

This material indicates previous actions/positions the South Atlantic Council has taken to protect essential fish habitat:

Established policies and procedures of the SAFMC and the NMFS (Appendix N - Comprehensive Habitat Amendment (SAFMC, 1998c) provide the framework for conserving and enhancing essential fish habitat for dolphin and wahoo. 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 Councils, 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 wetland habitat functions and values.

SAFMC Essential Fish Habitat and Environmental Protection Policy

In recognizing that dolphin and wahoo 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 the dolphin and wahoo 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.

SAFMC Essential Fish Habitat Policy Statements Affecting Dolphin and Wahoo

These are policies previously adopted by the South Atlantic Council which affect dolphin and wahoo. Action 24 addressees gear impacts.

SAFMC Policy Statement Concerning Dredging and Dredge Material Disposal Activities Ocean Dredged Material Disposal Sites (ODMDS) and SAFMC Policies

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

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

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

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

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

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

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

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

Council regarding the matter, such as is required for federal agencies pursuant to 16 U.S.C. 1852 (i).

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

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

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

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

Offshore and Nearshore Underwater Berm Creation

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

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

Maintenance Dredging and Sand Mining for Beach Renourishment

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

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

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

Open Water Disposal

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

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

SAFMC Policy on Oil and 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 was based on the potential degradation or loss of extensive live bottom and other habitat essential to fisheries under Council jurisdiction.

The SAFMC also supported North Carolina's determination that the plans of exploration filed with MMS by Mobil Exploration and Producing North America, Inc. for Lease OCS Manteo Unit are not consistent with North Carolina's Coastal Zone Management program. The Council has expressed concern to the Outer Continental Shelf Leasing and Development Task Force about the proposed area and 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 recommended 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 an EIS would be. The normal scoping process used in preparation of a NEPA-type document would not only "identify significant environmental issues deserving of study" but also "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 (USDOI 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

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.

Activity Based Policies

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.

Other Mineral Mining/Extraction

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. All other proposals will be considered on a case-by-case basis.

SAFMC Recommendation for International Protection of *Sargassum* and the Sargasso Sea

Because of the importance of *Sargassum* as essential fish habitat and as an essential fish habitat area of particular concern for dolphin and wahoo, the extra-jurisdictional pelagic *Sargassum* occurring in the Sargasso Sea outside the EEZ should be protected. Therefore, the United States should pursue all other options under the Magnuson-Stevens Act and other laws to protect *Sargassum* in international waters.

4.3 Unavoidable Adverse Effects

Action 1. The management unit is the population of dolphin (common dolphin- *Coryphaena hippurus* and pompano dolphin- *Coryphaena equiselis*) from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts;

Action 2. The management unit is the population of wahoo (*Acanthocybium solandri*) from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts;

Action 3. In the Atlantic any dealer, defined as the person who first receives dolphin or wahoo harvested in or from the EEZ by way of purchase, barter, trade, or transfer in commerce, will be required to possess a valid dealer permit issued by the National Marine Fisheries Service and to report data needed to monitor the dolphin and wahoo fisheries; Require that the owner of a for-hire vessel obtain a vessel permit from the National Marine Fisheries Service to harvest or possess dolphin or wahoo in or from the Atlantic EEZ;

Action 4. Require that the owner of a commercial vessel obtain a vessel permit from the National Marine Fisheries Service to harvest or possess dolphin or wahoo in or from the Atlantic EEZ;

In order to qualify for a commercial vessel permit in the Atlantic, during one of the three calendar years preceding the control date, the vessel owner (1) must have 25 percent of his or her earned income derived from commercial or for-hire fishing, or must have earned at least $10,000 from either commercial or for-hire fishing and (2) must be able to document 250 pounds of landings and sale of dolphin and/or wahoo on or before the control date of May 21, 1999 in the Atlantic. Alternatively individuals may also qualify for a commercial permit if they hold a valid permit in the snapper-grouper, king mackerel, or swordfish fisheries. The commercial permit is transferable (1 for 1) with vessel when sold or replaced. Allow a 200 pound incidental harvest possession limit of dolphin and/or wahoo for vessels with a valid federal commercial permit fishing North of 39° North latitude.

For a person aboard a fishing vessel to fish for dolphin and wahoo in the exclusive economic zone (EEZ), possess dolphin and wahoo in or from the EEZ, off-load dolphin and wahoo from the EEZ, or sell dolphin and wahoo in or from the EEZ, a vessel permit for dolphin and wahoo must be issued to the vessel and be on board.

A fee will be charged to cover the administrative costs of issuing federal vessel permits. There are no requirements to qualify for a for-hire vessel permit;

Action 5. Require that the operator of a commercial or for-hire vessel obtain an operator's permit issued by the National Marine Fisheries Service to harvest or possess dolphin or wahoo in or from the Atlantic EEZ. On each federally permitted dolphin/wahoo commercial or for-hire vessel, there must be on board at least one operator who has been issued a federal operator's permit for the dolphin/wahoo fishery. The federally permitted operator will be held accountable for violations of fishing regulations and also may be subject to a permit sanction. If an operator's permit has been sanctioned, during the permit sanction period the individual operator may not work in any capacity aboard a federally permitted fishing vessel. No performance or competency testing will be required to obtain a permit. However, the permit may be revoked for violation of Federal dolphin and wahoo regulations as authorized by 15 C.F.R. 904.

The federal permit program will have the following requirements:

1. Any operator of a vessel fishing for dolphin or wahoo (either commercial or for-hire) must have an operator's permit issued by the NMFS Regional Administrator.

2. An operator is defined as the master or other individual on board a vessel who is in charge of that vessel (see 50 CFR 620.2).

3. The operator is required to submit an application, supplied by the Regional Administrator, for an Operator's Permit. The permit will be issued for a period of up to three years.

4. The applicant must provide his/her name, mailing address, telephone number, date of birth, and physical characteristics (height, weight, hair, and eye color) on the application. In addition to this information, the applicant must provide two passport size color photos.

5. The permit is not transferable.

6. Permit holders would be required to carry their permit aboard the fishing vessel during fishing and off-loading operations and must have it available for inspection upon request by an authorized officer.

7. The Regional Administrator may charge an administrative fee for the operator permit consistent with NOAA guidelines;

Action 6. In the Atlantic, require reporting of vessel permit holders (commercial and for-hire) and include reporting requirements as specified in the Atlantic Coastal Cooperative Statistics Program (ACCSP). Also continue existing logbook requirements;

Action 7. Maximum Sustainable Yield for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 18.8 and 46.5 million pounds. The Maximum Sustainable Yield proxy for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 1.41 and 1.63 million pounds;

Action 8. Optimum Yield (OY) for dolphin and wahoo is the amount of harvest that can be taken by fishermen while not exceeding 75% of MSY (between 14.1 and 34.9 million pounds) for dolphin and 100% of MSY (between 1.41 and 1.63 million pounds) for wahoo;

Action 9. Overfishing level. Overfishing is defined in terms of the NMFS Guidelines Checklist. A maximum fishing mortality threshold (MFMT) - In the Atlantic, U.S. Caribbean, and Gulf of Mexico overfishing for dolphin and wahoo is defined as a fishing mortality rate (F) in excess of F_{MSY} ($F_{30\%\ Static\ SPR}$). A minimum stock size threshold (MSST) – In the Atlantic, U.S. Caribbean, and Gulf of Mexico the minimum stock size threshold for dolphin and wahoo is defined as a ratio of current biomass ($B_{current}$) to biomass at MSY or (1-M)*B_{MSY}, where 1-M should never be less than 0.5. Using the best available estimates of natural mortality (M = 0.68-0.80) in the formula results in a MSST of 50% B_{MSY}. The stock would be overfished if current biomass ($B_{current}$) was less than MSST and would be recovered when current biomass was equal or greater than the biomass at MSY; and

Action 10. Establish a framework procedure for the Dolphin and Wahoo FMP to provide the South Atlantic Fishery Management Council with a mechanism to independently adjust management measures for their area of responsibility through framework action.

Action 11. Prohibit sale of recreationally caught dolphin or wahoo in or from the Atlantic EEZ except for allowing for-hire vessels that possess the necessary state and Federal commercial permits to sell dolphin harvested under the bag limit in or from the Atlantic EEZ;

Action 12. Establish a cap of 1.5 million pounds or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the Council will review the data and evaluate the need for additional regulations which may be established through the framework;

Action 13. Establish a recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Headboats (with a valid certificate of inspection) will be allowed a bag limit of 10 dolphin per paying passenger;

Action 14. Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed;

Action 15. Establish a minimum size limit for dolphin of 20 inches fork length off Florida and Georgia and no minimum size limit north of Georgia;

Action 16. Establish a commercial trip limit for wahoo (landed head and tail intact) of 500 pounds with no transfer at sea allowed;

Action 17. Do not establish a size limit for wahoo in the Atlantic EEZ;

Action 18. Establish a recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ;

Action 19. Specify allowable gear for dolphin and wahoo in the Atlantic EEZ as longline; hook and line gear including manual, electric, or hydraulic rod and reels; bandit gear; handline; and spearfishing gear (including powerheads);

Action 20. Prohibit the use of surface and pelagic longline gear for dolphin and wahoo within any "time or area closure" in the South Atlantic Council's area of jurisdiction (Atlantic Coast) which is closed to the use of pelagic gear for highly migratory pelagic species;

Action 21. Establish a fishing year of January 1 to December 31 for the dolphin and wahoo fishery in the Atlantic EEZ;

Action 22. Expand the list of Essential Fish Habitat (EFH) definitions that were approved for dolphin by the Secretary of Commerce to apply to dolphin and wahoo throughout the Atlantic. EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum*;

Action 23. Expand the list of Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) that were approved for dolphin by the Secretary of Commerce to apply to dolphin and wahoo throughout the Atlantic. EFH-HAPCs for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and The Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic *Sargassum*; and

Action 24. Assessment of the Impacts of Present Fishing Activities on EFH. No action to implement additional management measures to reduce impacts of fishing on dolphin wahoo EFH. Defer to measures in the *Sargassum* Fishery Management Plan which has been submitted to the Secretary for formal review, and incorporate by reference the Comprehensive Habitat Amendment approved by the Secretary on June 3, 1999.

The following summarizes the separate effects from those actions that are likely to result in adverse impacts. A more detailed discussion of the impacts of each action is contained in Section 4.

Actions 3, 4, and 5 will result in a small increase in operating costs for dealers, vessel owners, and operators in the dolphin/wahoo fishery. Action 4 could result in revenue loss to those vessels not able to qualify for a dolphin wahoo permit. It is estimated that Action 6 will result in a time cost equivalent to $12.50 per hour for respondents required to complete logbooks.

Action 11 that proposes to prohibit the sale of recreationally caught dolphin by the private recreational sector, and wahoo by the entire recreational sector will most likely result in decreased revenue and consumer surplus. Action 13 would establish a 10 fish recreational bag limit/60 fish boat limit, which will reduce benefits to recreational anglers. The 3,000 pound/1,000

pound trip limit for dolphin in the Atlantic EEZ (Action 14) could reduce annual revenue in the commercial sector by $312,961. A 20 inch minimum size limit for dolphin could reduce consumer surplus benefits in the recreational fishery, and revenue in the commercial fishery by at least $45,092 (Action 15). Action 16 proposes a 500 pound trip limit on the wahoo fishery in the Atlantic EEZ, which could reduce commercial ex-vessel revenue by $2,360 annually.

Action 18 establishes a bag limit of 2 wahoo per person per day, which would reduce benefits to anglers since there would be a reduction in landings. This measure may well reduce short term recreational landings by 119,970 pounds. A prohibition on the use of pelagic longline gear for dolphin and wahoo in the HMS closed areas (Action 20) could reduce revenue in the commercial fishery anywhere from $105,271 to $170,329.

4.4 Relationship of Short-term and Long-term Productivity

The measures proposed are necessary to take a precautionary, risk adverse approach to cap harvest in the dolphin and wahoo fishery to protect the long-term viability of the fishery.

4.5 Irreversible and Irretrievable Commitments of Resources

There are no irreversible or irretrievable commitments of resources associated with the proposed actions. If the Councils do not take action to regulate the dolphin/wahoo fisheries, there could be a reduction in yield.

4.6 Effects of the Fishery on the Environment

See also Section 9.6 National Environmental Policy Act for additional discussion.

4.6.1 Damage to Ocean and Coastal Habitat

The proposed actions, and their alternatives, are not expected to have any adverse effect on the ocean and coastal habitats.

4.6.2 Physical Environment

The proposed actions in this plan will have a positive impact on the physical environment by identifying and describing Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern (EFH-HAPCs) so impacts from fishing and non-fishing activities can be minimized.

4.6.3 Effects on Wetlands

The proposed plan will have no effect on any flood plains, wetlands, or rivers.

4.6.4 Fishery Resource

The proposed actions take a precautionary, risk averse management approach by managing dolphin and wahoo throughout their range in the Atlantic, Gulf of Mexico, and U.S. Caribbean EEZ.

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4.6.5 Human Environment

The Council concluded the long-term benefits are expected to exceed the short-term loss.

4.6.6 Public Health and Safety

The proposed actions, and their alternatives, are not expected to have any substantial adverse impact on public health or safety.

4.6.7 Endangered Species and Marine Mammals

The proposed actions, and their alternatives, are not expected to adversely affect any endangered or threatened species or marine mammal population (see bycatch discussion below). The proposed actions would ensure that overfishing does not occur. Therefore, the proposed actions would likely reduce the future likelihood of potential entanglements, serious injuries, and mortality's of listed or protected species, as compared to the Status Quo. Appendix F contains a Biological Evaluation (BE) prepared by the Councils. The Biological Evaluation contains the Councils' detailed rationale.

4.6.8 Bycatch

Observer data and vessel logbooks indicate that pelagic longline fishing for Atlantic swordfish and tunas results in catch of non-target finfish species such as bluefin tuna, billfish, and undersized swordfish, and of protected species, including threatened and endangered sea turtles. Also, this fishing gear incidentally hooks marine mammals and sea birds during tuna and swordfish operations. The bycatch of animals that are hooked but not retained due to economic or regulatory factors contributes to overall fishing mortality. Such bycatch mortality may significantly impair rebuilding of overfished finfish stocks or the recovery of protected species. Atlantic blue marlin, white marlin, sailfish, bluefin tuna, and swordfish are overfished. The concurrent closure in this FMP was deemed necessary by NMFS to reduce bycatch and incidental catch of overfished and protected species by pelagic longline fishermen who target highly migratory pelagic species (HMS).

Appendix C (FSEIS for HMS Regulatory Amendment 1) contains data on dolphin-wahoo pelagic longline fishery analysis. The data presented on page C-66 and in Table C-4 indicate that pelagic longlines targeting dolphin do in fact result in a bycatch of HMS species.

Implementation of regulations proposed in this plan will address the Magnuson-Stevens Act requirements to reduce bycatch and the mortality of bycatch. Additional detailed data on bycatch in the directed dolphin/wahoo fisheries will be provided through full implementation of ACCSP (which includes observer coverage) as required under Action 6.

4.6.9 Cumulative Effects

The proposed actions, and their alternatives, are not expected to result in cumulative adverse effects that could have a substantial effect on dolphin and wahoo or any related stocks, including endangered and threatened species, such as turtles. Appendix F contains a Biological Evaluation (BE) prepared by the Councils. The Biological Evaluation contains the Councils' detailed rationale. In fact, the proposed measures provide the basis from which essential fish habitat and essential fish habitat - habitat areas of particular concern for dolphin and wahoo can be protected from fishing and non-fishing impacts. These habitats are also important as habitat for threatened and endangered sea turtles. See Section 3.4 and 4.3 of the Habitat Plan (SAFMC, 1998b).

<u>Economic Considerations</u>

It is not possible to quantify the overall cumulative economic impacts of the management actions in this plan, the effect of other fishing regulations, and other factors such as coastal development and imports. The relevant data and econometric models are not available to conduct analyses of the past, current, and future cumulative effects of the proposed regulations, other fishery regulations, and other factors not related to fishery management that affect participants in this fishery. For example, recreational and commercial entities in the dolphin and wahoo fishery who participate in other fisheries would be affected by state and federal fishery management

actions including those implemented in the SAFMC snapper/grouper and mackerel fisheries. It is expected that dolphin imports have a major influence on the domestic dolphin price based on the fact that large quantities of product (in the frozen fillet category and the flash/frozen category) enters U.S. markets annually. A complete market demand model is required to quantify this effect; however, such a model is not currently available.

The permitting and data collection requirements proposed in this FMP (i.e., full implementation of ACCSP) would provide some of the necessary information for future analyses of the management actions in the dolphin and wahoo fisheries. However, collection of all information to quantify all effects will be expensive. The estimated cost for full implementation of ACCSP (catch/effort, biological sampling, discards and protected resources, and socioeconomic modules) along the entire Atlantic coast is approximately $50 million. Analysis of this data and development of the required economic, social, and biological models could easily equal this estimate.

The following is a qualitative summary of the direct economic impacts of the measures on the private recreational sector, for-hire recreational sector, and commercial harvesting sector. Detailed analysis of these effects are contained in Section 4. Also, refer to Table 1 for a summary of the economic impacts. While some of the measures proposed would directly reduce the economic benefits for some participants in the dolphin/wahoo fishery, economic benefits could accrue to other individuals. For example, the prohibition on recreational sale will result in reduced revenue to the private recreational sector. However, this measure will reduce health risks for seafood consumers (recreationally harvested fish are generally not handled according to HAACP to the same degree as commercially harvested fish).

Proposed measures in the SAFMC dolphin/wahoo FMP will reduce net consumer surplus in the recreational sector from the bag limits and the minimum size regulations. There will also be reductions in revenue from the prohibition on recreational sale. Some private recreational anglers sell all or a portion of their catch to offset their trip costs and this prohibition of sale will also reduce the overall net consumer surplus benefits on these recreational fishing trips. This sector would benefit in the future if these precautionary measures reduce the incidence of localized depletion which could allow for improved fishing quality and possibly additional angler benefits.

There could be a reduction in trips and/or overall harvest in the for-hire sector as a result of the size limit, boat limits, and bag limits proposed for dolphin and wahoo which would result in loss of net income. In addition, there will be some loss of revenue from the prohibition on recreational sale of wahoo. For-hire vessels that sold dolphin in the past but do not qualify for a Federal commercial dolphin permit will experience a loss of revenue.

There will be a minor increase in the overall vessel operating costs in the commercial harvesting sector from the permit requirement. Also, there will be reduced short-term revenue from the trip limits and the dolphin minimum size limit. Regulatory Amendment 1 to the Atlantic Tunas, Swordfish, and Sharks Fishery Management Plan established areas that are closed to longlining (Appendix D). The longline sub-sector will experience losses in revenue from the prohibition on fishing in these HMS closed areas from a reduction in all landings (HMS species as well as dolphin and wahoo). Some of these vessels could shift fishing effort into other areas during the closure periods and/or target other fisheries to recoup some of the forgone revenue.

The measures proposed for dolphin and wahoo in this plan will have some short-term negative impacts on participants in these fisheries. Also other state and federal fishery management regulations previously implemented in the Atlantic affected some participants in this fishery. It must be noted that these regulations were enacted to improve stock status and/or

to reconcile conflicts in these fisheries, which could increase long-term economic benefits to society.

Social Considerations

Like the economic impacts to the human environment, it is not possible at the present time to conduct a full cumulative effects analysis for the social and cultural impacts resulting from the proposed implementation of this Dolphin/Wahoo Fishery Management Plan.
In order to aptly conduct a cumulative impact analysis for any proposed action, whether it is in fisheries, forestry, rural development, etc. there should be available a set of baseline social, cultural, and demographic data from which one can draw comparisons and determine past, present, and future impacts. The analyses should include a determination of which factors have impacted the community or social group in question. In order to be comprehensive, the analyses need to recognize the interactions and interlinkages among such supposedly disparate spheres such as natural entities or conditions (e.g., climate change, shifts in ocean current patterns) along with economic factors (e.g., variations in labor force composition, price fluctuations, or even the political economy of the nation and world). Other factors closer to the sociocultural sphere effecting outcomes of sociocultural cumulative change include, for example, events such as coastal development and its associated gentrification process, the growing acceptance of concepts concerning environmental preservation/protection, and demographic shifts among ethnic groupings. Other than in a very qualitative way, these types of impacts cannot be sufficiently evaluated until further data collection and analyses are implemented (cost estimates provided above in the economic discussion). Both the proposed data collection efforts of the ACCSP and the hiring of social scientists by NOAA Fisheries should facilitate this task.

Specifically relevant to this FMP, any identified cumulative social impacts have been discussed in Section 4 under each action and the alternatives.

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 dolphin and wahoo fishery management plan include:

Councils costs of document preparation, meetings, data synthesis/analysis, scoping meetings, workshops, public hearings, and information dissemination =	$248,000
NMFS administrative costs of document preparation, meetings, and review =	$50,000
NMFS law enforcement and monitoring costs =	$90,000
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Total	$388,000+

4.8 Effects on Small Businesses: Initial Regulatory Flexibility Analysis (IRFA)

The Regulatory Flexibility Act requires an assessment of the economic impacts of proposed actions on small entities. It provides for certifying that a proposed rule would not have a significant economic impact on a substantial number of small entities if the factual basis for the certification is provided. If a certification cannot be made, an initial regulatory flexibility analysis (IRFA) must be prepared. The IRFA, using information from the analysis of the economic impacts of the various alternatives contained in the document should demonstrate that:

- Reasonable alternatives from among which to select a proposal are identified.
- The proposal selected reflects a wise choice from among reasonable alternatives.
- Managers have fair warning whether their proposal will generate loud complaint.
- The proposal competes well against other social goals, regardless of legislative mandates, in light of other administration priorities.
- The proposal will move rapidly through the regulatory process at OMB and SBA's Office of Advocacy.
- The proposal is likely to withstand legal challenge.

The definition of a "small entity" is taken from Part 121 of Title 13, Code of Federal Regulation (CFR), which classifies businesses by SIC code as small or large. The established size standards are as follows:

- Any fish harvesting business is a small entity if it is independently owned and operated and not dominant in its field of operation and if it has annual gross receipts not in excess of $3.5 million.
- A business entity in the for-hire sector is classified as small if annual gross receipts do not exceed $6.0 million annually.

It was not possible to identify all firms or vessels in this fishery since there is no federal permit or national database that tracks the operation of fishing vessels in the Atlantic. However, it is assumed that all entities fall in the small category based on information from industry sources and data on gross revenue from federally permitted vessels in the south Atlantic that engage in the harvest of dolphin and wahoo. These firms affected by the proposed management actions will qualify as small business entities because their gross revenues are less than $3.5 million annually. Hence, it is clear that the criterion of a substantial number of small business entities comprising the dolphin/wahoo harvesting industry being affected by the proposed rule will be met. Evaluation of whether a proposed rule will result in a "significant impact" is less clear. Recent guidelines provided by the National Marine Fisheries Service recommends that the criteria of profitability and disproportionality be used in this determination (NMFS, 2000):

1. Disproportionality. A comparison must be made of the effect of the proposed rule on small and large entities.
2. Profitability. The analysis should focus on the short and medium-term effect on profits of small entities.

Disproportionality

The industry is composed entirely of small businesses (harvesters and fish houses). Since no large businesses are involved, there are no disproportional small versus large business effects. However, among the small entities in this fishery there is a degree of heterogeneity in terms of

gear used and type of operation (recreational for-hire, commercial harvester, or a combination of both activities).

Profitability

For purposes of the Regulatory Flexibility Act, this management plan would impact small business entities. The subsequent paragraphs summarize the separate effects from only those actions that are likely to have a direct impact on entities in the dolphin and wahoo fisheries in the Atlantic.

Action 3 (the requirement for dealer permits) will impose a time cost and a small increase in operating costs (the permit fee). This action is unlikely to substantially reduce firm level profitability.

The requirement for a vessel permit is likely to reduce the number of vessels that sell dolphin and wahoo. Most affected, will be firms that sell small quantities of dolphin/wahoo and/or entities that do not depend on the commercial or for-hire fisheries in the Atlantic for a large portion of their overall income. The Council set these criteria so as to protect the firms that have traditionally sold dolphin/wahoo and depend on these fisheries for a significant part of their income. Also, the Council's intent was to reduce the level of private recreational sale and protect the public from improperly handled fish.

There is little information to determine how many vessels will likely be affected by this measure in the Atlantic. Analysis of the Florida trip ticket data revealed that 1617 vessels (unique vessel numbers) were found to have landed dolphin and/or wahoo on the Florida Atlantic coast during 1997-2001 (1056 in 1997-1999 only). The Council set several qualifying criteria so that vessels that depend on commercial fishing or vessels that land and sell more than a minimal quantity each year would qualify for a commercial permit. A vessel owner would have to earn more than 25% of gross annual income or earn at least $10,000 gross revenue annually from a combination of commercial sale of any species and for-hire fishing, and also document 250 pounds of dolphin/wahoo landings in any one year during the period 1997-1999. If vessels did not qualify under these criteria but held a Federal permit in either the snapper/grouper, king mackerel, or swordfish fisheries they would automatically qualify for a commercial dolphin/wahoo permit. In this data set about 50% of all identified vessels would meet these criteria. However, it cannot be assumed that the remainder of these vessels would not qualify for a dolphin/wahoo permit. Some of these vessels could also operate in the for-hire sector, and charter income would allow the vessel to meet the income requirement. Data from a recently completed study on the for-hire sector indicated that the mean income for South Atlantic charterboat vessels was $51,000 (Holland et. al., 1999). Information on the distribution of fishing income was not presented in this report. However, analysis of the data set revealed that among charterboats that targeted dolphin and wahoo only 3.7% reported annual gross fishing income less than $10,000 annually.

In addition some of the commercial fishing vessels would have landings in other states that are not recorded by the Florida trip ticket system that could enable the vessel to qualify for a dolphin/wahoo commercial vessel permit. In this category there could be "private recreational vessels" that obtain a Saltwater Products License (SPL) and sell fish in Florida. There is no income requirement to commercially sell dolphin and wahoo in Florida. They are classified as unrestricted species. This measure was adopted to eliminate this private recreational sale in order to protect the interests of the commercial sector that is dependent on these species.

For commercial vessel owners that did not meet the income requirement, their combined overall annual income from any commercial or for-hire activity would have to be less than $10,000 or less than 25% of overall annual income. For those vessels that were in the fishery

prior to May 31, 1999 meeting the income requirement but not the landings requirement, their forgone income would not exceed $387.50. Vessels that entered the fishery after May 31, 1999 will not be eligible to fish for dolphin/wahoo unless they hold one of the "closed access" commercial permits. Furthermore, vessels with any federal permit that did not qualify for a dolphin/wahoo permit will be allowed an incidental harvest limit of 200 pounds annually when fishing North of the 39° North latitude line.

However, it is expected that vessels not meeting these qualifying criteria could recoup some of their forgone revenue by participating in other fisheries. At this time it is not possible to calculate the impact on vessel profitability of this proposed measure since information is not available regarding the economic dependence of these vessels on the dolphin/wahoo fishery nor is there available information on the operating cost of these vessels.

The requirement for operator permits (Action 5) would increase the costs to vessel owners only if the owner is the operator. This cost is expected to be around $50, and permits should be valid for three years. Action 4 will also increase the annual cost to vessel owners who qualify for a commercial dolphin/wahoo permit. A fee will be charged to cover the cost of administering this permitting process. This fee is currently $50 per application. The opportunity cost (time spent completing the application) is estimated at $5 per application. However, vessel owners holding other federal permits will only pay an additional $20 to receive an endorsement for dolphin and wahoo on their permits. For vessels that qualify for the dolphin/wahoo fishery these actions are unlikely to substantially reduce firm level profitability.

Action 11 that proposes to prohibit the sale of recreationally caught dolphin by the private recreational sector, and wahoo by the entire recreational sector will result in decreased revenue within the for-hire sector and the private recreational sector. It was not possible to estimate this loss with a great degree of accuracy, however it is expected that this short-term loss should not exceed $1.46 million in the first year. The 3,000 pound/1,000 pound trip limit for dolphin in the Atlantic EEZ (Action 14) could reduce annual revenue in the commercial sector by $312,961. A 20 inch minimum size limit for dolphin could reduce revenue in the commercial fishery by at least $45,092 (Action 15). Action 16 proposes a 500 pound trip limit on the wahoo fishery in the Atlantic EEZ, which could reduce commercial ex-vessel revenue by $2,360 annually. However, it is expected that some of these vessels will mitigate this loss by participating in other fisheries. A prohibition on the use of pelagic longline gear for dolphin and wahoo in the HMS closed areas (Action 20) could reduce revenue in the commercial fishery anywhere from $105,271 to $170,329. However, it is expected that some of these vessels will mitigate this loss by participating in other fisheries. It is not possible to estimate the average impact per vessel since there is no information to specifically determine the number of vessels in the fishery nor in each sector of this fishery. Also, at this time it is not possible to calculate the impact on vessel profitability of these proposed measures since information is not available regarding the economic dependence of these vessels on the dolphin/wahoo fishery nor is there available information on the operating cost of these vessels.

In summary, there could be some impact on the short-term profits of commercial and for-hire vessels that do not qualify for a commercial permit and increased costs for vessels that fish for these species from the requirements for operator permits and vessel permits, reduced revenue from trip limits and the dolphin size limit, and the impact on the pelagic longline fleet from the proposed closed areas. It is uncertain as to whether this proposed rule will have a significant impact on a substantial number of small business entities, therefore, and Initial Regulatory Flexibility Analysis (IRFA) is required.

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

Description of the reasons why action by the agency is being considered: Refer to Section 1.0, Purpose and Need. This fishery management plan includes the following measures: (1) Establish a management unit for dolphin and (2) Establish a management unit for wahoo to allow the Councils to manage these fisheries for sustainable benefits; (3) Require dealer permits, (4) Require for-hire and commercial vessel permits, (5) Require operator permits, and (6) Establish data reporting requirements to provide data on this fishery for better management and enable better enforcement of fisheries regulations. The requirement for vessel permits will also protect the vessels that have traditionally sold dolphin/wahoo and obtain a larger share of their income from commercial sale of these species; (7) Set Maximum Sustainable Yield (MSY), (8) Set Optimum Yield (OY), and (9) Define Overfishing to allow the Councils to monitor the status of the fishery and determine if actions are needed to prevent overfishing; (10) Establish a framework procedure for the dolphin and wahoo FMP to allow for a more flexible management system; (11) Prohibit sale of recreationally caught dolphin by the private recreational sector, and prohibit all sale of wahoo in the Atlantic EEZ to reduce the harvesting pressure on the resource and the health risks from sale of improperly handled fish; (12) Establish a cap on the commercial dolphin harvest in the Atlantic EEZ by sector at 87% for the recreational fishery and 13% for the commercial fishery to reduce future conflicts between user groups; (13) Establish a 10 fish recreational bag limit for dolphin in the Atlantic EEZ and (14) Establish commercial dolphin trip limits in the Atlantic EEZ to improve management of the stock, avoid future excessive harvest and market disruptions, and reduce the likelihood of localized depletion at certain times of the year; (15) Establish a minimum size limit for dolphin off Florida and Georgia to reduce potential enforcement problems; (16) Establish a 500 pound commercial wahoo trip limit in the Atlantic EEZ to improve management of the stock, avoid future excessive harvest and market disruptions, and reduce the likelihood of localized depletion at certain times of the year; (18) Specify a two fish bag limit for wahoo in the Atlantic EEZ to avoid excessive recreational harvest and reduce conflict with the commercial sector; (19) Specify allowable gear for dolphin and wahoo in the Atlantic EEZ to control entry into the commercial fishery, to reduce competition with entities currently in the fishery, and to avoid the potential for localized overfishing and increased by-catch; (20) Prohibit the use of pelagic longline gear within any time or area closure in the South Atlantic Council's area of jurisdiction for dolphin and wahoo (Atlantic Coast), which is closed to the use of such gear for highly migratory pelagic species, that would complement and facilitate the intended reduction of HMS bycatch and regulatory discards as well as enhance enforceability of the closure; (21) Specify a January 1-December 31 fishing year to aid in reporting requirements; (22) Specify Essential Fish Habitat for dolphin and wahoo in the Atlantic and (23) Habitat Areas of Particular Concern for Dolphin and Wahoo in the Atlantic to be able to enact measures that protect habitat that these species depend upon;

Statement of the objectives of, and legal basis for, the proposed rule: The following objectives are a part of these actions:
(1) **Address localized reduction in fish abundance**. The Councils remain concerned over the potential shift of effort by longline vessels to traditional recreational fishing grounds and the resulting reduction in local availability if commercial harvest intensifies; (2) **Minimize market disruption.** Commercial markets (mainly local) may be disrupted if large quantities of dolphin are landed from intense commercial harvest or unregulated catch and landings by charter or other

components of the recreational sector; (3) **Minimize conflict and/or competition between recreational and commercial user groups**. If commercial longlining effort increases, either directing on dolphin and wahoo or targeting these species as a significant incidental catch, conflict and/or competition may arise if effort shifts to areas traditionally used by recreational fishermen; (4) **Optimize the social and economic benefits of the dolphin and wahoo fishery.** Given the significant importance of dolphin and wahoo to the recreational sector throughout the range of these species and management unit, it is important to manage the resources to achieve optimum yield on a continuing basis; (5) **Reduce bycatch of the dolphin fishery.** Bycatch is a problem in the pelagic longline fishery. Any increase in overall effort, and more specifically shifts of effort into nearer shore, non-traditional fishing grounds by swordfish and tuna vessels, may result in increased bycatch of non-target species; (6) **Direct research to evaluate the role of dolphin and wahoo as prey and predators in the pelagic ecosystem**; and (7) **Direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries**.

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 dealers, and vessels in the commercial and recreational sectors engaged in the harvest of dolphin and wahoo in the U.S. Atlantic. In the Atlantic, commercial fisheries for dolphin consist primarily of longline and hook and line (which includes hand line, troll, rod and reel and electric reel). The hook and line portion of the commercial fishery is conducted similarly to the recreational hook and line segment, which is described under the recreational fisheries section. The longline component of the fishery consists of longliners that primarily target highly migratory species but may also catch dolphin and longliners that target dolphin directly.

At this time it is not possible to identify the entire universe engaged in these fisheries. An attempt was made to identify vessels landing dolphin and wahoo along the Atlantic coast of Florida. Analysis of the Florida trip ticket data indicated that 1617 vessels (unique vessel numbers) were found to have landed dolphin and/or wahoo on the Florida Atlantic coast during 1997-2001 (1056 in 1997-1999 only).

The measures in this proposed rule could have an impact on all entities or a subset of vessels. The fishery can be divided into: 1) Vessels that are in the for-hire sector that wi1l not qualify for a commercial vessel permit. These entities will be able to operate in the for-hire dolphin/wahoo fishery but will not be able to receive income from the commercial sale of dolphin; 2) Dealers in the dolphin/wahoo fishery who will bear the cost of the dealer permit and who will be required to submit reports on these fisheries; 3) For-hire vessels qualifying for a commercial permit that will be impacted by regulations on recreational fishing and commercial fishing. 4) Commercial vessels that qualify for a vessel permit that will be subject to the commercial fishing restrictions and the commercial fishing reporting requirements; 5) Commercial fishing vessels not qualifying for a permit that would bear the cost of forgone income from dolphin/wahoo sales.

The rule is likely to result in reduced income earned by these vessels to varying degrees. At this time it is not possible to identify the universe of affected entities nor estimate the size of these categories with any degree of accuracy.

Description of the projected reporting, record keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records: There will be some time costs associated with completing the permit applications for vessel permits, dealer permits, and operator permits. The time burden for completing the vessel permit application has been estimated at $5 per application. The proposed rule will require dealer reporting and a logbook reporting system for vessels commercially harvesting dolphin. In addition, further data needs as specified under the ACCSP will be required. All commercial harvesting entities and entities in the for-hire sector will have to meet these reporting requirements. The approximate burden cost for dealer reporting has been estimated at $12.50 per hour. The professional skills necessary to meet these requirements will not change relative to the level that all fishermen are familiar with and have previously used. Compliance will be monitored through existing systems established by the National Marine Fisheries Service and the U.S. Coast Guard.

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, for each proposed action there is a section on the rejected options. The economic impacts are calculated and/or described for each alternative, and where possible an assessment of the economic impact on small entities is included. The only actions that are likely to result in direct impact on these entities in the dolphin/wahoo fishery are addressed below. The following discussion provides the rationale for the Council's choice of each proposed action in comparison to the alternatives considered for that action item:

1. **Preferred Action 3** should discourage non–reporting and other forms of non-compliance with regulations which will not reduce the expected benefits from other management measures. This action will impose monetary and time cost to dealers from purchasing a dealer permit and submitting regular data reports to the National Marine Fisheries Service. However dealer information will improve economic analyses, and thus management decisions based on this additional information is expected to increased net economic benefits. In comparison, the no action alternative (Option 1) would not impose these costs on dealers. However, Option 1 would not result in increased benefits to society from improved data collection and analyses for better management of these fisheries.

2. **Preferred Action 4** is only expected to have a minor impact on vessels that do not qualify for a dolphin permit. Vessels that do qualify for a permit would incur an annual out of pocket cost not exceeding $50, and a time cost of $5 for completing the application. This measure is expected to slow the growth rate of capacity in the future in comparison to the no action alternative (Option 1). In addition, this measure will increase future economic benefits from better management based on data collected from the known universe of participants and better enforcement of fishing regulations. The Council set these criteria so as to protect the firms that have traditionally sold dolphin/wahoo and depend on these fisheries for a significant part of their income. Furthermore, the Council's intent was to reduce the level of private recreational sale and protect the public from improperly handled fish.

3. **Preferred Action 5** would ensure that vessel operators would be held accountable for federal fishery violations. If there is a permit sanction, that individual may not work in any capacity aboard a federally permitted fishing vessel during the sanction period. Thus, this measure should deter fishery violations. For vessel owners who are not operators this would enhance accountability of the vessel operators they employ and reduce their costs for fishery violations. For owner/operators this action will ensure that if convicted of a fishery management violation they could not work as an operator aboard another fishing vessel. Thus, the Council's preferred option is likely to effect higher compliance than Option 1. A reduction in the incidence of fishery management violations is likely to increase net benefits in the future from a reduction in enforcement costs, a reduction in the cost of the penalties (as a result of voluntary compliance), and gains from increased compliance with fishery management regulations. In comparison, the "no action" alternative is not likely to provide these benefits but there will be no vessel operator fee from implementing this rejected alternative.

4. **Preferred Action 11 i**n comparison to Option 1 will reduce revenue to the recreational sector by a total not expected to exceed $1.46 million. However, the revenue loss in the for-hire recreational sector will be lower than that resulting from implementation of Option 3 since for-hire operations will still be allowed to harvest and sell dolphin. During the 3-5 year phase out period, as specified under Option 2, the for-hire sector would earn higher revenue compared to the situation under the Councils' proposed measure. However, after the phase out period there would be no difference between Option 2 and Option 3 as there would be a prohibition on all recreational sale. If recreational sale results in "localized reduced prices" Option 3 and Option 2 (after the 3-5 year phase out period) would be more effective at preventing this occurrence than the proposed measure and Option 1. The effect on private recreational sale would be no different among this action and Options 2 and 3, since sale by the private recreational sector would be immediately prohibited. Compared to the "no action" alternative, it is expected that there will be reduced harvesting demand for dolphin and wahoo under the proposed action and if either Option 2 or Option 3 were to be implemented. The no action alternative (Option 1) would not address the problem of increased health risks from the sale of recreationally caught fish. The preferred alternative, Option 2 and Option 3 should all result in lowering this risk since they would all restrict recreational sale.

5. **Preferred Action 14** would result in decreased net revenue to those commercial vessels constrained by the trip limit. Option 2 does not specify a trip limit and thus could be more or less restrictive depending on the specific trip limit chosen. However, a trip limit could prevent a sector from exceeding its allocation. If this sector exceeds its allocation there could be reduced net economic benefits. In addition, a management measure that restricts harvest per trip could spread harvest of the "available resource" throughout a longer period and among a larger number of fishermen. If current harvesting practices result in localized "market flooding" net benefits would decrease under the no action option (Option 1).

6. **Preferred Action 15** could constrain harvest in both the recreational and commercial fisheries. This measure would reduce short-term net economic benefits to both recreational anglers and commercial fishermen. Long-term benefits could increase if in the future this measure results in higher quality fishing that is sustainable. If this measure is necessary to prevent growth overfishing then long term benefits will increase. In contrast, Option 1, "no action", would not result in short-term economic losses, however long-term benefits may not

be optimized if a minimum size limit is needed to "improve" the stock status or to prevent growth overfishing.

7. **Preferred Action 16** could reduce total revenue by $3,641 annually assuming there are no price changes. If this measure is necessary to prevent overfishing, prevent localized depletion, or to regulate market supply throughout the year, then economic benefits will increase. In contrast there would be no reduction in commercial ex-vessel revenue from the "no action" alternative (Option 1). Economic benefits could decrease if "no action" results in local market flooding and/or overfishing occurs in the future.

8. **Preferred Action 20** could result in a short-term reduction of $95,655 to $154,770 in revenue for those longline vessels that fish in the HMS proposed closed areas. These estimates only represent the expected losses from reduction in dolphin harvests and not the total reduction in ex-vessel revenue from all species. Regulatory Amendment 1 to the Atlantic Tunas, Swordfish, and Shark Fishery Management Plan established time/area closures for pelagic longline fishing targeting HMS species in the South Atlantic and Gulf of Mexico (HMS closed areas). The HMS closed areas in the South Atlantic region are the Florida Straits (Area between 31^{o} N and 24^{o} N latitude, and 79^{o} W longitude) year round and the Charleston Bump (the area between 31^{o} N and 34^{o} N latitude, and 76^{o} W longitude) from February 1 to April 30 (Map on page 44 and page 165 of Appendix D). In the future the affected longline vessels could respond by increasing effort to target dolphin and other species outside of the closed area in an effort to make up this lost revenue. This action could result in higher net benefits in the future only if these measures reduce the rebuilding time of the depleted HMS populations such that the future benefits outweigh these costs to the longline industry. Not taking action (Option 1) could have economic consequences if longline vessels redirect effort to dolphin and wahoo in the HMS closed areas. There would be no reduction in the bycatch of juvenile highly migratory species, and this situation could result in excessive harvest of dolphin and wahoo. Both effects may not optimize benefits to society. Keeping the HMS closed areas open to longlining for dolphin and wahoo could lead to increased enforcement costs from monitoring the activities of these vessels to ensure that they are not harvesting HMS in these areas.

5.0 ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS

Established policies and procedures of the SAFMC and the NMFS (Appendix N - Comprehensive Habitat Amendment (SAFMC, 1998c) provide the framework for conserving and enhancing essential fish habitat for dolphin and wahoo. Other Council essential fish habitat policies and procedures are included in their respective EFH documents. 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 Councils, 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 wetland habitat functions and values.

6.0 DOLPHIN AND WAHOO RESEARCH NEEDS

6.1 Essential Fish Habitat Research Needs

The following constitutes the basic structure of the Council's essential fish habitat (EFH) research and monitoring program contained in the Habitat Plan (SAFMC, 1998b). This general structure provides research recommendations 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.

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-Stevens 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 dolphin and wahoo habitat. In addition, research is needed to identify and evaluate existing and potential adverse effect on dolphin and wahoo 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.

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 and 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 synthesizing and providing timely scientific information to managers.

The Council worked with NMFS and other NOAA programs, including the Office of Ocean and Coastal Resource Management, Coastal Ocean Program, Center for Coastal Ecosystem Health (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, a list of research needs for dolphin and wahoo is included.

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, but also to NMFS mandated responsibilities in restoration planning and implementation.

6.1.3 Habitat Restoration Methods

Not applicable.

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 and this 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 (GIS) 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 basin-wide 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. Elements shown for each research area depict the stages and continuity of information required to develop a comprehensive database 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. In addition, the Council will support programmatic EFH research proposals when requested from and developed by NMFS SEFSC.

Habitat and species specific research needs identified in Council Fishery Management Plans are presented below for pelagic *Sargassum* habitat.

6.1.7 Prioritized EFH Research Needs for Dolphin and Wahoo

This determination was developed based on research needs identified through the Pelagic Water Column Workshop, Research and Monitoring Workshop, Settle (1997) and the NMFS Biological Opinion for the Sargassum FMP (SAFMC, 2002) as they apply to dolphin and wahoo.

1. What is the areal and seasonal abundance of pelagic *Sargassum* off the southeast U.S.?
2. Develop methodologies to assess remotely assess *Sargassum* 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 dolphin and wahoo?
5. Are there differences in abundance, growth rate, and mortality?
6. What is the age structure of all fishes that utilize pelagic *Sargassum* habitat as a nursery and how does it compare to the age structure of recruits to pelagic and benthic habitats?
7. Is pelagic *Sargassum* mariculture feasible?
8. Determine 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.
10. Quantify the contribution of nutrients to deepwater benthic habitat by pelagic *Sargassum*.
11. Studies should be performed on the abundance, seasonality, life cycle, and reproductive strategies of Sargassum and the role this species plays in the marine environment, not only as an essential fish habitat, but as a unique pelagic algae.
12. Research to determine impacts on the *Sargassum* community, as well as the individual species of this community that are associated with, and/or dependent on, pelagic *Sargassum*. Human-induced (tanker oil discharge; trash) and natural threats (storm events) to *Sargassum* need to be researched for the purpose of protecting and conserving this natural resource.
13. Develop cooperative research partnerships between the Council, NMFS Protected Resources Division, and state agencies since many of the needs to a) research pelagic *Sargassum*, and b) protect and conserve pelagic *Sargassum* habitat, are the same for both managed fish species and listed sea turtles.
14. Direct specific research to further address the association between pelagic *Sargassum* habitat and post-hatchling sea turtles

6.2 Prioritized Research Needs for Dolphin and Wahoo.

The determination is based on Prager, 2000 and SAFMC, 1998a research workshop recommendations.

Research needs include but are not limited to the following:

1. In the short-term effort should be directed at examining all existing seasonality (effort and landings), mean size, and life history data for dolphin from the northern area.
2. Additional data are needed to develop and/or improve estimates of growth, fecundity, etc. Research in this area is encouraged.
3. There are limited social and economic data available. Additional data need to be obtained and evaluated to better understand the implications of fishery management options.
4. Trophic data should be considered in support of an ecosystem management approach.
5. Essential fish habitats for dolphin and wahoo need to be identified.
6. An overall design should be developed for future tagging work. This could be done by the Working Group. In addition, existing tagging databases should be examined.
7. Long-term work should continue and expand on current research investigating genetic variability of dolphin populations in the western central Atlantic.
8. Observer programs should place observers on longline trips directed on dolphin. Catch and bycatch characterization, condition released (alive or dead), etc. should be collected. Observers could also be used to collect bioprofile data (size, sex, hard parts for aging, etc.).
9. High levels of uncertainty in inter-annual variation in abundance of dolphin should be investigated through an examination of oceanographic and other environmental factors.
10. Release mortality should be investigated as a part of the evaluation of the effectiveness of current minimum size limits in the dolphin fishery.
11. Establish a list serve for dolphin and wahoo which would facilitate research and the exchange of information.

Note: An additional recommendation of the workshop was to establish a regional working group to develop and implement a coordinated research program for dolphin and wahoo.

7.0 LIST OF PREPARERS

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SAFMC Dolphin Wahoo Workshop Report:
Dr. Hazel A. Oxenford, MAREMP, University of the West Indies, Barbados; Dr. Brian Luckhurst, Division of Fisheries, Bermuda; and Mr. Peter A. Murray, OECS, St. Lucia, West Indies served as editors of this report. South Atlantic Council Staff provided administrative support by serving as moderators, recording the workshop, transcribing summary minutes, typing the report, and providing funding for the three invited researchers. The proceedings were prepared by Gregg Waugh, Mike Jepson, and Kerry O'Malley.

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The following individuals were involved in workshops or on writing teams which developed essential fish habitat information presented in the SAFMC Habitat Plan (SAFMC, 1998b) which has been incorporated into this fishery management plan.

SAFMC Habitat Sub-Group Workshop (Pelagic Habitat - *Sargassum* and Water Column): Workshop #9 October 7-8, 1997

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Illustrations
Dolphin and wahoo 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."

8.0 LIST OF AGENCIES AND ORGANIZATIONS

Responsible Agencies

South Atlantic Fishery Management Council
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List of Agencies, Organizations, and Persons Consulted

SAFMC Dolphin/Wahoo Advisory Panel
SAFMC Law Enforcement Advisory Panel
SAFMC Habitat Advisory Panel
SAFMC Scientific and Statistical Committee
Maine Coastal Zone Management Program
New Hampshire Coastal Zone Management Program
Rhode Island Coastal Zone Management Program
Massachusetts Coastal Zone Management Program
Connecticut Coastal Zone Management Program
New York Coastal Zone Management Program
New Jersey Coastal Zone Management Program
Delaware Coastal Zone Management Program
Pennsylvania Coastal Zone Management Program
Maryland Coastal Zone Management Program
Virginia Coastal Zone Management Program
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Georgia Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida State Clearing House, Department of Community Affairs
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
Maine Department of Marine Resources
New Hampshire Fish and Game Department
Rhode Island Division of Fish and Wildlife
Massachusetts Division of Marine Fisheries
Connecticut Department of Environmental Protection
New York State Department of Environmental Conservation
New Jersey Division of Fish, Game and Wildlife Department of Environmental Protection
Delaware Department of Natural Resources and Environmental Control
Pennsylvania Fish and Boat Commission
Maryland Department of Natural Resources
Virginia Marine Resources Commission
Gulf and South Atlantic Fisheries Development Foundation
MAFMC & NEFMC
National Marine Fisheries Service
- Washington Office
- Office of Ecology and Conservation
- Southeast Region
- Northeast Region
- Beaufort Lab
- Charleston Lab
- Southeast Fisheries Science Center
- Northeast 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
National Coalition for Marine Conservation
Coastal Conservation Association of Florida
Center for Marine Conservation
National Fisheries Institute
Bluewater Fishermen
Florida Sea Grant
Atlantic States Marine Fisheries Commission
North Carolina Fisheries Association
Organized Fishermen of Florida
The Georgia Conservancy
Reefkeeper International
Harbor Branch Institute
Monroe County Commercial Fishermen, Inc.
Audubon Living Oceans Campaign

9.0 OTHER APPLICABLE LAW

9.1 Vessel Safety

PL. 99-659 amended the Magnuson-Stevens 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.

9.2 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 Councils 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 plan's impacts in previous sections, the Councils have concluded this plan is an improvement to the federal management measures for dolphin and wahoo. The Councils have determined the plan to be consistent with existing state Coastal Zone Management Plans to the maximum extent practicable.

This determination was submitted and deemed to consistent with the Atlantic responsible state agencies under Section 307 of the Coastal Zone Management Act administering approved Coastal Zone Management Programs in the states. The determination was submitted to state agencies in the Gulf of Mexico under Section 307 of the Coastal Zone Management Act administering approved Coastal Zone Management Programs in these states.

9.3 Endangered Species and Marine Mammal Acts

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 this fishery management plan will not likely adversely affect any listed and protected species under the Endangered Species Act (ESA) and Marine Mammals Protection Act (MMPA) in the action area including [Note: See Appendix F for the Councils detailed rationale.]:

Whales:	Date Listed
(1) Northern right whale- *Eubalaena glacialis* (ENDANGERED) (Critical Habitat Designated)	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)	12/2/70

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

Fish:	
(1) Shortnose sturgeon- *Acipenser brevirostrum* (ENDANGERED)	3/11/67

Seagrasses:	
(1) Johnson's seagrass- *Halophilia johnsonii* (THREATENED) (Critical Habitat Designated)	9/14/98

Species Proposed for Listing
None

Designated Critical Habitat
Right Whale: Between 31°15' N. Latitude (approximately the mouth of the Altamaha River, Georgia) and 30°15' N. Latitude (approximately Jacksonville Beach, Florida) from the coast out to 15 nautical miles offshore; the coastal waters between 30°15' N. Latitude and 28°00' N. (approximately Sebastain Inlet, Florida) from the coast out to 5 miles.

Proposed Critical Habitat
None

Candidate Species- Fish
Dusky shark *Carachahinus obscrurus*
Sand Tiger Shark *Odontaspis taurus*
Night Tiger Carachahinus signatus
Speckled hind *Epinephelus drummondhayi*
Atlantic sturgeon *Acipenser oxyrhynchus oxyrhynchus*
Mangrove rivulus *Rivulus mamoratus*
Opposum pipefish *Microphis barchyurus lineatus*
Key silverside *Menidia conchorum*
Golith Grouper (formerly Jewfish) *Epinephelus itajara*
Warsaw grouper *Epinephelus nigritus*
Nassau grouper *Epinephelus striatus*

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

Research efforts identifying use of *Sargassum* habitat by juvenile sea turtles is summarized in the *Sargassum* Fishery Management Plan (SAFMC, 2002).

9.4 Paperwork Reduction Act

The purpose of the Paperwork Reduction Act is to control paperwork requirements imposed on the public by the federal government. The authority to manage information collection and record keeping requirements is vested with the Director of the Office of Management and Budget. This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications.

The Council is proposing measures under this plan to require reporting, a vessel permit, operator's permit, and dealer permit.

9.5 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 plan.

9.6 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 plan and the environmental impact statement. A description of the affected environment is contained in Section 3.0 and Council recommendations for protection of essential fish habitat and are contained in Section 5.0.

The proposed plan is a major action having a significant positive impact on the quality of the marine and human environment of Atlantic, Caribbean and Gulf of Mexico. The proposed action will have a significant positive impact by taking a precautionary, risk averse approach in managing the dolphin and wahoo resources and their essential fish habitat and essential fish habitat-habitat areas of particular concern.

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 plan.

Overall, the benefits to the nation resulting from implementation of this fishery management plan 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.

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.

Controversial Effects

The proposed actions are expected to have significant controversial effects with prohibition of longlining in HMS closed areas and prohibition on the sale of recreationally caught fish. The Councils provided extensive opportunity for input by holding public hearings, receiving public comment at Council meetings, and by providing the opportunity for interested persons to provide written and email comments. During development of this plan, the Councils incorporated suggestions from the public and their advisory panels. Additionally, states incorporate public input into their management measures which the Council is requesting track 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 dolphin and wahoo resources and their essential fish habitat.

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. See Appendix F for the Councils detailed rationale.

Historical/Cultural Impacts

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

Endangered/Threatened Species Impacts

The proposed actions are not expected to have any negative effects on any endangered or threatened species or marine mammal population. See Appendix F for the Councils detailed rationale. Critical habitats, established under ESA, have been designated in the South Atlantic for the Northern Right Whale and Johnson's Seagrass. Therefore, the Councils concluded the proposed management measures will not 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 Councils and coordinate with State, Federal, regional, and international efforts to protect their essential fish habitat.

Effects of the Fishery on the Environment

Section 4.2 of the Habitat Plan contains a discussion on threats to essential habitat from fishing activities in the Atlantic. The Councils evaluated the effects of fisheries under their jurisdiction on the environment and concluded no other fishing activity impacts EFH for dolphin and wahoo except for the harvest of pelagic *Sargassum* in the Atlantic which the SAFMC considers to be a direct removal of dolphin and wahoo EFH and EFH-HAPCs. Implementation of the management measures to reduce, to the maximum extent practicable, the impact of fisheries on essential fish habitat for dolphin and wahoo is necessary under the *Sargassum* FMP or, if not through the *Sargassum* FMP, then implemented pursuant to action under the framework of this FMP.

Bycatch

Bycatch from the longline fishery has been recognized as a problem. Any increase in total effort redirected from swordfish, shark, and tuna fisheries on dolphin and wahoo or into nearshore areas to increase their catch of dolphin and wahoo, may increase overall bycatch.

Effort Directed at or From Other Fisheries

Measures proposed in this plan are intended to minimize the shift of vessels from other fisheries into the dolphin and wahoo fishery.

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Appendix F. .