

AMENDMENT 12
TO THE
REEF FISH FISHERY MANAGEMENT PLAN
FOR THE REEF FISH RESOURCES OF
THE GULF OF MEXICO
(Includes Regulatory Impact Review and Environmental Assessment)



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Abbreviations Used in This Document

ABC	Allowable Biological Catch	NMFS	National Marine Fisheries Service
ALARM	Automated Landings Assessment for Responsive Management	OY	Optimum Yield
AP	Advisory Panel	RFA	Regulatory Flexibility Act of 1980
CFMC	Caribbean Fishery Management Council	RFSAP	Reef Fish Stock Assessment Panel
Council	Gulf of Mexico Fishery Management Council	RIR	Regulatory Impact Review
EEZ	Exclusive Economic Zone	SAFMC	South Atlantic Fishery Management Council
E.O.	Executive Order	SBA	Small Business Administration
F	Fishing Mortality Rate (measured as an instantaneous rate)	SEFSC	Southeast Fisheries Science Center of NMFS
FMFC	Florida Marine Fisheries Commission	SEIS	Supplemental Environmental Impact Statement
FMP	Fishery Management Plan	SEP	Socioeconomic Panel
GMFMC	Gulf of Mexico Fishery Management Council	SMZ	Special Management Zone
IRFA	Initial Regulatory Flexibility Analysis	SPR	Spawning Potential Ratio
ITQ	Individual Transferable Quota	SSBR	Spawning Stock Biomass Per Recruit
KWCBA	Key West Charterboatman's Association	TAC	Total Allowable Catch
LEAP	Law Enforcement Advisory Panel	TED	Turtle Excluder Device
		YPR	Yield Per Recruit

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1.0 INTRODUCTION

Issues and alternatives in this amendment were originally part of the public hearing draft of Amendment 11. The Council did not have time to address all of the issues contained in Amendment 11 when it took final action at its May 1995 meeting. Consequently, those issues which were not addressed were rolled over into this Amendment. The issues in this amendment include:

- Amberjack Size and Bag Limits (section 6.0)
- Red Snapper Minimum Size Limits (section 7.0)
- Aggregate Bag Limit for Reef Fish (section 8.0)

The following issues were Also included in the public hearing draft of this amendment. In final action, the Council voted to retain the status quo on these issues, and they were subsequently removed from the final version of this amendment:

- Commercial Hook-and-Line Reef Fish Harvest by Shrimp Vessels
- Enforcement Issues
 - ▶ Exemptions to the Head and Tails Attached Rule:
 - Definition of Bait Allowed on Board
 - Possession of Reef Fish on Board for Personal Consumption
 - ▶ Permitted Dealers Transport Requirements
 - ▶ Recreational Bag Limit of Reef Fish on Commercial Vessels During Closures
- Amberjack Florida Compatible Season Closures
- Gag and Black Grouper Size Limits

No new issues or alternatives have been included in Amendment 12 that were not in the Public Hearing Draft of Amendment 11. However, the discussion and organization has been revised to improve readability. For each set of alternatives, the rationale/discussion, economic impacts and environmental consequences have been included together in the main sections of the amendment (sections 6.0-8.0) instead of spread out over three separate sections. The sections titled Regulatory Impact Review and Environmental Assessment contain discussion and analysis which is not specific to individual alternatives, and include the specific alternative discussions from the main sections by reference.

The sections titled "Purpose and Need for Action" and "Problems Requiring a Plan Amendment" provide a brief overview of the issues in this amendment. The section titled "Proposed Actions" lists the proposed alternatives for each issue. These sections can serve as an executive summary for the remainder of the document.

2.0 HISTORY OF MANAGEMENT

The Reef Fish Fishery Management Plan was implemented in November 1984. The regulations, designed to rebuild declining reef fish stocks, included: (1) prohibitions on the use of fish traps, roller trawls, and powerhead-equipped spear guns within an inshore stressed area; (2) a minimum size limit of 13 inches total length for red snapper with the exceptions that for-hire boats were exempted until 1987 and each angler could keep 5 undersize fish; and, (3) data reporting requirements.

The National Marine Fisheries Service (NMFS) has collected commercial landings data since the early 1950's, recreational harvest data since 1979, and in 1984 initiated a dockside interview program to collect more detailed data on commercial harvest. The first red snapper assessment in 1988 indicated that red snapper was significantly overfished and that reductions in fishing mortality rates of as much as 60 to 70 percent

were necessary to rebuild red snapper to a recommended 20 percent spawning stock potential ratio (SPR - See Section 5 below). The 1988 assessment also identified shrimp trawl bycatch as a significant source of mortality.

Amendment 1 to the Reef Fish Fishery Management Plan, implemented in 1990, set as a primary objective of the FMP the stabilization of long term population levels of all reef fish species by establishing a survival rate of biomass into the stock of spawning age to achieve at least 20 percent spawning stock biomass per recruit (SSBR), relative to the SSBR that would occur with no fishing. It set a red snapper 7 fish recreational bag limit and 3.1 million pound commercial quota that together were to reduce fishing mortality by 20 percent and begin a rebuilding program for that stock. This amendment also established a 5 fish recreational bag limit and 11.0 million pound commercial quota¹ for groupers, with the commercial quota divided into a 9.2 million pound shallow-water quota and a 1.8 million pound deep-water quota. A framework procedure for specification of TAC was created to allow for annual management changes, and a target date for achieving the 20 percent SSBR goal was set at January 1, 2000. This amendment also established a longline and buoy gear boundary inshore of which the directed harvest of reef fish with longlines and buoy gear was prohibited and the retention of reef fish captured incidentally in other longline operations (e.g. shark) was limited to the recreational bag limit. Subsequent changes to the longline/buoy boundary could be made through the framework procedure for specification of TAC.

Amendment 2, implemented in 1990, prohibited the harvest of jewfish to provide complete protection for this species in federal waters in response to indications that the population abundance throughout its range was greatly depressed. This amendment was initially implemented by emergency rule.

In November, 1990, NMFS announced that anyone entering the commercial reef fish fishery in the Gulf of Mexico and South Atlantic after a control date of November 1, 1989 may not be assured of future access to the reef fish fishery if a management regime is developed and implemented that limits the number of participants in the fishery. The purpose of this announcement was to establish a public awareness of potential eligibility criteria for future access to the reef fish resource, and does not prevent any other date for eligibility or other method for controlling fishing effort from being proposed and implemented.

At the direction of the Council, the Reef Fish Scientific Assessment Panel (RFSAP) met in March 1990 and reviewed the 1990 NMFS Red Snapper Stock Assessment. The recommendation of the panel at that time was to close the directed fishery because the Allowable Biological Catch (ABC) was being harvested as bycatch of the shrimp trawl fishery. No viable alternatives were identified that would achieve the 20 percent SPR goal by the year 2000 without closure of the directed fishery; because no means existed for reducing trawl bycatch. As a result, Amendment 3, implemented in July 1991, provided additional flexibility in the annual framework procedure for specifying TAC by allowing the target date for rebuilding an overfished stock to be changed depending on changes in scientific advice, except that the rebuilding period cannot exceed 1.5 times the generation time of the species under consideration. It revised the FMP's primary objective, definitions of optimum yield and overfishing and framework procedure for TAC by replacing the 20 percent SSBR target with 20 percent spawning potential ratio (SPR). The amendment also transferred speckled hind from the shallow-water grouper quota category to the deep-water grouper quota category and established a new red snapper target year of 2007 for achieving the 20 percent SPR goal.

During 1991 several regulatory amendments were implemented to adjust the TACs and quotas for reef fish:

¹ These values have been subsequently modified to correct for revisions adopted in the gutted to whole weight ratio. Historically, the conversion ratio used was 1.18, subsequently, the ratio has been corrected and 1.05 is used. This results in these values being 9.8, 8.2 and 1.6 million pounds respectively, for total, shallow-water and deep-water grouper quotas (e.g., $11.0 \div 1.18 \times 1.05 = 9.8$). There is no impact on the commercial fishery from the revision as fish have always been reported in gutted weight and that data is transformed to whole weight for NMFS records.

A July 1991 regulatory amendment provided a one-time increase in 1991 quota for shallow-water groupers from 9.2 million pounds to 9.9² million pounds. This action was taken to provide the commercial fishery an opportunity to harvest 0.7 million pounds that went unharvested in 1990 due to an early closure of the fishery in 1990. NMFS had projected the 9.2 million pound quota to be reached on November 7, 1990, but subsequent data showed that the actual harvest was 8.5 million pounds.

A March 1991 regulatory amendment reduced the red snapper TAC from 5.0 million pounds to 4.0 million pounds to be allocated with a commercial quota of 2.04 million pounds and a 7 fish recreational daily bag limit (1.96 million pound allocation) beginning in 1991. This amendment also contained a proposal by the Council to effect a 50 percent reduction of red snapper bycatch in 1994 by the offshore EEZ shrimp trawler fleet, to occur through the mandatory use of finfish excluder devices on shrimp trawls, reductions in fishing effort, area or season closures of the shrimp fishery, or a combination of these actions. This combination of measures was projected to achieve a 20 percent SPR by the year 2007. The 2.04 million pound quota was reached on August 24, 1991, and the red snapper fishery was closed to further commercial harvest in the EEZ for the remainder of the year. In 1992, the commercial red snapper quota remained at 2.04 million pounds. However, extremely heavy harvest rates resulted in the quota being filled in just 53 days, and the commercial red snapper fishery was closed on February 22, 1992.

A November 1991 regulatory amendment raised the 1992 commercial quota for shallow-water groupers from 8.2 million pounds to 9.8 million pounds, after a red grouper stock assessment indicated that the red grouper SPR was substantially above the Council's minimum target of 20 percent, and the Council concluded that the increased quota would not materially impinge on the long-term viability of at least the red grouper stock.

The 1992 commercial red snapper fishery opened on January 1 and closed after just 53 days when a derby fishery developed and the quota was quickly filled. An emergency rule, implemented in 1992 by NMFS at the request of the Council, reopened the red snapper fishery from April 3, 1992 through May 14, 1992 with a 1,000 pound trip limit. This rule was implemented to alleviate economic and social upheavals that occurred as a result of the 1992 red snapper commercial quota being rapidly filled. Although this emergency rule resulted in a quota overrun of approximately 600,000 pounds, analysis by NMFS biologists determined that this one time overrun would not prevent the red snapper stock from attaining its target SPR.

Amendment 4, implemented in May 1992, established a moratorium on the issuance of new reef fish permits for a maximum period of three years. The moratorium was created to moderate short term future increases in fishing effort and to attempt to stabilize fishing mortality while the Council considers a more comprehensive effort limitation program. It allows the transfer of permits between vessels owned by the permittee or between individuals when the permitted vessel is transferred. Amendment 4 also changed the time of the year that TAC is specified from April to August and included additional species in the reef fish management unit.

Amendment 5, implemented in February 1994, established restrictions on the use of fish traps in the Gulf of Mexico EEZ, implemented a three year moratorium on the use of fish traps by creating a fish trap endorsement and issuing the endorsement only to fishermen who had submitted logbook records of reef fish landings from fish traps between January 1, 1991 and November 19, 1992, created a special management zone (SMZ) with gear restrictions off the Alabama coast, created a framework procedure for establishing

² The corrected 1991 quota, using the revised conversion factor, was 8.8 million pounds. The corrected 1990 actual harvest was 7.6 million pounds.

future SMZ's, required that all finfish except for oceanic migratory species be landed with head and fins attached, established a schedule to gradually raise the minimum size limit for red snapper to 16 inches over a period of five years, and closed the region of Riley's Hump (near Dry Tortugas, Florida) to all fishing during May and June to protect mutton snapper spawning aggregations.

An October 1992 Regulatory Amendment raised the 1993 red snapper TAC from 4.0 million pounds to 6.0 million pounds to be allocated with a commercial quota of 3.06 million pounds and a recreational allocation of 2.94 million pounds (to be implemented by a 7 fish recreational daily bag limit). The amendment also changed the target year to achieve a 20 percent red snapper SPR from 2007 to 2009, based on the Plan provision that the rebuilding period may be for a time span not exceeding 1.5 times the potential generation time of the stock and an estimated red snapper generation time of 13 years (Goodyear 1992).

An Emergency Rule effective December 30, 1992 created a red snapper endorsement to the reef fish permit for the start of the 1993 season. The endorsement was issued to owners or operators of federally permitted reef fish vessels who had annual landings of at least 5,000 pounds of red snapper in two of the three years from 1990 through 1992. For the duration of the emergency rule, while the commercial red snapper fishery is open permitted vessels with red snapper endorsements are allowed a 2,000 pound possession limit of red snapper, and permitted vessels without the endorsement are allowed 200 pounds. This emergency action was initially effective for 90 days, and was extended for an additional 90 days with the concurrence of NMFS and the Council. A related emergency rule delayed the opening of the 1993 commercial red snapper season until February 16 to allow time for NMFS to process and issue the endorsements.

Amendment 6, implemented in June, 1993, extended the provisions of the emergency rule for red snapper endorsements for the remainder of 1993 and 1994, unless replaced sooner by a comprehensive effort limitation program. In addition, it allowed the trip limits for qualifying and non-qualifying permitted vessels to be changed under the framework procedure for specification of TAC.

A withdrawn 1993 Regulatory Amendment would have moved the longline and buoy gear restricted area boundary off central and south-central Florida inshore from the 20 fathom isobath to the 15 fathom isobath for a one-year period beginning January 1, 1994. It was withdrawn at industry's request by the Council in January 1994 amid concerns that it would lead to a quota closure and a concern by the NMFS Southeast Fisheries Science Center that there were inadequate experimental controls to properly evaluate the impact of the action.

An October 1993 Regulatory Amendment set the opening date of the 1994 commercial red snapper fishery as February 10, 1994, and restricted commercial vessels to landing no more than one trip limit per day. The purpose of this amendment was to facilitate enforcement of the trip limits, minimize fishing during hazardous winter weather, and ensure that the commercial red snapper fishery is open during Lent, when there is increased demand for seafood. The Total Allowable Catch (TAC) was retained at the 1993 level of 6 million pounds, with a 3.06 million pound commercial quota and 2.94 million pound recreational allocation. The shallow-water grouper regulations were also evaluated but no change was made. The shallow-water grouper TAC, which previously had only been specified as a commercial quota, was specified as a total harvest of 15.1 million pounds (with 9.8 million pounds allocated to the commercial quota) and 20 inch total length size limit for gag, red, Nassau, yellowfin and black grouper.

Amendment 7, implemented in February 1994, established reef fish dealer permitting and record keeping requirements, allowed transfer of fish trap permits and endorsements between immediate family members during the fish trap permit moratorium, and allowed transfer of other reef fish permits or endorsements in the event of the death or disability of the person who was the qualifier for the permit or endorsement. A proposed provision of this amendment that would have required permitted vessels to sell harvested reef fish only to permitted dealers was disapproved by the Secretary of Commerce and was not implemented.

Proposed Amendment 8 has been approved by the Council and is currently under review by NMFS. It will manage effort in the commercial red snapper fishery by restricting access to the fishery beginning in 1996, through an individual transferable quota (ITQ) system. Due to concerns by commercial fishermen about the impact of the proposed measures, the Council delayed consideration of this amendment until information could be collected (under Amendment 9) to determine eligibility and initial allocations to individual fishermen.

Amendment 9, implemented in July 1994, provided for collection of red snapper landings and eligibility data from commercial fishermen for the years 1990 through 1992. The purpose of this data collection was to evaluate the initial impacts of the limited access measures being considered under Amendment 8 and to identify fishermen who may qualify for initial participation under a limited access system. This amendment also extended the reef fish permit moratorium and red snapper endorsement system through December 31, 1995, in order to continue the existing interim management regime until longer term measures can be implemented. The Council received the results of the data collection in November 1994, at which time consideration of Amendment 8 resumed.

Withdrawn Amendment 10 would have extended the validity of additional fish trap endorsements for the duration of the fish trap moratorium that was implemented under Amendment 5. These additional endorsements were to have been issued under an emergency rule, requested in March 1994, to alleviate economic hardships after the Council heard from fishermen who entered the fish trap fishery after the November 19, 1992 cutoff date and stated that they were unaware of the impending moratorium. The Council rejected the proposed amendment in May 1994 after NMFS stated that it had notified fishermen of the pending moratorium and fish trap endorsement criteria during the time between Council final action and NMFS implementation if they asked about fish trap rules or if they requested application materials and NMFS was aware that it was for purposes of entering the fish trap fishery. The Council also considered arguments that the change in qualifying criteria circumvented the intent of the fish trap moratorium to halt expansion of the fish trap fishery at the November 19, 1992 level. After the Council rejected Amendment 10, NMFS subsequently rejected the emergency request.

An October 1994 proposed regulatory amendment retained the 6 million pound red snapper TAC and commercial trip limits and set the opening date of the 1995 commercial red snapper fishery as February 24, 1995. However, because the recreational sector exceeded its 2.94 million pound red snapper allocation each year since 1992, this regulatory amendment reduced the daily bag limit from 7 fish to 5 fish, and increased the minimum size limit for recreational fishing from 14 inches to 15 inches.

Amendment 11 has been approved by NMFS for implementation in January 1996. It will (1) limit sale of Gulf reef fish by permitted vessels to permitted reef fish dealers; (2) require that permitted reef fish dealers purchase reef fish caught in Gulf federal waters only from permitted vessels; (3) allow transfer of reef fish permits and fish trap endorsements in the event of death or disability; (4) implement a new reef fish permit moratorium for no more than 5 years or until December 31, 2000, while the Council considers limited access for the reef fish fishery; (5) allow permit transfers to other persons with vessels by vessel owners (not operators) who qualified for their reef fish permit; and (5) allow a one time transfer of existing fish trap endorsements to permitted reef fish vessels whose owners have landed reef fish from fish traps in federal waters, as reported on logbooks received by the Science and Research Director of NMFS from November 20, 1992 through February 6, 1994. A number of additional issues that were originally in Amendment 11 were not addressed by the Council when it approved the amendment. Those issues have been placed in Amendment 12.

A proposed regulatory amendment to set the 1996 red snapper TAC, dated December 1995, has been approved by the Council and is currently under review by NMFS. This regulatory amendment proposes to raise the red snapper TAC from 6 million pounds to 9.12 million pounds, with 4.65 million pounds allocated to the commercial sector and 4.47 million pounds allocated to the recreational sector. Recreational size and

bag limits will remain at 5 fish and 15 inches total length. The recovery target date to achieve 20 percent SPR is extended to the year 2019, based on new biological information that red snapper live longer and have a longer generation time than previously believed. This regulatory amendment also proposes eliminating the automatic increases in commercial red snapper size limit and restoring the commercial 14 inch red snapper size limit if similar provisions in Amendment 12 are not implemented in time for the 1996 commercial season.

3.0 PURPOSE AND NEED FOR ACTION

Greater amberjack are subject to size and bag limit rules that were set in Amendment 1 without a stock assessment or TAC specified. Sufficient biological data does not exist for NMFS to produce a stock assessment, but testimony from fishermen suggest that problems exist with the fishery. Without a stock assessment, the framework procedure for specification of TAC cannot be used, subsequently the rules can currently be changed only by another plan amendment. The testimony from fishermen suggests that a problem with the amberjack stocks is serious enough to warrant action through the plan amendment process. Commercial and recreational fishermen have suggested that changes to bag and size limits is an appropriate measure. The LEAP has requested that the greater amberjack rules be applied to all four amberjack species found in the Gulf because of the difficulty in differentiating between species. However, fishermen have requested that Almaco jack be excluded from any aggregate amberjack regulations because that species can be more readily identified.

Red snapper minimum size limit was set at 13 inches in Amendment 1. Amendment 5 established a schedule of biennial size limit increases that will eventually reach 16 inches in 1998 and maximize yield per recruit, according to NMFS stock assessments and based on a 33 percent release mortality of undersized fish. Commercial fishermen maintain that NMFS has underestimated release mortality, and that a return to the 13 inch size limit, or at least discontinuing the scheduled increases to 15 inches in 1996 and 16 inches in 1998, will reduce waste from release mortality and help to satisfy a market demand for pan sized fish.

For many reef fish species there is no bag limit and no basis on which to set a species specific bag limit. An aggregate bag limit for all reef fish species would eliminate an incentive to catch and sell large quantities of recreationally caught fish and would promote conservation of the resource on a proactive basis.

4.0 PROBLEMS REQUIRING A PLAN AMENDMENT

This amendment addresses several diverse issues within reef fish management. The problems addressed in each issue is are given below with reference to the section in the amendment.

AMBERJACK SIZE AND BAG LIMITS (Section 6)

There are four species of amberjack (*Seriola* sp.) in the Gulf that are similar in appearance (greater amberjack, lesser amberjack, Almaco jack and banded rudderfish), but the size and bag limits apply only to the greater amberjack, which makes enforcement difficult. Fishermen from the eastern Gulf of Mexico have testified that greater amberjack are in a state of decline and more restrictive harvest measures are needed to protect the stock. With insufficient biological information to conduct a stock assessment, any changes to the amberjack regulations must be implemented through a plan amendment rather than through the framework procedure.

RED SNAPPER MINIMUM SIZE LIMITS (Section 7)

The red snapper size limit is scheduled to increase to 15 inches for commercial fishermen in 1996,

and to 16 inches for all fishermen in 1998. Based on a 33 percent release mortality of undersized fish, 16 inches is the size that produces maximum yield per recruit. Commercial fishermen have suggested that the release mortality for commercial fishing, which occurs generally in deeper water than recreational fishing, is higher than 33 percent, which results in wasted resource at the larger size limit. Red Snapper size limits can be changed through the framework procedure for specification of TAC, but removal of the automatic increases requires a plan amendment.

AGGREGATE BAG LIMIT FOR REEF FISH (Section 8)

There is no bag limit for many reef fish species. This can allow recreational fisherman to catch large quantities of these reef fish and may provide an incentive to sell part of their catch. An aggregate bag limit for those species without a bag limit would place a cap on the number of reef fish that can be harvested by recreational fishermen.

5.0 PROPOSED ACTIONS

AMBERJACK SIZE AND BAG LIMITS (Section 6)

For the recreational fishery, greater amberjack, lesser amberjack, and banded rudderfish to be combined with a 1 fish bag limit and a 28 inch fork length minimum size limit, and for the commercial fishery status quo be retained of a 36 inch fork length minimum size limit for greater amberjack only.

RED SNAPPER MINIMUM SIZE LIMITS (Section 7)

Remove the provisions, for the commercial sector, for automatic red snapper minimum size limit increases to 15 inches total length in 1996 and 16 inches total length in 1998 that were implemented through Amendment 5 - [50 CFR 641.21(a)(1)(iii and iv)].

AGGREGATE BAG LIMIT FOR REEF FISH (Section 8)

Establish an EEZ aggregate daily bag (possession) limit of 20 fish per person for all reef fish species not having a bag limit, in addition to the bag limits for species or species groups regulated by bag limits. Persons on qualified charter or headboat trips in excess of 24 hours may possess 2 days' bag limits.

6.0 AMBERJACK SIZE AND BAG LIMITS

Proposed Alternative:

For the recreational fishery, greater amberjack, lesser amberjack, and banded rudderfish to be combined with a 1 fish bag limit and a 28 inch fork length minimum size limit, and for the commercial fishery status quo be retained of a 36 inch fork length minimum size limit for greater amberjack only.

Rejected Alternative 1: Law Enforcement Recommended Law:

Almaco jack, banded rudderfish, lesser amberjack and greater amberjack -- 28 inches total length for a fish taken by a person subject to the bag limit and 36 inches total length by a person not subject to the bag limit.

Rejected Alternative 2: Ad Hoc Red Snapper AP Recommendation:

Reduce the commercial size limit for greater amberjack to 32 inches fork length.

Rejected Alternative 3: Recommended by Ad Hoc AP Red Snapper AP and others:

Eliminate the minimum size limit for recreationally caught amberjack with a recreational bag limit of one amberjack of any species (Almaco jack, banded rudderfish, lesser amberjack and greater amberjack).

Rejected Alternative 4: Recommended by Key West Charterboatman's Association

Reduce the bag limit for greater amberjack from 3 per person to 1 per person, and exclude the captain and crew on charter boats from a recreational limit.

Rejected Alternative 5:

Increase the recreational size limit for greater amberjack from 28 inches to 36 inches.

Rejected Alternative 6:

Change the commercial size limit for greater amberjack from 36 inches fork length to 28 inches core length.

Rejected Alternative 7: Status Quo - Current Law: [50 CFR 641.21(a)(5) and 641.24(b)(4)]

Minimum Sizes: Greater amberjack - 28 inches fork length for a fish taken by a person subject to the bag limit and 36 inches fork length by a person not subject to the bag limit. No size limit on other amberjack species.

Bag limits. Daily bag limit is: Greater amberjack - 3. No bag limits on other amberjack species.

Rationale: Anecdotal information from eastern Gulf fishermen suggests that greater amberjack populations may be in a state of decline. Although this evaluation is not shared by fishermen from

the western Gulf, the observations of fishermen from southwest Florida are that average size and abundance of greater amberjack has declined in recent years. A reduction in the recreational bag limit was supported by a majority of persons who expressed an opinion on amberjack bag limits while testifying at the public hearings and Council meeting.

Some recreational fishermen suggested that the recreational size limit be eliminated completely, in order to shift some of the fishing pressure from greater amberjack to the other, smaller species. The Council rejected this suggestion because of the possibility that eliminating the size limit could result in increased fishing mortality of immature greater amberjack rather than effort shifting to other species.

Because of the difficulty of differentiating between greater amberjack, lesser amberjack and banded rudderfish, the Council proposes to combine these species under an aggregate size and bag limit. This will facilitate enforcement and compliance with the size and bag limits. The fourth amberjack species, Almaco jack, is more easily identified and is therefore excluded from the aggregate rule. Aggregating amberjack species under one set of rules was recommended by the Law Enforcement Advisory Panel (LEAP). The LEAP felt that the amberjack species fish are simply too similar in appearance to expect the public or law enforcement to be able to differentiate between the species.

Status quo is proposed for the commercial size limit. This size limit is already above the minimum size for maturity of greater amberjack. Because of the concerns and uncertainty about the current status of amberjack stocks, a reduction in the greater amberjack commercial size limit, as requested by some commercial fishermen, cannot be justified at this time. However, lesser amberjack, banded rudderfish and Almaco jack will continue to be excluded from the commercial size limit. Commercial fishermen have stated that of the three other amberjack species, Almaco jack is taken in significant quantities.

Fork length is retained as the method of measurement to avoid compliance problems that could be encountered if total length were used, e.g., the tail breaking off or confusion from different measuring methods used (tail in a natural position vs. tail with one lobe bent down).

The current amberjack rules were implemented through Amendment 1 in 1990. Because no stock assessment which estimates SPR or TAC exists for amberjack, the framework procedure for setting TAC cannot be used to change the existing regulations. The Council has requested that NMFS give a high priority to conducting a stock assessment of greater amberjack.

Discussion: The above alternatives address four issues:

- 1) Size limits
- 2) Bag Limits
- 3) Aggregating all species of amberjack
- 4) Measuring size in fork length or total length

The current greater amberjack EEZ rules are:

recreational minimum size limit - 28 inches fork length
commercial minimum size limit - 36 inches fork length
bag limit - 3 per person
(2 day limit allowed on charter/headboats)
reef fish vessel permit required for commercial harvest

no TAC, recreational allocation, quota or commercial trip limits

The current greater amberjack state size and possession rules are:
(All states have basic recreational and commercial license requirements)

Florida	recreational minimum size limit - 28 inches fork length commercial minimum size limit - 36 inches fork or 28 inches core length bag limit - 3 per person restricted species endorsement required for commercial no commercial trip limits
Alabama	minimum size limit - 28 inches fork length possession limit - 3 per person no commercial trip limits
Mississippi	recreational minimum size limit - 28 inches fork length commercial minimum size limit - 36 inches fork length recreational possession limit - 3 per person no commercial trip limits
Louisiana	recreational minimum size limit - 28 inches fork length commercial minimum size limit - 36 inches fork length (5% of commercially taken fish may be smaller than the legal limit) recreational possession limit - 3 per person (2 day limit allowed on charter/headboats) no commercial trip limits
Texas	minimum size limit - 32 inches total length bag/possession limit - 3/6 per person (applies to both commercial and recreational)

To differentiate between amberjack species, a person may need to check fish's gill rakers and count the fins' soft rays. The LEAP felt that these are the type of things that would be expected of a biologist, not the public.

This is the current professional guidance on distinguishing between greater amberjack and the other jacks. These descriptions are excerpts from Dr. Shipps' Guide to the Fish of the Gulf of Mexico identification book (Shipp 1986):

Greater amberjack has a small eye; its diameter is less than half the snout length. The greater amberjack has 12 to 15 gill rakers. The greater amberjack has 30 or fewer rays in the second dorsal fin.

Lesser amberjack has a large eye, the diameter of which is more than half the snout length. Lesser amberjack have about 23 or more gill rakers.

Banded rudderfish have bands until the fish is up to 14 inches, several inches longer than the size at which the pattern fades in other amberjacks. The banded rudderfish has 35 or more rays in the second dorsal fin.

Almaco jack, the first few rays of the soft part of the dorsal fin are way more than twice as long as the dorsal spines. The Almaco have about 23 or more gill rakers.

The LEAP questioned the reaction that could be expected from a judge when, upon being asked how an amberjack species was identified, the enforcement officer would explain that he had to remove gill rakers, or count between 30 and 35 soft fin rays, or determine if the eye is half the snout length.

The LEAP felt that commercial quantities of amberjacks other than greater amberjack are not typically caught. The Almaco jack, lesser amberjack and banded rudderfish are generally caught as a bycatch to other fisheries and do not bring high values.

If size limits were kept at the same numeric limits but measured as total rather than fork length the result would be to allow smaller fish to be kept. Thompson et al. (1992) reported the following length conversion for greater amberjack from Louisiana in centimeters:

$$TL(cm) = (1.13 * FL(cm)) + 1.68$$

Based on this conversion, converting to total length and keeping the current equivalent size limits for greater amberjack would require the following size limit changes:

28 inches **fork length** = 32 inches **total length** recreational limit
36 inches **fork length** = 41 inches **total length** commercial limit

If the same numerical values were kept and measured as total length rather than fork length, the impact would be to reduce the size limits to the following equivalent fork lengths:

28 inches **total length** recreational limit = 24 inches **fork length**
36 inches **total length** commercial limit = 31 inches **fork length**

Amendment 1 noted that the smallest reproductively active female and male greater amberjack observed was at 81 and 83 cm fork length (equal to 32 and 33 inches **fork length** or 37 and 38 inches **total length**). The average size of maturity was not reported, but would be greater than these minimum sizes.

Between 1979 and 1991, the average size of the other amberjack species caught has been (Cummings-Parrack 1993):

	<u>Commercial</u>	<u>Recreational</u>
lesser amberjack	20"-26" fork length	12"-20" fork length
Almaco jack	12"-30" fork length	7"-20" fork length
banded rudderfish	22" fork length	7"-19" fork length

Rejected Alternative 1 would eliminate from harvest most catches of the other amberjack species, since they generally do not reach even the adjusted size limits. The Council rejected aggregating species for commercial harvest because it felt that the 36 inch fork length size limit provides sufficient protection for greater amberjack for the commercial sector without the need to include other species. The Council excluded Almaco jack from the recreational aggregate limits because it can be more easily differentiated from the other species. The use of total length measurements was rejected for the reasons given in the rationale.

Rejected Alternative 2 would reduce the commercial greater amberjack size limit to 32 inches. As noted above, this is the smallest size at which a mature female amberjack has been found., and it leaves the commercial size limit 4 inches longer than the recreational size limit. The Ad Hoc Red Snapper AP felt that greater amberjack in the central and western Gulf generally are not 36 inches or larger. They suggested that the fish migrate as they age, with large fish being found only off south Florida, although one AP member indicated that his tagging information for released undersized (<28 inches) fish did not indicate migrations (800 tagged/200 recaptured). Cummings-Parrack (1993) noted that spawning greater amberjack have been collected off Louisiana and southeast Florida as small as 32 inches fork length or about 2-3 years old (Burch 1979, Thompson et al. 1992).

A geographical shift in amberjack landings has occurred since implementation of the current size limits. In the first four years after the amberjack size limits were implemented (1990-1993), Gulfwide annual commercial landings of amberjack averaged 2.0 to 2.5 million pounds, approximately the same range as the preceding four years (1986-1989) of 1.4-2.9 million pounds. However, landings from the Florida Keys/Southwest Florida have increased, while landings from the Florida panhandle to Texas have decreased. The range of annual landings (in thousands of pounds) for these regions is shown below (source: ALARM report, October 1994).

	<u>1986-1989 range</u>	<u>1990-1993 range</u>
Texas	105 - 182	28 - 180
AL, MS, LA	443 - 787	219 - 495
Florida panhandle	453 - 1,094	287 - 404
Florida Middle	213 - 467	228 - 426
Fla. Keys/SW Florida	214 - 580	850 - 1,242

Rejected Alternative 2 would likely result in a redistribution of harvest away from south Florida and back toward the central Gulf. The Council rejected this alternative because, given concerns and uncertainty about the status of the stock, it could not justify a size limit reduction at this time.

Rejected Alternative 3 would eliminate the recreational size limit and instead reduce the bag limit to 1 fish of any amberjack species. Cummings-Parrack (1993) estimated reductions for a number of bag limit options and estimated that a 1 fish bag limit would result in a 26 to 78 percent reduction in harvest for various recreational segments.

Estimated percent reduction in recreational catch for the Gulf greater amberjack for several bag limit options (N = number of observations). Source: Cummings-Parrack 1993.

Data Source/Fishery					
Bag Limit	MRFSS			NMFS	TPWD
Option	Charter	Private	Shore	Headboat	Private
1	77.8	8.2	0.0	26.0	44.7
2	59.1	0.0	0.0	8.0	26.9
3	54.2	0.0	0.0	1.0	16.1
4	0.0	0.0	0.0	0.0	9.1
5	0.0	0.0	0.0	0.0	0.0
N	34	5	1	727	9.0

However, the above estimates are based on the current recreational size limit. Eliminating the recreational size limit will allow fish to be kept that must currently be released. In the years 1979-1987, amberjack less than 28 inches fork length comprised more than 72 percent of the recreational harvest (Table 11.23 in Amendment 1). Eliminating the size limit will likely offset the impact of a reduced bag limit, but whether the net result would be more, less or the same amount of amberjack caught cannot be determined. Because of this uncertainty, the Council rejected this alternative.

Rejected Alternative 4 reduces the greater amberjack bag limit to one fish, excludes the captain and crew of a charter boat, and retains the size limit. Based on the above table, this will reduce recreational harvest by about one fourth. A reduction in the recreational amberjack bag limit to one fish was recommended by the Ad Hoc Red Snapper AP and by Key West Charterboatmen's Association (KWCBA). Applying size and bag limits equally to all amberjack species would eliminate confusion in species identification. In addition, the KWCBA noted a decline in the average size of greater amberjack from 45-60 pounds twenty years ago to a present day average of 20-30 pounds.

In contrast, Cummings-Parrack (1993) found average weight of greater amberjack increased during 1979-1991 in commercial and headboat fisheries, and was variable with no long term trend in other recreational fisheries. The range of mean weights reported by Parrack-Cummings was less than that reported by the KWCBA, ranging from 7-26 pounds in the recreational fishery and 7-44 pounds in the commercial fishery. Cummings-Parrack also stated that amberjack harvest exceeded production in 1987 and 1989. However, since 1986, two years of very good recruitment and two of moderate level have occurred. If a declining trend in yield from headboat and commercial fisheries continues or remains stable and if the current rate of exploitation in other recreational fisheries does not increase, stock sizes may increase. The Council's Proposed Alternative includes most of the features of this Rejected Alternative, except for the exclusion of Captain and crew of a charter boat. The impact of such an exclusion is unknown. Because that impact could not be determined, a similar proposal for red snapper was previously rejected by NMFS.

Rejected Alternative 5 increases the recreational minimum size limit for greater amberjack to the same size as commercial, 36 inches fork length. This is above the minimum size of observed mature fish, and well above the average size of recreational catches. Parrack (1993) reported the average size of recreationally caught amberjack to be between 19 and 32 inches from 1980 to 1992.

However, the average size of headboat caught amberjack has been increasing since 1989, and the average size from other recreational harvest has been increasing since 1987. Amendment 1 reported that prior to 1986, headboat anglers also harvested significant quantities of fish up to about 40 inches in length. The Council chose to reduce recreational effort through a reduced bag limit, which has popular support, rather than through an increased size limit.

Average size of recreationally caught amberjack, inches (Parrack 1993)		
Year	Headboat	Other
1979	42	37
1980	26	29
1981	27	21
1982	29	22
1983	20	29
1984	19	28
1985	30	19
1986	21	25
1987	23	22
1988	24	25
1989	20	26
1990	20	28
1991	27	29
1992	32	30

Rejected Alternative 6 measures the commercial size limit as a core length instead of a fork length. A 36 inch fork length size limit is equal 26 inches core length³. The 28 inch core length specified in the alternative would raise the size limit to an equivalent of 39 inches fork length.. Florida statutes define core length as the total length of a fish with the head removed, measured from the front center edge at the deheaded end to the rear center edge of the tail. In previous years coring was a common practice (personal comm. from Nancy Cummings-Parrack). However, under Amendment 5, removal of the head or tail is prohibited, making this alternative moot.

Rejected Alternative 7 would retain the status quo. Although an SPR estimate for amberjack does not exist, the Council felt that the testimony from fishermen was strong enough to suggest that there has been a decline in amberjack stocks, and steps to decrease the harvest rate are warranted at this time.

³ core length (cm) = (0.69 * fork length (cm)) + 2.9 - personal communication from Richard Beaver, Florida DEP/FMRI

Economic Impacts: The difficulty of distinguishing between various species of amberjack has been reported to create confusion among the fishing public and enforcement personnel. Such confusion can be minimized either by eliminating size limits on these species or, if size limits are necessary, by making such size limits uniform on these species. In the latter case, differentiating between commercial and recreational size limits is probably manageable from an enforcement standpoint so long again as all such species are subject to the same rule. Alternative 1 would fall into this second case in which the size limit rule is the same on the mentioned species although differentiated between commercial and recreational sectors. Alternative 3 would fall into the first case but supplants the size rule with a bag limit. The Proposed Alternative is a combination of these two alternatives, with the qualification that Almaco jack is not subject to the recreational size and bag limits and the commercial size limit applies only to greater amberjack.

While the Proposed Alternative would simplify enforcement and compliance in the recreational sector, applying the current size limit on greater amberjacks to the other amberjack species would have adverse impacts on participants of the recreational fishery. Parrack (1993) reported that between 1979 and 1991 the average sizes of the other amberjack species caught by recreational anglers were mostly below 28 inches. In this case, the Proposed Alternative would virtually prohibit recreational harvest of a substantial number of these species. Reductions in anglers' consumer surpluses are bound to accompany such reduction in catch. If such virtual prohibition on the harvest of these other species translates to reductions in trips taken on for-hire vessels, these vessels will experience reductions in revenues and consequently in profits since operational costs will be about the same. A reduction in bag limit from 3 to 1 fish would likely affect mainly the harvest of greater amberjack. Parrack's (1993) bag limit analysis estimated that a 1 fish bag limit would reduce recreational harvest by as much as 78 percent for the charter mode, 26 percent by headboat mode and 8 to 45 percent by private mode. Such reduction in bag limits then would result in further cuts on consumer surpluses and for-hire vessel profits. While we may expect some future gains from such change in management, the extent of such gains is not known. Some knowledge in this regard may be obtained when stock and economic assessments are conducted on this segment of the reef fishery.

As with the case of the Proposed Alternative, enforcement and compliance may be simplified under Alternative 1, but applying the current size limit on greater amberjacks to the other amberjack species would have adverse impacts on both the commercial and recreational sectors. Parrack (1993) reported that between 1979 and 1991 the average sizes of the other amberjack species caught by both recreational and commercial sectors were mostly below 28 inches. In this case, Alternative 1 would virtually prohibit the harvest of a substantial number of these species by both the commercial and recreational sectors. Reductions in commercial profit and in consumer surpluses are bound to accompany such reduction in catch. Again the extent of future gains from such management change is not known.

While it is logical to expect that Alternative 2 would result in an increase in commercial harvest of greater amberjacks, at least in the short run, it is also possible that a reduction in size limit would affect the relative distribution of commercial landings of this species. The 36-inch size limit on greater amberjacks was implemented in 1990. Commercial landings fell from 2.2 million pounds in 1989 to 1.1 million pounds in 1990. Commercial landings further declined in 1991 at 787 thousand pounds but rose in 1992 at 1.4 million pounds. The relative distribution of landings also changed after the imposition of the 36-inch size limit, with increased landings in the Florida Keys and decreased landings in the northern Gulf. There is then some possibility that while total commercial landings may increase due to a reduction in size limit, landings in the northern Gulf may increase faster than those in other areas. In this case, fishing operations may become more profitable considering that cost may not increase while total revenues will. The northern Gulf may experience relatively higher change in profitability than other areas.

While Alternative 3 may simplify enforcement on the recreational side, the 1-fish bag limit may entail a relatively large reduction in recreational harvest. Cummings-Parrack (1993) estimated that a 1-fish bag limit on greater amberjack would reduce catches of the species ranging from 8 percent for private fishing mode (45 percent in Texas) to 78 percent for charter fishing mode. Eliminating the size limit would temper the reduction in catch due to the reduction in bag limit. But since Alternative 3 applies to all amberjack species there is some possibility that the elimination of the size limit may not fully offset the reduction due to a lower bag limit. Such reduction in catch would translate to reductions in profits of the for-hire sector and in consumer surplus of anglers.

The nature and extent of such reductions in profits and consumer surplus partly depend on the importance of amberjack as target species by for-hire vessels and anglers. Amberjack is one of four major species group targeted by party boats in the Gulf (Ditton et al., 1992). The other species groups are snapper, grouper, and mackerel. Party boats in Florida target amberjack more than party boats in other states. Although amberjack is not targeted by charter boats as much as by party boats, it is also an important species for charter boats operating out of Alabama and Florida (Holland et al., 1992). It thus appears that party boats would be adversely impacted more than charter boats, and party and charter boats in Florida would be adversely impacted more than their counterparts in other states. The case of party boats being adversely impacted more than charter boats appears to be not supported by the bag limit analysis showing a greater reduction in harvest for charter boats than for party boats. There is some possibility, however, in this case that while charter boats catch more greater amberjack, party boats may be targeting other species of amberjack. The long-term effects of Alternative 3 is not known although, to the extent that one may expect the stock to receive some protection, future benefits may be derived.

Alternative 4 would have about similar effects as Alternative 3, although the magnitude of effects of the former would likely be larger, primarily because the current size limit is retained. Additionally, excluding captains and crews of charterboats from the bag limit rule in the sense that these individuals are not allowed to keep amberjacks would further reduce catch of charter boats. The resulting short-run reductions in benefits would consequently be greater. Long-run gains from this measure are not known.

Alternative 5 would raise the size limit for recreationally caught fish well above the average of fish caught in recent years. This alternative would then have the likelihood of significantly reducing recreational catch probably beyond what a one-fish bag limit would do. In this case, consumer surplus would substantially fall. Future gains from the measure are not known.

Alternative 6 would change the enforcement activities since the method of measuring fish is changed. More importantly from an impact side, this measure would raise the size limit for greater amberjack on commercial catch. The fact that some fishermen, especially those members of the Council's advisory panels requested a lower size limit for greater amberjacks indicates that this measure would result in some catch reductions to the commercial sector, which would most likely translate in revenue, if not profit, reductions.

Adoption then of the Proposed Alternative may be expected to result in short-run losses in recreational consumer surpluses and in for-hire vessel profits. The commercial fishery is minimally affected by this alternative. The long-run gains from this alternative is not known in the absence of stock and economic assessments for this segment of the fishery.

Environmental Consequences:

Physical Environment: The alternatives presented in this section will have no impact on the physical environment.

Human Environment: The Proposed Alternative eliminates the need to identify amberjack (other than Almaco jack) to the species level and will improve compliance with size and possession limits. Reducing the bag limit to 1 amberjack of any of the three species, greater amberjack, lesser amberjack or banded rudderfish reduce the recreational harvest of greater amberjack, probably on the order of 26 to 78 percent, based on the analysis by Cummings-Parrack (1993), and will essentially eliminate most recreational harvest of lesser amberjack and banded rudderfish. However, leaving the smaller amberjack species without a size limit leaves open the potential for juvenile greater amberjack to be landed, misidentified as other species. The Proposed Alternative increases harvest restrictions on the recreational sector. This increase in restrictions was supported by a majority of recreational fishermen and charter operators from the eastern Gulf of Mexico who testified on this issue, but opposed by charter operators from the western Gulf who felt that amberjack stocks in their region was not in a decline.

Fishery Resources: There is no stock assessment of Gulf stocks of amberjack, and the current status of the stocks is unknown. The Proposed Alternative will prevent the recreational landing of undersized greater amberjack that have been misidentified as lesser amberjack or banded rudderfish, and in combination with the reduced bag limit, will reduce recreational harvest of greater amberjack. The Proposed Alternative will also reduce recreational catches of lesser amberjack and banded rudderfish since their average size is less than the minimum size limit. Because the current recreational harvest of these species is not known, the extent of the reduction cannot be determined.

Impact on Other Fisheries: The Proposed Alternative may, as a result of decreased harvest on amberjack species, shift effort to other reef fish species, but will otherwise have no direct impact on other living marine resources.

Effect on Wetlands: The alternatives presented in this section have no effect on wetlands.

7.0 RED SNAPPER MINIMUM SIZE LIMITS

Proposed Alternative: Remove the provisions, for the commercial sector, for automatic red snapper minimum size limit increases to 15 inches total length in 1996 and 16 inches total length in 1998 that were implemented through Amendment 5 - [50 CFR 641.21(a)(1)(iii and iv)].

Rejected Alternative 1: Reduce the red snapper minimum size limit to 13 inches total length.

Rejected Alternative 2: Reduce the red snapper minimum size limit to 13 inches total length for the commercial fishery only.

Rejected Alternative 3: Status Quo. Retain the minimum size limits at 14 inches total length for the commercial fishery and 15 inches total length for the recreational fishery, with increases for all sectors to 15 inches total length in 1996, and 16 inches total length in 1998.

Rationale: Amendment 5 created a series of biennial size limit increases that will raise the minimum size limit for red snapper to an eventual 16 inches total length. This is the size that will maximize yield per recruit and biomass yield from the stock, assuming a 33 percent release mortality, thereby benefiting the restoration program. The commercial red snapper industry feels, however, that NMFS has underestimated the release mortality from the commercial sector. The commercial fishery may fish further offshore than the recreational sector. Fast retrieval and sudden decompression associated

with the use of power reels may also contribute to a higher mortality for commercially caught fish. Also, a 13 inch fish is a more desirable size for the market. The Ad Hoc Red Snapper AP recommended that the 13 inch size limit be restored. However, in the absence of positive information that release mortality is higher than assumed, there may be a greater benefit to the commercial fishery from keeping the size limit regulation stable at 14 inches. If release mortality is higher than assumed, then the minimum size limit that produces maximum yield per recruit will be smaller.

The Proposed Alternative does not change the current 14 inch commercial red snapper limit, nor does it prevent the Council from making annual changes in the future through the framework procedure. It simply removes the automatic increases that would occur in 1996 and 1998 in the absence of Council action. **However, this management measure cannot be implemented through this amendment before January 1, 1996.** Under the proposed red snapper ITQ system, a derby fishery and quota closure is unlikely. Size limit changes are therefore not needed to control the rate of commercial fishing, and the size limit can be set at that which optimizes biological and economic benefits.

The automatic increase to 16 inches in 1998 for the recreational sector remains in place. Anecdotal information suggests that release mortality may be lower for at least some recreational fishermen than for commercial fishermen, which would improve the effectiveness of an increased minimum size limit to increase yield per recruit. In the absence of a framework adjustment, the minimum size limits will remain at 14 inches total length for the commercial fishery and 15 inches total length for the recreational fishery.

Discussion: Amendment 5 established a schedule of biennial one-inch size limit increases to raise the red snapper minimum size limit from 13 inches to 14 inches in 1994, 15 inches in 1996, and 16 inches in 1998. The 15 inch size limit for the recreational fishery was implemented in 1995, ahead of schedule, as part of a regulatory change to keep the recreational sector within its 2.94 million pound allocation. However, even further restrictions will be needed for the recreational sector in the future as average size and number of successful trips increase.

The following discussion is based on the 1994 red snapper stock assessment. The 1995 assessment changed the biological parameters used to assess red snapper size limits. For a discussion of the most recent information regarding size limits, refer to the size limit discussion in, "Regulatory Amendment to the Reef Fish Fishery Management Plan to Set 1996 Red Snapper Total Allowable Catch" (GMFMC 1995).

NMFS analysis indicated that with a 6 million pound TAC, the 20 percent SPR goal could be achieved if the size limit were 16 inches. The 16 inch size limit is within the range of sizes determined to achieve 99 percent of the maximum yield per recruit, assuming a 33 percent release mortality of undersized fish (The size range, from figure 69 of Goodyear 1992, was about 15-19 inches). This yield per recruit was also dependent on reducing fishing mortality to a rate of about $F=0.2$. At the current fishing mortality rate of $F=0.346$ for the most heavily exploited age 3 age group (from table 90 of Goodyear 1994), neither 99 percent nor 95 percent of maximum yield per recruit cannot be achieved at any size limit. A 90 percent yield per recruit can be achieved with sizes ranging from about 14-21 inches, but 20 percent SPR can be achieved only at the upper end of that range. (The constant TAC recovery policy will gradually reduce fishing mortality as stock size increases but harvest remains the same.)

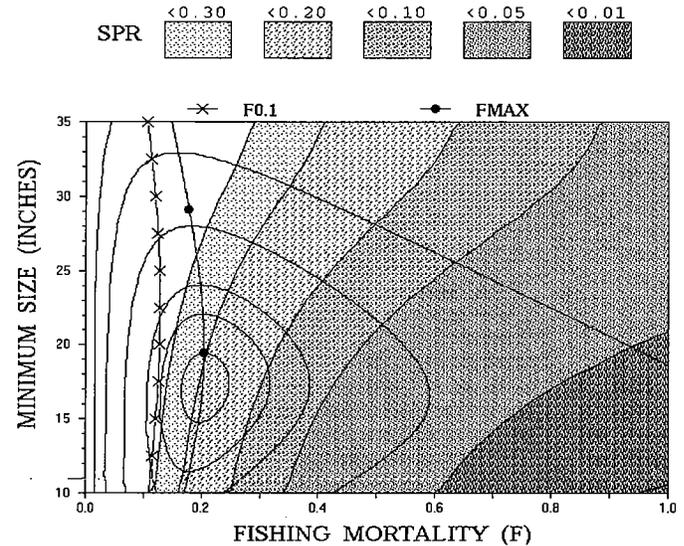


Figure 2. Yield and SPR for red snapper in the absence of any shrimp trawl discard mortality as a function of minimum size and F for a release mortality of 0.33. Yield isopleths represent 99%, 95%, 90%, 75%, 50% and 25% of maximum yield per recruit (from figure 69 in Goodyear 1994).

If release mortality is higher than assumed, then the minimum size for maximum yield per recruit will be smaller. Conversely, if release mortality is lower (or the maximum age is higher than in the current assessment), the minimum size will be larger. Based on the above yield curve, a 20 percent SPR can be achieved with a 13 inch size limit provided the fishing mortality rate is reduced to between $F=0.18$ to 0.28 , or between 52-80 percent of the current rate. This would necessitate a reduction in TAC.

Economic Impacts: The Proposed Alternative would virtually hold the minimum size limit on red snapper for the commercial sector at the current limit of 14 inches. In this sense its impacts would not be different from the current situation, but would forestall any reduction in commercial profits that would materialize under the status quo. Alternative 1 would appear to be beneficial to both the commercial and recreational sectors. On the commercial side, a reduction in size limit from the current limit of 14 inches (to increase to 15 and 16 inches in 1996 and 1998, respectively) would enable the fishermen to re-open the market for smaller sized red snapper. On the recreational side, a reduction from the current limit of 15 inches (to increase to 16 inches by 1998) would enable this sector to harvest more fish and/or fish at shorter distances from shore. Alternative 2 would have similar impacts as Alternative 1 only that the changes are confined to the commercial sector. In order however, to determine the likely direction of short-run and long-run net benefits from the various alternatives, it is instructive to recall the effects of the current size limits when they were proposed.

When the current size limits were proposed it was argued that an increase in size limit from 13 inches to 14 inches and eventually to 16 inches could be expected to negatively impact the harvest of fish of both commercial and recreational users in the short run. Recreational harvest of red snapper varies in number and weight by fishing mode and state. For 1991, the average weight across all states and

fishing modes of recreationally harvested red snapper was about 2.07 pounds (Goodyear, 1992). This would approximately correspond to a little over 16 inches in total length. On average then, the impact of an increase in size limit up to 16 inches on the recreational sector would not be very substantial. One may note, of course, that the idea of an average size of fish caught indicates that some fish caught by anglers were smaller than 16 inches and so would have to be discarded when the appropriate size limit takes into effect. Among the states, Texas recreational anglers which caught fish of an average weight of 1.79 pounds in 1991 would be adversely affected by the increase in size limit. Among the fishing modes, the headboat anglers (mainly in Texas) which caught an average weight of 1.93 pounds would be negatively impacted by a size limit of 16 inches. Lower size limits may not have a substantial impact on anglers using this fishing mode. Although in terms of catch, an increase in size limit may not directly translate in catch reduction, recreational anglers may be compelled to increase their fishing cost or experience less valuable fishing trips. In this sense, consumer surplus may decline in the short run. The marketability of fishing trips by charter and head boats may also be adversely impacted in the short run by less valuable fishing trips brought about by a size limit increase. More recent data, however, indicate that the size limit increase for the recreational sector has not reduced the sector's total catch, although it may have partly slowed down the rate of increase in catch.

The commercial sector has caught and sold red snapper in the 1 to 2 pound category. With a gradual increase in size limit to 16 inches, this category will be eventually lost to imports unless states do not change their size regulations to be compatible with the proposed change in size limits in federal waters. The red snapper pricing system among red snapper dealers in the Gulf is described in Amendment 5. Such a pricing system is based on information collected from 10 major dealers around the Gulf that supply most of the information for monitoring the red snapper quota (Antozzi, per. com., 1993). According to this survey, dealers historically used from one to four tiers of pricing red snapper based on pound sizes, with one to two tiers being the most common. Whatever the tier system used, the 2-4 pound category generally commanded premium price over smaller or larger sizes. The 1-2 pound category commanded premium price when a two tier system was used, but secondary price with three to four tiers. Given the information that a two-tier system is most common, it is not readily ascertainable whether a 1-2 pound fish commanded higher prices than 2-4 pound fish since both sizes are listed as commanding premium prices. Considering that ex-vessel demand is derived from consumer demand through wholesale demand, wholesale prices (consumer prices are not available) would be highly indicative of red snapper ex-vessel price structure. Information from the Fulton Fish Market shows that at least from 1987 through 1992, wholesale prices for medium size (presumed to be 1-2 pounds) red snapper had been higher than those for smaller sizes (Waters, 1992). This could very likely mean that ex-vessel prices for 2-4 pound sizes had been higher than for those of smaller sizes for the period mentioned. Incidentally, this was the type of information that the Council's Socioeconomic Panel (SEP) had when they discussed the impacts of size limit increase on the most highly priced fish size category (SEP, 1992). On the other hand, information for 1993 appears to indicate that the 1-2 pound fish command higher wholesale prices (Antozzi, 1993). By a similar reasoning as above, this implies higher ex-vessel prices for smaller size than for larger size categories.

Both demand and supply factors have a role on this apparent price reversal. Demand considerations related to the price structure of red snapper are more difficult to pin down. Although an empirically estimated demand function for snappers in the Southeast is available (see Keithly and Prochaska, 1985), it provides only very general quantitative relationships between snapper price, snapper landings, imports, and income. Since such estimation was done for a different purpose it understandably lacks the necessary detail to address such issues as price differentials for various sizes of red snapper. Nonetheless, such estimates show that the demand for snappers is relatively inelastic, indicating that large changes in total quantity of snapper landings are associated with small

changes (in opposite direction) in snapper price. In many public hearings held throughout the Gulf, it has been contended that 1-2 pound red snappers command a relatively higher demand especially among restaurants. While such claim is supportive of the premium price smaller snappers commanded in the 1993 open fishing season, it does not appear to support the premium price attached to 2-4 pound sizes in previous years. A change in demand could have possibly occurred in 1993, but there is no information to support this claim.

In view of the foregoing, we turn our attention to supply factors to explain the mentioned price reversal. Holding demand constant, one possible explanation for the price reversal is that the supply of 1-2 pound fish in 1993 must have been relatively low relative to those of previous years and relative to the 1993 supply of larger fish. Although both imports and domestic landings of red snapper (or close substitutes) affect overall supply, there is not much that can be said about imports due to lack of information. Turning to domestic landings, we recall the discussion in Amendment 5 regarding strong 1989 and 1990 year classes of juvenile red snapper, with the former about twice as abundant as the latter year class. By the beginning of 1993, the 1989 and 1990 year classes averaged about 16.7 and 13.1 inch (TL) size. We may also note that a 1-2 pound fish is smaller than 16 inches (TL) in size. Although it remains to be fully validated by an examination of commercial landings by size categories, there appears some reason to believe that in 1993 there was a relatively higher supply of larger sized fish, and this resulted in lower prices for this size category relative to smaller size fish. By 1994, the 1989 and 1990 year classes will average about 19.8 and 16.7 inches (TL) in length so that larger size fish would then command lower prices than smaller fish if the 1991 year class were not as strong as the 1989 or 1990 year classes. Similar price conditions would exist in later years if subsequent year classes were not also strong. Hence, under the condition that the 1989 and 1990 year classes dominate subsequent year classes, catches of larger fish would be very likely higher and thus would depress prices for these size categories. Hence, an increase in size limit on top of a commercial quota would reduce the short-run revenues of commercial fishermen mainly because revenue losses from reduced sales of smaller snappers would not be outweighed by revenue gains from increased sales of larger snappers. The net effect on profitability, however, also depends of what happens to fishing cost under such condition. In the absence of cost information, we can only focus on general cost changes. If larger size fish becomes more abundant under the scenario depicted above, fishing time could be reduced and thus cost would also be reduced. However, there is also a compensating increase in cost brought about by the added work of discarding undersize fish and by the possibility that fishing vessels may need to travel farther offshore to catch the legal size snappers. It is likely then that a higher size limit would bring about an increase in cost. Hence, the size limit increase may be expected to effect a reduction in short-run profits to the commercial sector due to a reduction in revenue and increase in cost. We hasten to add, however, that such reduction in profit is more likely to be effected more by a reduction in revenue than by an increase in cost.

To complete the picture, the short-run losses described above have to be contrasted with the long-term impacts of a size limit increase. It may be stated at the start that such short-run losses could be maintained over a longer period if a higher size limit plays a minimal role in a long-run increase or in forestalling a reduction in TAC, commercial quota, and recreational bag limit (through regulatory changes).

The long-run impacts of the size limit increase on fishery participants largely depends on the biological outcome of the measure. Increasing the size limit is expected to increase the yield per recruit and eventually the level of harvest of red snapper. First time spawners are given more protection with an increasing size limit. Indeed an increase in size limit may be expected to increase the release mortality which is currently considered to be 33 percent. As mentioned in Amendment 5, a more recent analysis of the proposed size limits shows that the target SPR of 20 percent would be achieved sooner, or conversely, a shrimp trawl bycatch reduction of 50 percent could be implemented

in 1995. Since, as also mentioned in Amendment 5, the target bycatch reduction is very unlikely to be achieved in 1994, the proposed size limit increase becomes the major remaining policy variable that management can control to achieve the long-run objective for red snapper management under the current TAC level of 6.0 MP and bycatch reduction in 1995. If the size limit is maintained at current level, the target SPR can only be reached if the TAC is reduced provided the bycatch reduction is implemented in 1995. If both the current size limit and TAC are maintained, then a larger bycatch reduction would be required to achieve the target SPR by 2009. Although the bycatch reduction is the single most important factor in the achievement of the target SPR, research studies along this line are still on-going. At this stage then, we can only assume that the 50 percent (not more) target bycatch reduction can be implemented in 1995. Under this scenario, the choice facing management in order to achieve the target SPR by 2009 is either a reduction in TAC with the same size limit or an increase in size limit with the same TAC. From this standpoint, it can be asserted that an increase in size limit plays an extremely important role in at least maintaining the same TAC over the recovery period.

A lower TAC means a reduction in commercial quota and recreational allocation and bag limit. It is highly probable that the commercial sector would suffer larger profit losses with lower quota and the same size limit than with higher size limit and the same quota. Under a higher size limit, the potential average revenue losses would be on the order of about 10 to 25 cents a pound corresponding to the price differential between small and large snappers. On the other hand, a lower quota with the same size limit would translate to average revenue losses on the order of \$1.75 to \$3.00 (actually more than these due to inflexibility of demand) a pound corresponding to the price of red snapper prevailing in the market. Although costs also play a role here, it is safe to assert that cost reductions under a lower quota would not be enough to outweigh revenue losses. As argued earlier, an increase in size limit would be accompanied by some cost increase, however profit reduction would be effected more by revenue reduction than by cost increase. Given the foregoing the less costly approach at least over the period of recovery is an increase in size limit than a reduction in commercial quota.

The long-run differential impact of an increase in size limit versus a reduction in bag limit on recreational anglers is not as determinate as that for the commercial sector. The situation is confounded by the lack of demand information for red snapper and the contrasting findings of demand estimates for other recreational fisheries in the Gulf. Green (1989) estimated the recreational demand in the red drum fishery and found statistically significant relationship between trips and catch rate per angler. A similar relationship was found by Milon (1989) for the king mackerel fishery. In contrast, Milon (1993) found no such relationship existed when he re-estimated king mackerel recreational demand using more recent data. In all three studies, changes in size limits were not examined. Thus while Green (1989) and Milon (1989) would lead us to believe that changes in bag limit would affect consumer surplus, Milon (1993) would lead us to conclude that the relationship between changes in bag limit and consumer welfare would be essentially a random event. In reviewing Milon's 1993 study the SEP (1993) noted that although there may be no relationship between trips and catch per angler for those already in the fishery, increased participation in the mackerel fishery appeared to indicate that benefits in terms of an increase in the number of anglers were associated with increased abundance. If the SEP remark is carried over to the red snapper fishery, it could imply that changes in abundance as reflected through changes in bag limits or size limits would affect total benefits in terms of changes in participation in the recreational fishery. The immediate implication of this in relation to the issue at hand is whether changes in size limit affect the perception of potential red snapper anglers more than bag limit changes. In the most recent Council meetings (July 12-15, 1993), a party boat captain testified that given the choice between an increase in size limit and reduction in bag limit, the former is more favorable to the for-hire business. This could be interpreted to mean that the number of angler trips would be affected less by an increase in size limit than by a reduction in bag limits. In the light of Milon's 1993 study and

the SEP's remark, such relationship would be more relevant in terms of increased participation than in terms of trips per angler. It can then be concluded that at least over the period of red snapper recovery, a size limit increase would result in greater net consumer welfare than a reduction in bag limit.

Despite the qualitative nature of the foregoing discussion, it appears that short-run losses due to a size limit increase would be outweighed by long-term benefits. Conversely then lowering the size limit to 13 inches for both the commercial sector (Alternative 1) or only for the commercial sector (Alternative 2) would have the opposite effects. Maintaining the size limit for the commercial fishery at 14 inches (Proposed Alternative) would forestall reductions in short-run profits but possibly at the expense of a declining long-term profits.

Environmental Consequences:

Physical Environment: The alternatives presented in this section will have no impact on the physical environment.

Human Environment: Commercial fishermen have stated that a 13 inch red snapper is a more desirable size for the market. Maintaining the existing 14 inch commercial size limit may help to satisfy a market demand for the smaller, pan-sized fish. However, having a smaller size limit for the commercial sector than for the recreational sector could increase a perceived user conflict, since recreational fishermen may feel that the commercial sector is getting a chance to catch red snapper before they do. During public testimony, several persons who testified recommended that the commercial and recreational sectors have the same size limit.

Fishery Resources: With a 33 percent release mortality, maintaining a size limit of 14 inches will reduce the yield per recruit that could be obtained relative to 16 inches. However, if the release mortality is higher than assumed, maximum yield per recruit occurs at a lower minimum size. Conversely, if the release mortality is lower than assumed, maximum yield per recruit occurs at a higher minimum size. Anecdotal information received by the Council suggests that commercial release mortality is higher and recreational release mortality lower than 33 percent. If this is true, then reducing the minimum size limit for the commercial fishery only may still allow the overall harvest to attain maximum yield per recruit. However, when an increased release mortality is factored into the stock assessment, the likely outcome will be a lower estimate of current SPR and a possible reduction in TAC needed to achieve the recovery goal.

Impact on Other Fisheries: Eliminating the scheduled increase in size limit will lead to an increased rate of harvest. If an ITQ system is not implemented, commercial red snapper fishermen will catch their allocation of red snapper more quickly, which may increase the amount of time that red snapper fishermen target alternative species such as vermilion snapper, increasing fishing mortality on those species as well.

Effect on Wetlands: The alternatives presented in this section have no effect on wetlands.

8.0 AGGREGATE BAG LIMIT FOR REEF FISH

Proposed Alternative: Establish an EEZ aggregate daily bag (possession) limit for all finfish of 20 fish per person of reef all fish species not having a bag limit, in addition to the bag limits for species or species groups regulated by bag limits. Persons on qualified charter or headboat trips in excess of 24 hours may possess 2 days' bag limits.

Rejected Alternative 1: Establish an EEZ aggregate daily bag limit for all reef fish species of 20 fish per person which shall include no more than the following:

- 5 Red Snapper*
 - 5 Grouper in Aggregate*,
 - 10 Snapper in Aggregate (excluding red, lane and vermilion snapper)
 - 3 Greater Amberjack,
- and such reef fish limits as may established by regulatory or plan amendment.

Rejected Alternative 2: Establish an EEZ aggregate daily bag limit for all finfish of 20 fish per person which shall include no more than the bag limit for each species or species group, as prescribed by federal rule. (Bait is excluded).

Rejected Alternative 3: Status Quo - specify bag limits separately by species or species group.

Rationale: The Proposed Alternative will improve enforceability of commercial reef fish harvest regulations by preventing non-permitted fishermen from harvesting commercial quantities of those species under the pretense of recreational fishing, which might then be then subsequently sold. It will also serve as a pro-active conservation measure to prevent an uncontrolled increase in harvest of species for which no regulations or stock assessments exist. This measure applies only to reef fish. Species not in the reef fish fishery which do not have a bag limit can continue to be caught in unlimited quantities. Thus, this measure will not prevent fishermen from catching their own bait, such as cigar minnows or sardines.

The aggregate bag limit applies only to those species that don't have their own bag limit. In combination with the existing species bag limits, this measure allows a large enough recreational harvest so as not to affect most legitimate recreational fishing activities. Since most targeted species already have bag limits, this would affect mainly the catch of incidental, or bycatch, species. In this respect, the Proposed Alternative functions as a means to control bycatch in the recreational fishery.

An aggregate bag limit can also simplify recreational fishing regulations by reducing the need for a multitude of individual species bag limits. Some recreational fishermen may have difficulty identifying large numbers of species. By placing bag limits only on those species in need of individual limits for conservation or allocation purposes, an aggregate bag limit can provide protection for a large number of species without the need for fishermen to learn a complex array of bag limits and species identification factors.

Discussion: The Council currently has established the following EEZ bag limits per person for reef fish species or species groups:

- 5 Red Snapper*
- 5 Grouper in Aggregate (except jewfish)*

- 3 Greater Amberjack
- 10 Snapper in Aggregate (excluding red, lane and vermilion snapper)

*Denotes bag limits that may be changed under TAC procedure.

In addition, the following non-reef fish finfish species have EEZ bag limits (per person except where noted):

- 2 Cobia
- 2 King mackerel
- 5 Small Coastal Sharks
- 4 Large coastal or Pelagic Sharks per vessel
- 10 (or state limit of) Spanish mackerel
- 2 bluefin tuna per permitted person

The current bag limit rules leave the recreational possession (on the water) unregulated for all other species. Commercial fishermen fishing on a vessel with a reef fish vessel permit are exempted from possession of only a bag limit for reef fish. Persons on commercial vessels utilizing trawls, entangling nets and longlines in the longline/buoy prohibited area (e.g., for sharks) are limited to possession of a bag limit of reef fish while that gear is on board. However, for some species there is no bag limit so unlimited quantities can be retained. Because there is no bag limit for certain species (e.g., vermilion snapper), there is speculation that recreational fishermen with large catches may occasionally sell part of their catch.

The Florida Marine Fisheries Commission has requested that a number of species bag limits be adopted in federal waters for compatibility with Florida state rules. This request will be considered in a future plan amendment. The bag limits and species for which Florida has requested compatible regulations are:

- 5 Hogfish
- 10 Vermilion Snapper
- 3 Red Porgy
- 2 Cubera Snapper
- 2 Mutton Snapper
- 1 Tilefish
- 1 Snowy Grouper

The level of 20 reef fish specified in the Proposed Alternative was suggested by the Council to place a cap on harvest of unregulated species. This level provides a very liberal bag limit for each angler and probably is substantially in excess of average catches. It provides a conservation function only in rare instances where fish are extremely abundant and for fishermen who are prone to harvest all the fish they can. It reduces the probability of recreational fishermen landing commercial quantities of reef fish that don't have bag limits. The Council's general policy is that recreational fishermen are limited to a bag limit designed to allocate that resource among fishermen over an annual period and that the fish cannot be sold.

Rejected Alternative 1 provides for the aggregate bag limit to include no more than a daily bag limit including those species for which separate bag limits have been established. As with the Proposed Alternative, species that are not in the reef fish management unit would be excluded from the aggregate limit. This seems particularly appropriate for red snapper and the groupers for which annual TACs are set and recreational allocations are specified. It is also appropriate for greater

amberjack which were allocated using bag and size limits on a basis designed to maintain SPR at 20 percent. The inclusion of separate bag limits for other species within the overall aggregate bag limit is a Council option as a conservation measure for those species, but information on the status of these stocks is not as definitive.

Rejected Alternative 2 would go a step further and include all finfish harvested from the EEZ within the aggregate daily bag limit of 20 fish per angler. That measure would include specific bag limits for certain species within the aggregate bag limit, for example, no more than two king mackerel, five small coastal sharks, etc. The measure would provide an overall cap for conservation purposes on daily recreational harvest. After the measure is established and over time as recreational fishing effort increases, it may be necessary to reduce the aggregate bag limit level. The measure is similar to that established under the Reef Fish FMP that required landing of all finfish (except certain large species) with heads and fins intact. However, Council has been advised by NOAA General Counsel that a bag limit on species outside of the reef fish fishery cannot be implemented through the Reef Fish FMP.

Rejected Alternative 3 would provide that bag limits be established separately for each species or species group, with no bag limits on other species. This would leave in place the existing problems of harvest of commercial quantities of reef fish from vessels without a reef fish permit.

Economic Impacts: Recreational fishermen catch a motley of species, although some of these fishermen are known to be targeting directly certain species, such as red snapper and red grouper. Table 8.1 of Amendment 1 shows the historical harvest of some reef fish species caught by recreational fishermen.

We may expect that more restrictive regulations on one species would prompt anglers to target or catch and/or keep substitute species that are otherwise less regulated. Such effort shift may protect one species but possibly at the expense of another. In this regard, the various alternatives to status quo may be seen as ways of addressing shifts in fishing effort that may harm other species. In that way the benefits from a restrictive regulation on one species may not be fully offset by the overfishing of another.

Among the alternatives to status quo, the Proposed Alternative is the least stringent. In fact, as more and more species become regulated with specific bag limits, the allowable number of fish that can be kept increases. Alternative 2 is the most restrictive, with the aggregate bag limit remaining the same even as more species specific bag limits are imposed. An important feature of this alternative is that since it applies to all finfish, other finfish not regulated presently or in the future will automatically be regulated as more bag limits are developed for regulated finfish, such as reef fish and coastal migratory pelagics.

The appropriateness of 20 or some other number as an overall bag limit cannot be determined. Among others, this would require an biological assessment of the major species found in the bag of most recreational fishermen. On top of that, an economic assessment would have to be undertaken to determine the resulting cost and benefits of restricting the total number of fish a recreational angler may be allowed to harvest. The economic impacts of such limit on the for-hire sector also need to be undertaken.

Based on 1993 and 1994 MRFSS data only Holiman (1995) developed frequency tables (see Appendix A) for recreational catch and landings of reef fish not subject to bag limits. A 20 fish bag limit on selected reef species not currently subject to bag limits would adversely affect as much as 4.42 percent if based on 1993 data or 4.49 percent if based on 1994 data of angler trips that landed

fish. The magnitude of impacts would be proportional to the number of fish caught above 20; that is, trips that caught 21 fish would be impacted less than those that caught 195 fish. It may be noted here that, as shown in the Appendix, some of the species considered as non-bag limit species are proposed to be subject to bag limits under this plan amendment. In that event the impact of a 20 fish bag limit would be less than the numbers mentioned above.

A recently completed study by Greene, Moss and Thunberg (1994) found that on a single day trip of anglers targeting or catching reef fish, significantly less than 20 reef fish and non-reef fish are kept for all modes of fishing, except shore mode. For this last mode of fishing, anglers kept an average of 34 reef and non-reef fish. The potential impact then of the alternatives imposing an aggregate bag limit of 20 fish would mainly fall on those anglers fishing from shore. Noting that the average expenditure for a days fishing through this mode is relatively small, the immediate impact of any of the proposed options to limit the aggregate recreational catch would be relatively small.

Environmental Consequences:

Physical Environment: The alternatives presented in this section will have no impact on the physical environment.

Human Environment: The Proposed Alternative places a limit on the total number of reef fish that can be harvested by a recreational fishermen. This limit applies to all reef fish that have no species bag limit. Since it is a fairly liberal bag limit, the immediate impacts on the resource would be small or none, but it would prevent abuses of the resource by fishermen who are prone to harvest all they can.

Fishery Resources: The Proposed Alternative would have no impact on species that are already subject to a bag limit, but would restrain recreational catch in all reef fish that do not have a bag limit. The status of most of these stocks is unknown.

Impact on Other Fisheries: The Proposed Alternative applies to all reef fish and restrains recreational harvest on all reef fish species. It does not affect species outside of the reef fish fishery, and could result in some effort shifting to species that continue to have no bag limit if the aggregate reef fish bag limit is reached.

Effect on Wetlands: The alternatives presented in this section have no effect on wetlands.

9.0 REGULATORY IMPACT REVIEW

9.1 Introduction

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

The RIR also serves as the basis for determining whether any proposed regulations are a "significant regulatory action" under certain criteria provided in Executive Order 12866 and whether the proposed regulations will have a "significant economic impact on a substantial number of small business entities" in compliance with the Regulatory Flexibility Act of 1980 (RFA).

This RIR analyzes the probable impacts on fishery participants of the proposed plan amendment to the Fishery Management Plan for Reef Fish Resources of the Gulf of Mexico (FMP).

9.2 Problems and Objectives

The general problems and objectives are found in the FMP, as amended. The purpose and need for the present plan amendment are found in Sections 4.0 and 5.0 of this document. The current plan amendment addresses the following issues: 1) amberjack size and bag limits, 2) red snapper minimum size limits, and 3) aggregate bag limit for reef fish.

9.3 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. To the extent practicable, the net effects are stated in terms of producer surplus to the harvest sector, net profits to the intermediate sector, and consumer surplus to the final users of the resource.

In addition to changes in the surpluses mentioned above, there are public and private costs associated with the process of changing and enforcing regulations on the reef fish fishery.

Ideally, all these changes in costs and benefits need to be accounted for in assessing the net economic benefit from management of reef fish. The RIR attempts to determine these changes to the extent possible, albeit in a qualitative manner.

9.4 Impacts of Proposed Alternatives

The economic impacts of the individual alternatives are discussed in the main section (Sections 6.0-8.0) of this amendment under each of the alternatives. The subsection "Economic Impacts" comprises the major part of this RIR and is included herein by reference.

9.5 Government Costs of Regulation

The preparation, implementation, enforcement and monitoring of this or any federal action involves the expenditure of public and private resources which can be expressed as costs associated with the regulations. Costs associated with this amendment include:

Council costs of document preparation, meetings, public hearings, and information dissemination	\$ 15,000
NMFS administrative costs of document preparation, meetings and review	7,000
Law enforcement costs	None
Public burden associated with permits	None
NMFS costs associated with permits	None
TOTAL	\$22,000

The cost items above have been identified as the likely cost to be incurred in preparing and implementing this plan amendment.

9.6 Determination of a Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is likely to result in: a) an annual effect on the economy of \$100 million or more; b) a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions; or c) significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

In 1994, the entire Gulf commercial reef fish harvest sector landed reef fish with an ex-vessel value of about \$43 million. There is no current valuation of the harvest of reef fish by the recreational sector. Because the measures considered in this amendment do not significantly affect the total revenues generated by the commercial sector or the harvest of the recreational sector, a \$100 million annual impact due to the measures is not likely to happen. Some measures in this amendment, such as size limits on amberjacks, gag and black grouper, may tend to raise the price to consumers and cost to producers. But other measures, such as size limit on red snapper may bring about opposite effects.

Based on the foregoing, it is concluded that this regulation if enacted would not constitute a "significant regulatory action."

9.7 Determination of the Need for Initial Regulatory Flexibility Analysis

Introduction

The purpose of the Regulatory Flexibility Act is to relieve small businesses, small organizations, and small governmental entities from burdensome regulations and record keeping requirements. The categories of small entities likely to be affected by the proposed plan amendment are commercial harvest and dealer operations and recreational for-hire operations in the reef fish fishery. The impacts of the proposed action on these entities have been discussed above. The following discussion of impacts focuses specifically on the consequences of the proposed action on the mentioned business entities.

An Initial Regulatory Flexibility Analysis (IRFA) is conducted to primarily determine whether the proposed action would have a "significant economic impact on a substantial number of small entities." Although an IRFA focuses more on adverse effects, determination of beneficial significant effects is also an integral component of the analysis. In addition to analyses conducted for the Regulatory Impact Review (RIR), the IRFA provides an estimate of the number of small businesses affected, a description of the small businesses affected, and a discussion of the nature and size of the impacts.

Description of Economic Impact on Small Entities

In general, a "substantial number" of small entities is more than 20 percent of those small entities engaged in the fishery (NMFS, 1992). As of 1995 there are 1,532 active commercial reef fish permits issued. There are about 838 charter vessels and 92 party boats operating in the Gulf area. The number of recreational anglers in the Gulf targeting reef fish is not known; however state records show there are about 2.1 million recreational licenses issued by the five Gulf states. The Small Business Administration (SBA) defines a small business in the commercial fishing activity as a firm with receipts of up to \$2.0 million annually. Since the proposed action will affect all participants of the reef fish fishery in the Gulf area, the "substantial number" criterion will be met.

Economic impacts on small business entities are considered to be "significant" if the proposed action would result in any of the following: a) reduction in annual gross revenues by more than 5 percent; b) increase in total costs of production by more than 5 percent as a result of an increase in compliance costs; c) compliance costs as a percent of sales for small entities are at least 10 percent higher than compliance costs as a percent of sales for large entities; d) capital costs of compliance represent a significant portion of capital available to small entities, considering internal cash flow and external financing capabilities; or e) as a rule of thumb, 2 percent of small business entities being forced to cease business operations (NMFS, 1992).

The proposed changes on recreational size and bag limits for amberjack species and aggregate bag limit for finfish not subject to bag limits may impinge on the revenues of the for-hire sector, but the magnitude of this effect is not known. The proposed change on size limit for red snapper could prevent reductions in revenues and profits to the commercial harvest sector although the magnitude of such effect cannot be measured with existing information. The proposed aggregate bag limits could impose additional compliance costs on the for-hire vessels, but whether such additional cost is more than 5 percent of current operation costs of these for-hire vessels cannot be ascertained. To the extent, however, that most of the impacts of the aggregate bag limit falls on the private mode of fishing, the potential increase in operation cost to the for-hire sector may not be substantial. Considering that all participants in the commercial reef fishery and for-hire sector of the fishery may be deemed small business entities, the issue of big versus small business operations is not relevant

in determining distributional/regional effects of regulations, and it thus also rules out disproportionate effects on capital costs of compliance.

It can be inferred from the foregoing discussion that the measures proposed in this amendment would not result in a significant economic impact on a substantial number of small entities in the reef fish fishery. On this account, an IRFA is not required.

11. OTHER APPLICABLE LAW

11.1 Habitat Concerns

Reef fish habitats and related concerns were described in the FMP and updated in Amendments 1 and 5. The actions in this amendment do not affect the habitat.

11.2 Vessel Safety Considerations

A determination of vessel safety with regard to compliance with 50 CFR 605.15(b)(3) will be requested from the U.S. Coast Guard. Actions in this amendment are not expected to affect vessel safety.

11.3 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. The proposed changes in federal regulations governing reef fish in the EEZ of the Gulf of Mexico will make no changes in federal regulations that are inconsistent with either existing or proposed state regulations.

While it is the goal of the Council to have complementary management measures with those of the states, federal and state administrative procedures vary, and regulatory changes are unlikely to be fully instituted at the same time.

This amendment is consistent with the Coastal Zone Management programs of the states of Alabama, Florida, Louisiana, and Mississippi to the maximum extent possible; Texas does not have an approved Coastal Zone Management program. This determination will be submitted to the responsible state agencies under Section 307 of the Coastal Zone Management Act administering approved Coastal Zone Management programs in the states of Alabama, Florida, Mississippi, and Louisiana.

11.4 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 record keeping requirements is vested with the Director of the Office of Management and Budget. This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications.

The Council does not propose, through this amendment, to establish additional permits or modify existing permit criteria. On this account, there are no public reporting burdens associated with this plan amendment.

11.5 Federalism

No federalism issues have been identified relative to the actions proposed in this amendment. Therefore, preparation of a federalism assessment under Executive Order 12612 is not necessary.

12.0 LIST OF AGENCIES AND PERSONS CONSULTED

The following agencies have been consulted on the provisions of this amendment:

Gulf of Mexico Fishery Management Council: Standing and Special Reef Fish Scientific and Statistical Committees
Reef Fish (Red Snapper) Advisory Panel
Reef Fish (Other Reef Fish) Advisory Panel

Coastal Zone Management Programs: Louisiana
Mississippi
Alabama
Florida

National Marine Fisheries Service: Southeast Regional Office
Southeast Fisheries Science Center

Florida Marine Fisheries Commission

13.0 PUBLIC HEARING LOCATIONS AND DATES

The issues and alternatives in this amendment were originally part of the public hearing draft of Amendment 11. A total of ten public hearings were held to obtain public comments on Amendment 11 with an additional hearing held during the Gulf Council meeting in the Holiday Inn Crown Plaza, 700 North Westshore Boulevard, Tampa, Florida during May 8-11, 1995. Final action was taken at the Tampa meeting on only some of the Amendment 11 issues due to time constraints.

The issues in public hearing draft Amendment 11 that were not acted upon in Tampa were separated into Amendment 12 for final action at the Council meeting in the Broadwater Beach Resort, Biloxi, Mississippi, during September 18-21, 1995, with one additional public hearing during that meeting. The alternatives presented in Amendment 12 are unchanged from the alternatives for those issues in public hearing draft Amendment 11.

Public hearings for public hearing draft Amendment 11, which included all of the issues and alternatives contained in Amendment 12, were scheduled at the following dates and locations during 7:00 p.m. to 10:00 p.m.:

Monday, April 17, 1995
NMFS Panama City Laboratory
Conference Room
3500 Delwood Beach Road
Panama City, Florida 32408

Monday, April 17, 1995
Holiday Inn Beachside
3841 North Roosevelt Boulevard
Key West, Florida 33040

Tuesday, April 18, 1995
Our Lady of the Sea
Parish Hall
705 Longoria
Port Isabel, Texas 78578

Tuesday, April 18, 1995
Ramada Airport Hotel
5303 West Kennedy Boulevard
Tampa, Florida 33609

Wednesday, April 19, 1995
J.L. Scott Marine Education Center
and Auditorium
115 East Beach Boulevard
(U.S. Highway 90)
Biloxi, Mississippi 39530

Monday, April 24, 1995
Venice Fire House
Highway 23
Venice, Louisiana 70091

Tuesday, April 18, 1995
Orange Beach Community Center
27301 Canal Road
Orange Beach, Alabama 36561

Wednesday, April 19, 1995
University of Texas
Visitor's Center Auditorium
750 Channel View Drive
Port Aransas, Texas 78373

Thursday, April 20, 1995
Holiday Inn on the Beach
5002 Seawall Boulevard
Galveston, Texas 77551

Tuesday, April 25, 1995
Larose Regional Park
Versailles Room
2001 East 5th Street
Larose, Louisiana 70373

14.0 LIST OF PREPARERS

Gulf of Mexico Fishery Management Council
- Steven Atran, Statistician/Biologist
- Antonio Lamberte, Economist
- Wayne Swingle, Biologist

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APPENDIX A

SPECIES INCLUDED IN THE NON-BAG-LIMITED REEF FISH GROUPING

SNAPPERS

lane snapper	<i>Lutjanus synagris</i>
vermilion snapper	<i>Rhomboplites aurorubens</i>

SEABASS

black sea bass	<i>Centropristis striata</i>
bank sea bass	<i>Centropristis ocyurus</i>
rock sea bass	<i>Centropristis philadelphica</i>

TILEFISHES

goldface tilefish	<i>Caulolatilus chrysops</i>
blackline tilefish	<i>Caulolatilus cyanops</i>
anchor tilefish	<i>Caulolatilus intermedius</i>
blueline tilefish	<i>Caulolatilus microps</i>
tilefish	<i>Lopholatilus chamaeleonticeps</i>
tilefishes	<i>Caulolatilus</i> spp.

JACKS

lesser amberjack	<i>Seriola fasciata</i> (proposed to be in an aggregate amberjack limit)
banded rudderfish	<i>Seriola zonata</i> (proposed to be in an aggregate amberjack limit)
Almaco jack	<i>Seriola rivoliana</i>

WRASSES

hogfish	<i>Lachnolaimus maximus</i>
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GRUNTS

white grunt	<i>Haemulon plumieri</i>
tomtate	<i>Haemulon aurolineatum</i>
pigfish	<i>Orthopristis chrysoptera</i>

PORGIES

red porgy	<i>Pagrus pagrus</i>
knobbed porgy	<i>Calamus nodosus</i>
jolthead porgy	<i>Calamus nodosus</i>
littlehead porgy	<i>Calamus nodosus</i>
pinfish	<i>Lagodon rhomboides</i>
grass porgy	<i>Calamus arctifrons</i>

SAND PERCHES

dwarf sand perch	<i>Diplectrum bivittatum</i>
sand perch	<i>Diplectrum formosum</i>

TRIGGERFISH

gray triggerfish	<i>Balistes capriscus</i>
queen triggerfish	<i>Balistes vetula</i>

TABLE 121. 1993 AND 1994 NONBAG-LIMITED REEF FISH CATCH AND LAND FREQUENCIES, MRFSS DATA ONLY.

#	1993				1994			
FISH	CATCH		LAND		CATCH		LAND	
	N	%	N	%	N	%	N	%
0.5	38	2.82	42	6.15	35	2.27	35	4.63
1	391	22.30	160	23.43	381	24.68	192	25.40
2	214	15.85	111	16.25	249	16.13	126	16.67
3	156	11.56	78	11.42	179	11.59	74	9.79
4	90	6.67	46	6.74	128	8.29	48	6.35
5	80	5.93	40	5.86	105	6.80	50	6.61
6	70	5.19	27	3.95	78	5.05	39	5.16
7	40	2.96	24	3.51	40	2.59	21	2.78
8	44	3.26	26	3.81	36	2.33	19	2.51
9	29	2.07	18	2.64	27	1.75	11	1.46
10	49	3.63	14	2.05	48	3.11	29	3.84
11	22	1.63	6	0.88	32	2.07	20	2.65
12	35	2.59	14	2.05	35	2.27	13	1.72
13	18	1.33	8	1.17	14	0.91	10	1.32
14	8	0.59	2	0.29	10	0.65	6	0.79
15	17	1.26	8	1.17	21	1.36	11	1.46
16	15	1.11	7	1.03	12	0.08	6	0.08
17	4	0.30	5	0.73	6	0.39	1	0.13
18	11	0.82	4	0.59	7	0.45	1	0.13
19	6	0.44	5	0.73	4	0.26	2	0.27
20	15	1.11	8	1.17	21	1.36	6	0.79
21	6	0.44	3	0.44	5	0.32	2	0.27
22	8	0.59	4	0.59	6	0.39	2	0.27

TABLE 121. 1993 AND 1994 NONBAG-LIMITED REEFFISH CATCH AND LAND FREQUENCIES, MRFSS DATA ONLY. CONTINUED

#	1993				1994			
	FISH	CATCH	LAND		CATCH	LAND		
23	7	0.52	3	0.44	3	0.19	2	0.27
24	4	0.30			5	0.32	4	0.53
25	9	0.67	4	0.59	3	0.19	6	0.79
26	4	0.30	2	0.29	5	0.32	3	0.40
27	3	0.22	1	0.15	4	0.26	1	0.13
28	2	0.15	2	0.29	2	0.13	1	0.13
29	3	0.22	2	0.29	2	0.13	1	0.13
30	7	0.52	4	0.59	12	0.78	4	0.53
31	1	0.07			1	0.07		
32	6	0.44	1	0.15	1	0.07		
33	3	0.22	1	0.15				
34	2	0.15			1	0.07		
35					2	0.13	1	0.13
36	3	0.22	1	0.15	4	0.26	1	0.13
37	1	0.07						
38	2	0.15	1	0.15	1	0.07		
40	4	0.30			1	0.07	1	0.13
41	1	0.07			2	0.13	1	0.13
42	1	0.07			1	0.07	1	0.13
43	1	0.07			2	0.13		
44	1	0.07			1	0.07	1	0.13
45	2	0.15			1	0.07		
46	1	0.07						

TABLE 121. 1993 AND 1994 NONBAG-LIMITED REEFFISH CATCH AND LAND FREQUENCIES, MRFSS DATA ONLY. CONTINUED

#	1993				1994			
	FISH	CATCH	LAND		CATCH	LAND		
47	1	0.07	1	0.15				
50	2	0.15			3	0.19	1	0.13
51	1	0.07			1	0.07		
52							1	0.13
53					1	0.07		
54	1	0.07						
55	1	0.07						
60					2	0.13	1	0.13
65					1	0.07		
66					1	0.07		
70					1	0.07	1	0.13
83	1	0.07						
100					1	0.07		
195					1	0.07	1	0.13
TOTAL	1350	100.0	683	100.0	1544	100.0	756	100.0