

REGULATORY AMENDMENT
TO THE
REEF FISH FISHERY MANAGEMENT PLAN
TO SET TOTAL ALLOWABLE CATCH AND
MANAGEMENT MEASURES FOR RED SNAPPER
FOR THE 2000 AND 2001 SEASONS

*(Includes Environmental Assessment,
and Regulatory Impact Review)*

FEBRUARY 2000



Gulf of Mexico Fishery Management Council
The Commons at Rivergate
3018 U.S. Highway 301 North, Suite 1000
Tampa, Florida 33619-2266

813-228-2815
888-833-1844 (toll-free)
813-225-7015 (FAX)

gulfcouncil@gulfcouncil.org
<http://www.gulfcouncil.org>

Table of Contents

1.0 INTRODUCTION 1

2.0 HISTORY OF MANAGEMENT RELATING TO RED SNAPPER 1

 2.1 Management Activities Other Than Regulatory Amendments 1

 2.2 Regulatory Amendments 4

3.0 PURPOSE AND NEED FOR ACTION 6

4.0 PROPOSED ACTIONS 8

5.0 MANAGEMENT OBJECTIVE AND OPTIMUM YIELD 9

 Optimum Yield 9

 Definition of Overfishing 9

6.0 STATUS OF RED SNAPPER STOCK 10

7.0 MANAGEMENT ALTERNATIVES AND REGULATORY IMPACT REVIEW 13

 Introduction 13

 7.1 Red Snapper Total Allowable Catch (TAC) 14

 7.2 Red Snapper Recreational Minimum Size Limit 18

 7.3 Red Snapper Recreational Bag Limit 23

 7.4 Red Snapper Recreational Fishing Season 26

 7.5 Red Snapper Spring Commercial Fishing Season 32

 7.6 Red Snapper Fall Commercial Fishing Season 34

 7.7 Red Snapper Commercial Minimum Size Limit 36

 7.8 Red Snapper Commercial Sub-Quota Allocations 40

 7.9 Private and Public Costs 41

 Summary and Net Impact of Proposed Action 42

 Determination of a Significant Regulatory Action 43

 Initial Regulatory Flexibility Analysis 44

8.0 ENVIRONMENTAL ASSESSMENT 47

 Environmental Consequences 47

 Finding of No Significant Environmental Impact 51

9.0 OTHER APPLICABLE LAW 52

 Habitat Concerns 52

 Vessel Safety Considerations 52

 Coastal Zone Consistency 52

 Paperwork Reduction Act 52

 Federalism 53

10.0 REFERENCES 54

11.0 PUBLIC REVIEW 56

Abbreviations Used in This Document

ABC	Acceptable (or Allowable) Biological Catch
ASAP	Age Structured Assessment Model (used in stock assessment)
B_{MSY}	Stock biomass capable of producing maximum sustainable yield
BRD	Bycatch Reduction Device
EEZ	Exclusive Economic Zone (also known as federal waters)
EFH	Essential Fish Habitat
F	Rate of instantaneous fishing mortality, a measure of the rate at which fish are removed from the population by fishing.
— F_{MSY}	F that can sustain maximum sustainable yield
— $F_{0.1}$	F when the yield-per-recruit curve is at 10 percent of the slope at origin. This is usually a conservative estimate of F_{MSY} .
— F_{MAX}	F that can produce maximum yield-per-recruit.
FMP	Fishery Management Plan
GMFMC	Gulf of Mexico Fishery Management Council
IRFA	Initial Regulatory Flexibility Analysis
ITQ	Individual Transferable Quota
LSIM	Length-Based Fish Population Simulation Model (used in previous stock assessments)
MSY	Maximum Sustainable Yield
NMFS	National Marine Fisheries Service
OY	Optimum Yield
RA	Regional Administrator (NMFS Southeast Regional Office) (formerly Regional Director)
RFA	Regulatory Flexibility Act of 1980
RFSAP	Reef Fish Stock Assessment Panel
RIR	Regulatory Impact Review
SBA	Small Business Administration
SSC	Scientific and Statistical Committee
SEFSC	Southeast Fisheries Science Center, Miami, Florida (NMFS Southeast Regional Office)
SEP	Socioeconomic Panel
SFA	Sustainable Fisheries Act of 1996
SPR	Spawning Potential Ratio
SSBR	Spawning Stock Biomass Ratio or Spawning Stock Biomass per Recruit (an older term for SPR)
TAC	Total Allowable Catch
TED	Turtle Excluder Device
TL	Total Length
YPR	Yield-Per-Recruit

1.0 INTRODUCTION

Red snapper in the Gulf of Mexico are classified as an overfished stock. Currently, the Reef Fish Fishery Management Plan (FMP) requires that overfished stocks be restored to a level of 20 percent transitional spawning potential ratio (SPR) within one and a half generation times. (A generation time is the average time it would take a year class in an unfished population to replace itself.) Consequently, the red snapper recovery program, which began in 1989, is under a management program to restore the stock to 20 percent transitional SPR by 2019. New target and recovery time frame parameters are in the process of being revised to comply with the requirements of the Sustainable Fisheries Act of 1996 (SFA), but have not yet been implemented. Therefore, the 20 percent SPR by 2019 target remains in effect as the basis for setting management measures in 2000.

Stock assessments are periodically conducted by the National Marine Fisheries Service (NMFS) on red snapper and other species that are in need of management to prevent overfishing from occurring or to recover from an overfished state. Based on these assessments, a Reef Fish Stock Assessment Panel (RFSAP) appointed by the Gulf of Mexico Fishery Management Council (Council) and comprised of stock assessment biologists from federal and state agencies and universities recommends to the Council a range of acceptable biological catch (ABC) which is intended to stop overfishing or to keep the recovery on schedule to meet its objective. The Council selects a level of total allowable catch (TAC) from within the ABC range, depending upon the level of risk that the Council chooses to accept (i.e., harvest at the upper level of ABC has a greater risk of not achieving the recovery goal than harvest at the lower levels), along with any changes to fishing regulations (size limits, bag and trip limits, closed seasons, etc.) that are needed to achieve the TAC. The TAC is a level of fishing intended to obtain optimum yield (OY) and to prevent overfishing, or to follow a recovery plan when a stock is overfished. Annual changes to TAC or measures to attain TAC are implemented through a regulatory amendment. This regulatory amendment is based on a red snapper stock assessment that was prepared in October 1999.

Regulatory amendments differ from a plan amendments in that they are used to set TACs and associated fishing regulations, whereas plan amendments are used to make changes in the basic policies and procedures defined in a fishery management plan.

This regulatory amendment proposes the TAC for red snapper during 2000 and for 2001 (pending review of an annual update to the red snapper assessment). Management measures are also proposed which the Council considers to be appropriate to achieve the indicated catch levels.

2.0 HISTORY OF MANAGEMENT RELATING TO RED SNAPPER

2.1 Management Activities Other Than Regulatory Amendments

The Reef Fish Fishery Management Plan was implemented in November 1984, and established a minimum size limit of 13 inches total length (TL) for red snapper with the exceptions that for-hire boats were exempted until 1987 and each angler could keep 5 undersize fish.

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 SPR. 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. 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.

In November, 1990, NMFS set a **Control Date** for the reef fish fishery, and announced that anyone entering the commercial reef fish fishery in the Gulf of Mexico and South Atlantic after 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 did 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 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 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 SPR. The amendment also established a new red snapper target year of 2007 for achieving the 20 percent SPR goal.

On August 24, 1991, the commercial red snapper fishery was closed as a result of the 2.04 million pound quota being reached. This was the first time that a closure of the commercial red snapper fishery occurred.

In 1992, the 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 considered a more comprehensive effort limitation program. It allowed 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.

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 permittees with red snapper endorsements are allowed a 2,000 pound possession limit of red snapper, and permittees 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 permittees to be changed under the framework procedure for specification of TAC.

Amendment 8, which proposed establishment of a red snapper Individual Transferable Quota (ITQ) system, was approved by NMFS and final rules were published in the Federal Register on November 29, 1995. This amendment provided for an initial allocation of percentage shares of the commercial red snapper quota to vessel owners and historical operators based on fishermen's historical participation in the fishery during the years 1990-1992, set a four year period for harvest under the ITQ system, during which time the Council and NMFS would monitor and evaluate the program and decide whether to extend, terminate or modify it, and established a special appeals board, created by the Council, to consider requests who contest their initial allocations of shares or determination of historical captains. The appeals board was originally scheduled to meet during January 1996, with the ITQ system itself to become operational in April 1996. However, the federal government shutdown of December 1995-January 1996 forced an indefinite postponement of the appeals board meetings, and concerns about Congressional funding of the ITQ system made it inadvisable for the ITQ system to become operational, pending Congressional action. In October 1996, Congress, through re-authorization of the Magnuson-Stevens Act, repealed the red snapper ITQ system and prohibited Councils from submitting, or NMFS from approving and implementing, any new individual fishing quota program before October 1, 2000.

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.

Amendment 11 was implemented in January 1996. Approved provisions implemented 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, and allowed permit transfers to other persons with vessels by vessel owners (not operators) who qualified for their reef fish permit. NMFS disapproved a proposal to redefine OY from 20 percent SPR (the same level as overfishing) to an SPR corresponding to a fishing mortality rate of $F_{0.1}$ until an alternative operational definition that optimizes ecological, economic, and social benefits to the Nation could be developed. In April 1997, the Council resubmitted the OY definition with a new proposal to redefine OY as 30 percent SPR. The re-submission document is currently under review by NMFS.

Following the Congressional repeal of the red snapper ITQ system in Amendment 9, an **emergency interim action** was published in the Federal Register on January 2, 1996 to extend the red snapper endorsement system for 90 days. That emergency action was superseded by another emergency action, published in the Federal Register on February 29, 1996, that extended the red snapper endorsement system through May 29, 1996, and subsequently, by agreement of NMFS and the Council, for an additional 90 days until August 27, 1996.

Amendment 13, implemented in September 1996, further extended the red snapper endorsement system through the remainder of 1996 and, if necessary, through 1997, in order to give the Council time to develop a permanent limited access system that was in compliance with the new provisions of the Magnuson-Stevens Act.

Amendment 14, implemented in March and April, 1997, provided the Regional Administrator (RA) of NMFS with authority to reopen a fishery prematurely closed before the allocation was reached and modified the provisions for transfer of commercial reef fish vessel permits.

Amendment 15, implemented in January 1998, established a permanent two-tier red snapper license limitation system to replace the temporary red snapper endorsement system. Under the new system, Class 1 licenses and initial 2,000 pound trip limits are issued to red snapper endorsement holders as of March 1, 1997, Class 2 licenses and initial 200 pound trip limits issued to other holders of reef fish permits as of March 1, 1997 who had any landings of red snapper between January 1, 1990 and March 1, 1997 and vessels without a Class 1 or Class 2 red snapper license are prohibited from commercial harvest of red snapper. Licences are fully transferable. The commercial red snapper season is split in two, with two thirds of the quota allocated to a February 1 opening and the remaining quota to a September 1 opening, and the commercial fishery will open from noon of the first day to noon of the fifteenth day of each month during the commercial season.

2.2 Regulatory Amendments

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 shrimp trawler fleet operating in federal waters (also called the exclusive economic zone or EEZ), 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.

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 updated estimated red snapper generation time of 13 years (Goodyear 1992).

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 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.

An October 1994 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 a year ahead of the scheduled automatic increase.

A regulatory amendment to set the 1996 red snapper TAC, dated December 1995, raised 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 remained at 5 fish and 15 inches TL. The recovery target date to achieve 20 percent SPR was extended to the year 2019, based on new biological information that red snapper live longer and have a longer generation time than previously believed. A March 1996 addendum to the regulatory amendment split the 1996 and 1997 commercial red snapper quotas into two seasons each, with the first season opening on February 1 with a 3.06 million pound quota, and the second season opening on September 15 with the remainder of the annual quota.

A March 1997 regulatory amendment changed the opening date of the second 1997 commercial red snapper season from September 15 to September 2 at noon and closed the season on September 15 at noon, and thereafter opened the commercial fishery from noon of the first day to noon of the fifteenth day of each month until the 1997 quota was reached. It also complied with the new Magnuson-Stevens Act requirement that recreational red snapper be managed under a quota system by authorizing the NMFS Regional Administrator to close the recreational fishery in the EEZ at such time as projected to be necessary to prevent the recreational sector from exceeding its allocation.

A November 1997 regulatory amendment canceled a planned increase in the red snapper minimum size limit to 16 inches TL that had been implemented through Amendment 5, and retained a 15-inch TL minimum size limit. This action was taken to avoid unnecessary release mortality of undersized red

snapper, and in response to an analysis in the 1997 red snapper stock assessment that a size limit increase to 16 inches would have little impact on SPR.

A February 1998 regulatory amendment retained the 9.12 million pound TAC and 5-fish recreational bag limit, and proposed a zero-fish bag limit for the captain and crew of recreational for-hire vessels (contingent upon approval of the 9.12 million pound TAC). Concern was expressed by NMFS as to whether the assumption of a 60 percent shrimp trawl bycatch reduction was achievable, and initially only 6 million pounds of the TAC was released, with the remaining 3.12 million pounds to be released pending successful performance of shrimp trawl bycatch reduction devices (BRDs). Regulations requiring most shrimp trawls to be equipped with BRDs became effective in May 1998, and the remaining TAC was released in August 1998 following a satisfactory performance report on BRDs. The proposed zero-fish bag limit for the captain and crew of recreational for-hire vessels was rejected, as was the 5-fish recreational bag limit, and NMFS implemented a 4-fish recreational bag limit by interim rule.

A December 1998 regulatory amendment retained the 9.12 million pound TAC, established a permanent 4-fish recreational bag limit, re-proposed a zero-fish bag limit for the captain and crew of recreational for-hire vessels, and changed the open days for the commercial Fall season from the first 15 days to the first 10 days per month. The amendment also proposed a reduction in the red snapper minimum size limit from 15 to 14 inches TL, and a March 1 opening of the recreational fishing season. The size limit reduction and March 1 opening were rejected by NMFS. The 4-fish bag limit had already been in effect through an interim rule, but was approved as an ongoing rule by this regulatory amendment. The first 10 days per month open days for the commercial Fall season and the zero-fish bag limit for the captain and crew of recreational for-hire vessels were approved after a lengthy review and were implemented in the Fall of 1999 after the 1999 recreational season closed. Consequently, the zero-fish bag limit for the captain and crew provision did not take effect during the 1999 recreational season.

3.0 PURPOSE AND NEED FOR ACTION

The red snapper stock is in an overfished condition and is under a rebuilding program to restore the stock to 20 percent SPR by 2019. Estimates of current SPR range from 1.3 to 5.8 percent, depending upon the parameters used to define the spawner-recruit relationship. Since implementation of the red snapper stock recovery plan in 1989, the Council has conducted annual reviews of the status of red snapper stocks. Typically, a new assessment has been prepared by the NMFS Southeast Fisheries Science Center (SEFSC) every two years with a comprehensive update in the intervening years. In September 1999, the RFSAP reviewed a new stock assessment for red snapper (Schirripa and Legault 1999) for the purpose of recommending a 2000 ABC range. Because there is little change in the data from year to year, the RFSAP recommended ABCs for both 2000 and 2001.

The NMFS National Standard Guidelines require that the Councils and NMFS develop new definitions of overfishing and overfished stocks based on the ability of a stock to produce maximum sustainable yield (MSY) on a continuing basis (NMFS has accepted overfishing definitions based on static SPR as a proxy for fishing mortality rate, but the overfished definitions must be biomass-based). For overfished stocks, a recovery plan must be developed to restore the stocks to the biomass level capable of producing MSY on a continuing basis (B_{MSY}). This is more conservative than the current overfishing definition of 20 percent SPR, which is estimated to be the minimal level needed to prevent

future declines in the stock. The recovery is to be in as short a time period as possible, but not to exceed 10 years, except in cases where the biology of the stock of fish, other environmental conditions, or management measures under an international agreement dictate otherwise. The NMFS National Standard guidelines for implementing the SFA state that if rebuilding to B_{MSY} would take 10 years or more, even in the absence of all fishing mortality, then the maximum recovery period is the rebuilding period calculated in the absence of fishing mortality plus one mean generation time. For red snapper, this would result in a maximum rebuilding period of about 31.6 years (12 years to recover in the absence of fishing mortality plus 19.6 years mean generation time). A recovery plan implemented under the new guidelines in 2000 would have to reach its recovery target during the year 2031 or earlier. However, suitable biomass proxies have not yet been developed and accepted by the Council and NMFS, and the current proposed actions are based on the existing target of 20 percent SPR by 2019.

The RFSAP evaluated ABC under several combinations of shrimp trawl bycatch reduction levels, levels of steepness of the spawner-recruit curve, and constant catch vs. constant fishing mortality rate scenarios. This resulted in a range of maximum ABC recommendations of 5.8 to 9.12 million pounds under the constant catch scenario. Under the constant fishing mortality rate scenario, the maximum ABC recommendations were 2.0 to 3.5 million pounds in 2000, and 2.4 to 4.2 million pounds in 2001. In reviewing all of the available information and analyses, including economic analyses by the Socioeconomic Panel (SEP), the Council concluded that since maintaining the TAC of 9.12 million pounds represented the most appropriate level of harvest that would best balance the biological, social, and economic aspects of the fishery to provide the optimum benefits to the Nation.

A bag and size limit analyses prepared by NMFS projected that, at the 9.12 million pound TAC, the recreational quota would be filled by July 29, 2000 if the recreational season opened on January 1st at the current bag and minimum size limits (4 fish and 15 inches TL). On September 27, 1999, NMFS convened a stakeholder's workshop to discuss red snapper management alternatives. The recreational representatives at that meeting recommended that the bag limit remain at 4 fish including reinstating the bag limit for the captain and crew of recreational for-hire vessels, a minimum size limit no larger than 16 inches TL, a recreational season from March through October, and keep the TAC and regulations constant over a period of three years. This regulatory amendment implements those suggestions to the extent possible, given the need to remain within a 4.47 million pound recreational quota (under a 9.12 million pound TAC) and the need to periodically reassess the red snapper stock status and regulations. The proposed actions in this amendment differ from the stakeholders workshop recommendations in that the proposed season is mid-April (rather than March) through October, and the regulations are proposed for a two-year (rather than 3-year) period, pending a review of the stock status after the first year.

The commercial fishery found that it could get better prices for red snapper under the 10 days per month opening that was implemented for the Fall 1999 season than under the previous 15-days per month opening as a result of less glut on the market during the commercial season. Given the success of 10-days per month openings in the Fall, a similar strategy for the Spring season should help prices during that period as well as extend the commercial Spring season. In the Fall season, fish dealers have stated that there is low demand and prices for red snapper in September, but that demand and prices improve in October. Delaying the start of the Fall commercial season until October 1 will allow the industry to better match supply with demand.

The Spring sub-quota of 3.06 million pounds was established in 1996 as an artifact of that harvest level being the full commercial quota under the previous TAC of 6 million pounds. In 1996 the Council

increased the TAC to 9.12 million pounds with a 4.65 million pound commercial quota. The Council expected a red snapper ITQ system to be implemented later that year, and wished to keep part of the quota available for implementing the ITQ system in 1996 rather than wait a full year. If the ITQ system were not implemented, then the Council felt there would be advantages to the commercial red snapper fishery to allowing a Fall fishery under the red snapper endorsement system. The 3.06 million pound Spring quota has remained as a fixed quota since, meaning that any future TAC increases or decreases will be applied solely to the Fall quota. Switching the Spring quota from a fixed poundage to a percentage of the annual quota assures that any future changes will be applied proportionately to both the Spring and Fall commercial fisheries.

4.0 PROPOSED ACTIONS

TOTAL ALLOWABLE CATCH

- Set the red snapper TAC at status quo, 9.12 million pounds (4.65 million pounds commercial quota; 4.47 million pounds recreational quota), for the next two years (2000 and 2001), pending an annual review of the red snapper assessment.

RECREATIONAL MANAGEMENT MEASURES

- Set the recreational red snapper minimum size limit at 16 inches TL.
- Set the recreational red snapper bag limit at 4 fish (status quo).
- Reinstate the 4-fish red snapper bag limit for the captain and crew of recreational for-hire vessels.
- Set the recreational red snapper fishing season from April 15 through October 31. (Note: The Regional Administrator has revised these dates to be April 21 through October 31 via interim rule.)
- Authorize the Regional Administrator to adjust the opening and closing dates of the recreational red snapper fishing season to accommodate the reinstatement of the 4-fish bag limit for captain and crew of for-hire vessels.

COMMERCIAL MANAGEMENT MEASURES

- Set the red snapper commercial Spring season to open on February 1, to be open from noon on the 1st to noon on the 10th of each month until the Spring sub-quota is reached.
- Set the red snapper commercial Fall season to open on October 1, to be open from noon on the 1st to noon on the 10th of each month until the remaining commercial quota is reached.
- Retain the red snapper commercial minimum size limit at 15 inches TL (status quo).

- Set the red snapper commercial Spring season sub-quota at 2/3 of the commercial quota, and Fall season sub-quota at the remaining commercial quota.
-

RECOMMENDATION ON THE USE OF CIRCLE HOOKS

Since hooking injuries appear to be the major cause of red snapper release mortality in depths of less than 100 feet, the Council is encouraging red snapper fishermen to use circle hooks, which usually hook the fish in the mouth rather than the gut. The use of circle hooks is not currently required, but may be considered as a management tool in the future.

5.0 MANAGEMENT OBJECTIVE AND OPTIMUM YIELD

Optimum Yield

The primary objective and definition of OY for the Reef Fish Fishery Management Plan is any harvest level which maintains, or is expected to maintain, over time a survival rate of biomass into the stock of spawning age to achieve at least a 20 percent SPR.

Definition of Overfishing

The following is the definition of overfishing contained in Amendment 1 of the Reef Fish FMP.

1. A reef fish stock or stock complex is overfished when it is below the level of 20 percent SPR.
2. When a reef fish stock or stock complex is overfished, overfishing is defined as harvesting at a rate that is not consistent with a program that has been established to rebuild the stock or stock complex to the 20 percent SPR level.
3. When a reef fish stock or stock complex is not overfished, overfishing is defined as a harvesting rate that, if continued, would lead to a state of the stock or stock complex that would not at least allow a harvest of optimum yield on a continuing basis.

6.0 STATUS OF RED SNAPPER STOCK

In 1999 a red snapper stock assessment was prepared by the NMFS SEFSC (Schirripa and Legault 1999) and reviewed by the Reef Fish Stock Assessment Panel (GMFMC 1999a).

In view of new requirements of the Magnuson-Stevens Fishery Conservation and Management Act and associated Technical Guidelines, and in response to the 1997 Peer Review concern that uncertainty in the stock assessment had not been fully characterized, a new modeling methodology was used for the Red Snapper Stock Assessment. This new methodology, called ASAP (Age-Structured Assessment Program), provides greater flexibility in population model structure, provides internally consistent

estimates of management parameters of interest, such as the instantaneous fishing mortality rate and stock biomass level capable of producing MSY (F_{MSY} and B_{MSY}). It is a statistical fitting procedure that provides an improved basis for characterizing uncertainty in the evaluation of stock status. The ASAP model enables stock assessment analyses that are more consistent with the Magnuson-Stevens Act and associated Technical Guidelines and with the concerns of the 1997 Peer Review.

Results of the ASAP model showed that the present condition of the stock is, in general, the same as was reported in the 1995 assessment (Goodyear 1995). The 1995 assessment was the basis for the initial setting of the current 9.12 million pound TAC. Fishing mortality has increased in the recreational sector over time, has remained flat in the commercial handline west and shrimp bycatch sectors, and has decreased in the commercial handline east and commercial longlines. The estimated abundance of exploitable-sized red snapper has increased rapidly in recent years, although the total population has not increased and may have even slowly decreased.

The RFSAP presented a choice of ABC ranges, depending upon the management strategy used (constant catch vs. constant F), the recovery target (20% SPR in 2019 vs. a target that adheres to the Technical Guidelines), and estimate of shrimp trawl bycatch reduction in 2000 (40% and 50% bycatch reduction levels were evaluated). For the current recovery target of 20% SPR in 2019, and the current constant catch strategy, the ABC recommendation was 0 to 5.8 million pounds with a 40% shrimp trawl bycatch reduction, or 0 to 9.12 million pounds with a 50% bycatch reduction.

Table 1. COMMERCIAL RED SNAPPER HARVEST (from Tables 8 and 9 in Schirripa and Legault 1999, except 1999 landings from NMFS SERO)

Year	Commercial Quota	Commercial Harvest	Days Open (days that open or close at noon are counted as half-days) ("+" = split season)
1990	3.1 MP	2.66 MP	365
1991	2.04 MP	2.23 MP	236
1992	2.04 MP plus emergency season	3.14 MP	52 + 42
1993	3.06 MP	3.02 MP	104
1994	3.06 MP	3.25 MP	78
1995	3.06 MP	2.95 MP	50 + 2
1996	4.65 MP	4.35 MP	64 + 22
1997	4.65 MP	4.79 MP	53 + 18
1998	4.65 MP	4.72 (preliminary)	39 + 28
1999	4.65 MP	4.67 (preliminary)	42 + 22

The first quota closure of the commercial red snapper fishery occurred on August 24, 1991. In subsequent years, a derby fishery developed, and the quota was filled in increasingly shorter time periods.

The 1995 commercial season opened on February 24 and closed on April 15 (50 days) based on a projection that the 3.06 million pound quota would be reached. Subsequent landings information revealed that approximately 210,000 pounds of quota was unharvested. At the request of the Council, NMFS scheduled a 36 hour reopening of the season beginning at 12:01 a.m. on October 30. However, this reopening was delayed for 48 hours until November 1 due to hazardous weather conditions.

In 1996, the commercial quota increased to the current 4.65 million pounds, and the season was split into two sub-seasons in order to spread out the harvest and provide fishermen with an opportunity to harvest red snapper in the fall. The first portion of the season opened on February 1 and closed when 3.06 million pounds was projected to be reached. The second portion of the season opened on September 15 for harvest of the remainder of the 4.65 million pound quota. The February 1 season closed on April 5 (64 days) with landings of 3.19 million pounds. The September 15 season opened with 1.46 million pounds remaining and closed after October 6 (22 days) with additional landings of 1.29 million pounds. In each of the years since the current 4.65 million pound quota was implemented, the total number of fishing days has decreased.

Table 2. RECREATIONAL RED SNAPPER HARVEST (from Table 20 in Schirripa and Legault 1999)

Year	Recreational Allocation/Quota	Recreational Harvest	Days Open
1990	No allocation was explicitly specified	1.24 MP	365
1991	1.96 MP	1.94 MP	365
1992	1.96 MP	3.03 MP	366
1993	2.94 MP	5.29 MP	365
1994	2.94 MP	4.26 MP	365
1995	2.94 MP	3.25 MP	365
1996	4.47 MP	3.57 MP	366
1997	4.47 MP (quota begins)	5.41 MP	330 (closed 11/27/97)
1998	4.47 MP	5.76 MP	272 (closed 9/30/98)
1999	4.47 MP	n/a	240 (closed (8/29/99)
2000	4.47 MP (proposed)	n/a	200 (projected)

The days open for 2000 are based on the proposed action in this amendment to have recreational season from April 15 to October 31, 16-inch recreational minimum size limit, and 4-fish bag limit. An additional proposal to reinstate the 4-fish red snapper bag limit for captain and crew of for-hire vessels may result in the 2000 recreational season being 3 to 5 days shorter.

Table 3. COMBINED RED SNAPPER HARVEST

Year	TAC	Total Directed Harvest
1990	No TAC was explicitly specified	3.90 MP
1991	4.0 MP	4.17 MP
1992	4.0 MP plus emergency season	6.17 MP
1993	6.0 MP	8.31 MP
1994	6.0 MP	7.51 MP
1995	6.0 MP	6.20 MP
1996	9.12 MP	7.92 MP
1997	9.12 MP	10.20 MP
1998	9.12 MP	10.48 MP

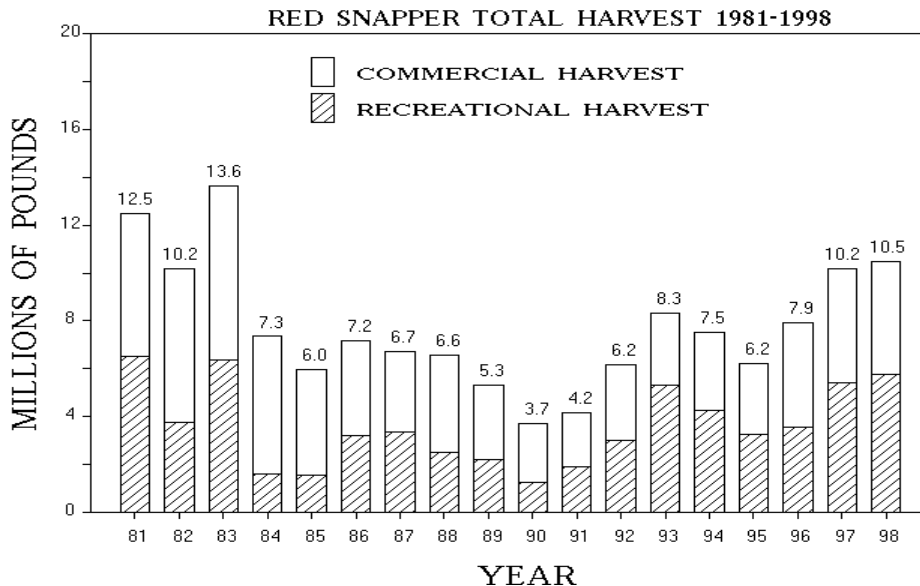


Figure 1 (Figure 27 in Schirripa and Legault 1999). Estimated biomass of the combined commercial and recreational harvest of U.S. Gulf of Mexico red snapper, 1981-1998.

7.0 MANAGEMENT ALTERNATIVES AND REGULATORY IMPACT REVIEW

Introduction

A Regulatory Impact Review (RIR) for all regulatory actions that are of public interest is required by NMFS. 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 entities" in compliance with the Regulatory Flexibility Act of 1980 (RFA). The primary purpose of the RFA is to relieve small businesses, small organizations, and small governmental jurisdictions (collectively: "small entities") of burdensome regulatory and record keeping requirements. The RFA requires that if regulatory and record keeping requirements are not burdensome, then the head of a Federal agency must certify that the requirement, if promulgated, will not have a significant effect on a substantial number of small entities.

This RIR analyzes the probable impacts that the proposed alternatives for the Reef Fish Fishery Management Plan (FMP) would have on the commercial and recreational directed red snapper fisheries. In this document, the "Economic Impacts" statements under each of the management options comprise the bulk of the RIR. The problems and objectives are described in previous sections of this regulatory document as a part of the RIR by reference.

7.1 Red Snapper Total Allowable Catch (TAC)

Proposed Alternative: Set the red snapper TAC at status quo, 9.12 million pounds (4.65 million pounds commercial quota; 4.47 million pounds recreational quota), for the next two years (2000 and 2001), pending an annual review of the red snapper assessment.

Rejected Alternative 1: Increase the TAC (to as high as 10.496 million pounds).

Rejected Alternative 2: Reduce the TAC (to as low as 2.0 million pounds).

Rationale

Keeping the TAC constant at the status quo level of 9.12 million pounds for the next two years (pending an annual review) will maintain stability in the fishery by allowing fishermen to plan on a longer time horizon, and will free up time for NMFS assessment biologists to examine other species that may be in need of management. This TAC is within the ABC range recommended by the RFSAP for the constant catch strategy with a 50 percent shrimp trawl bycatch reduction, and is below the maximum of 10.496 million pounds that the ASAP model projected could be taken. The 2000/2001 ABC derived from the ASAP model is consistent with the 1996 ABC range of 6 to 10 million pounds derived from the previously used LSIM (Length-Based Fish Population Simulation Model) model under the same constant catch and 50 percent bycatch reduction scenario.

NMFS biologist Scott Nichols, at the September 20-24, 1999 RFSAP meeting and at the October 27, 1999 meeting of the Scientific and Statistical Committee (SSC), stated that, excluding the now illegal configuration of a fisheye BRD covered by the trawl net's elephant ear, fisheye BRDs are currently

attaining a 40 percent reduction, and 50 percent appears feasible. NMFS biologist John Watson, in statements to the Council at the November 8-12, 1999 meeting, also stated that a 50 percent bycatch reduction could be achieved from fisheye BRD's. In addition, the Jones-Davis turtle excluder device (TED) already achieves a 50 percent bycatch reduction, and new BRD technology utilizing an inclined flow principle is being developed that takes advantage of some recently discovered behavioral characteristics of snapper. A 50 percent reduction in shrimp trawl bycatch therefore appears to be a reasonable assumption.

The SEP, in its analyses of the net present value of the red snapper commercial quota, concluded that the economic benefits of a constant F strategy would take 13 years to exceed the benefits of a constant catch strategy at a 3 percent discount rate, and that the long-term benefits of a stock recovery would not be sufficient to offset losses during the recovery period with 7% and 10% discount rates. The proposed status quo TAC is consistent with the SEP's recommendation that the TAC be set within the maximum constant catch ABCs of 6 to 9.12 million pounds.

Biological Impacts

The 9.12 million pound TAC, which was implemented in 1996 is projected to allow the red snapper stock to recover to 20 percent SPR by the year 2019, provided that; 1) the recreational and commercial sectors stay within their allocations, and 2) a 50 percent or better reduction in shrimp trawl bycatch mortality is achieved in 2000 and beyond. This TAC is 13 percent lower than the maximum of 10.496 million pounds that was modeled in the ASAP program under the constant catch and 50 percent bycatch reduction scenario, and therefore allows for some margin of error in the assumptions. Provided that the assumptions of the model are valid, the Proposed Alternative will conserve the resource and allow the recovery to proceed on schedule.

Rejected Alternative 1 would have increased the TAC up to the maximum projected under the most optimistic assumptions. The RFSAP noted that in recent years, the red snapper harvest has exceeded the TAC, even with quota management on both the commercial and recreational fisheries. If harvest exceeds the maximum level of 10.496 million pounds, then the recovery cannot proceed on schedule. Because of the historical precedent of TAC being exceeded, the RFSAP recommended that it not be set above the 9.12 million pound status quo. The RFSAP also noted that an increase in TAC would result in an increase in the instantaneous fishing mortality rate. This is inconsistent with the constant catch strategy, in which the catch level remains constant while the instantaneous fishing mortality rate decreases over time.

Rejected Alternative 2 would have reduced fishing mortality, and would be consistent with recovery of the stock under more precautionary assumptions or as a transition from a constant catch strategy to a constant fishing mortality rate strategy. A 5.8 million pound TAC would be consistent with a constant catch strategy at the observed 40 percent bycatch reduction level. A TAC of 2.0 to 3.5 million pounds would allow an immediate switch to a constant fishing mortality rate strategy. Under this strategy, the TAC would increase each year. For example, at a 50 percent bycatch reduction level, there would be a 3.5 million pound TAC in 2000, and a 4.2 million pound TAC in 2001. The TAC would exceed the current level of 9.12 million pounds as early as 2006, and would continue increasing each year, to as high as 25 million pounds by 2019 (see Table 3 in GMFMC 1999a). A TAC between 3.5 and 5.8 million pounds would allow a gradual transition to a constant fishing mortality rate strategy, but would take longer to recover to the current TAC.

Economic Impacts

Being the status quo, the Proposed Alternative is expected to have no short-term impacts in terms of changes in the economic status of both the commercial and recreational fishing participants. To the extent that the proposed TAC is within the ABC range estimated by the RFSAP, the long-term viability of the red snapper directed fishery is not very likely to be impaired. A two-year TAC specification also provides a relatively stable condition under which business decisions would be formulated particularly by the commercial and for-hire sectors of the red snapper fishery. In addition, a two-year TAC specification would reduce the public and private costs of changing regulations on an annual basis.

At a TAC of 9.12 million pounds which has been in effect since 1996, both the commercial and recreational sectors (since 1997 when the recreational allocation was first considered a quota) have been experiencing a diminishing fishing season (see the tables above). If effort in the fishery continues to increase at the face of a recovering red snapper stock, the fishing season for both the commercial and recreational sectors may be shortened further by maintaining the same TAC. This would potentially increase the short-term economic losses to both sectors.

Changing the TAC by raising it as in Rejected Alternative 1 or reducing it as in Rejected Alternative 2, would bring about changes in the economic benefits/losses to fishing participants. The higher TAC may be considered to be associated with a constant catch policy while the (substantially) lower one may be more attuned with the constant F (fishing mortality rate) policy¹. It is practically obvious to conclude that a higher TAC would be associated with an increase in short-term economic benefits and a lower TAC with a reduction in short-term economic benefits, but the long-term effects are less obvious. From an economic perspective, both short-term and long-term effects have to be considered in order to determine the net effects associated with choices of TAC.

As part of its advice to the Council, the SEP (GMFMC 1999b) estimated the net economic effects of several TAC levels, under differing assumptions on bycatch reduction levels, steepness of spawner-recruit curve, recovery period, and management strategies (i.e., constant catch vs. constant F). The following table, based on the SEP (GMFMC 1999b) findings, shows the net economic benefits associated with selected TAC levels.

Table 4. Net present values for selected TACs for constant catch and constant F recovery paths.

Policy	TAC (Million Pounds)		Net Present Value @ 3% (Million Dollars)			Net Present Value @ 7% (Million Dollars)			Net Present Value @ 10% (Million Dollars)		
	2000-2019	2020+	Com.	Rec.	Total	Com.	Rec.	Total	Com.	Rec.	Total
Status Quo	9.12	9.12	267	1,370	1,637	114	640	754	80	460	540
40% Bycatch Reduction											
Constant Catch	5.765	13.52	288	1,480	1,768	94	540	634	59	350	409

¹ A constant catch policy keeps the TAC at a constant level for the duration of the recovery. This allows a higher catch in the initial years of the recovery, but as the stock recovers and becomes more abundant, increasingly restrictive management measures are needed to keep the catch within the TAC. A constant fishing mortality rate policy sets the TAC such that the fish are harvested at a constant rate that is proportional to the stock biomass. This requires a lower TAC in the initial years of the recovery, but allows the TAC to increase as the stock recovers.

Constant F	1.96	13.52	300	1,550	1,850	97	560	657	57	340	397
50% Bycatch Reduction											
Constant Catch	9.12*	25.81	525	2,690	3,215	163	940	1,103	99	590	689
Constant F	3.48	25.81	572	2,950	3,522	184	1,060	1,244	109	640	749

*The (biologically) modeled TAC was 10.496 MP, but since the RFSAP did not recommend that TAC be set higher than 9.12 MP, the SEP used the lower figure for estimation of net present values under this scenario.

Notes:

- The status quo assumes a 40% bycatch reduction and constant TAC throughout.
- For constant catch strategy, TAC is maintained from year 2000 to 2019, thereafter is increased to level that maintains a 20% SPR; for constant F strategy, TAC is gradually changed from year 2000 to 2019, thereafter is kept at a level that maintains a 20% SPR.
- Commercial net present values are producer surplus while recreational net present values are consumer surplus. Excluded from these estimates is the producer surplus accruing to the for-hire sector.
- 3%, 7%, and 10% are discount rates.

Table 4 shows estimates of net present values shows under differing assumptions of bycatch reduction and discount rates. Given a 40 percent bycatch reduction rate, a lower TAC of about 6 million pounds under a constant catch strategy and a much lower TAC of about 2 million pounds under a constant F strategy would generate larger net economic benefits with a low discount rate of 3 percent. At higher discount rates of 7 and 10 percent, the long-term benefits from lower TACs would not be sufficient to outweigh the short-term losses. At a higher bycatch reduction rate of 50 percent, the results show that both constant catch and constant F strategies would generate net economic benefits higher than those of the status quo regardless of the three discount rate chosen. It may be worth noting at this stage that, given a 50 percent bycatch reduction, a higher TAC of 10.496 million pounds could result in higher net economic benefits so long as TAC overruns are avoided. Also it may be noted that at the 50 percent bycatch reduction rate, the constant F strategy with a much lower initial TAC would generate much larger net economic benefits than the status quo.

There are at least three salient points that these estimation results present. First, larger net economic benefits can ensue at higher bycatch reduction levels, even if a lower TAC is initially adopted under a constant F strategy. The penalty imposed by higher discount rates of 7 and 10 percent is not large enough to offset the long-term gains from a higher bycatch reduction rate. Second, under a 40 percent bycatch reduction rate, lower TACs under either a constant catch or constant F strategy would generate higher net economic benefits only at a low discount rate of 3 percent. Higher discount rates of 7 and 10 percent would reduce the long-term gains substantially as to not offset the short-term economic losses. Third, at a higher bycatch reduction rate (i.e., 50%), a constant F strategy appears to generate higher net economic benefits than a constant catch strategy. The discount rate factor, however, becomes important at a lower bycatch reduction rate (i.e., 40%)

Environmental Consequences

Physical Environment: The alternatives in this section are anticipated to have no impact on the physical environment.

Human Environment: Continuing the TAC at the same level since 1996 will help to establish a time series of data under a constant TAC. New rebuilding targets and schedules are being developed to conform with the provisions of the Sustainable Fisheries Act of 1996. At this time, it is uncertain whether the new targets and schedules will require an increase, decrease, or continuation of the current TAC. Maintaining a constant TAC at a level compatible with the existing recovery target of 20 percent SPR by 2019 avoids unnecessary fluctuations in TAC pending implementation of the new

targets. Raising the TAC now, if a reduction is needed in the near future, would be destabilizing to the fishery. On the other hand, reducing TAC would create short-term economic losses, as calculated in the 1999 report of the SEP (GMFMC 1999b).

Fishery Resources: Gear specialists from NMFS felt that a 50 percent shrimp trawl bycatch reduction was an achievable target. Under a 50 percent bycatch reduction scenario and the current target of 20 percent SPR in 2019, it is unnecessary to reduce TAC. The status quo 9.12 million pound TAC (proposed action) is projected to allow the recovery to proceed on schedule and is, therefore, beneficial to the resource. However, under the constant catch management strategy used to implement this TAC, as the stock recovers, if the trend toward shorter fishing seasons continues, there will be an increasing negative impact from release mortality of red snapper caught and released during closed seasons.

Impact on Other Fisheries: If the trend toward shorter seasons continues due to the increasing abundance of young red snapper and faster catch rates, then effort shifting to alternative species during the increasingly long closed seasons may increase as well. However, this effort shifting will occur only during the part of the year when the red snapper fishery is closed, and will likely be relatively minor. The proposed TAC requires that bycatch reduction in the shrimp trawl fishery be increased from the current 40 percent to 50 percent. This increase in BRD efficiency will benefit other species as well as red snapper.

Effect on Wetlands: The alternatives have no effect on wetlands.

Effect on Essential Fish Habitat (EFH): The Generic Amendment for Addressing EFH Requirements (GMFMC 1998) states that red snapper occur throughout the Gulf of Mexico shelf. They are particularly abundant on the Campeche Banks and in the northern Gulf. The species is demersal and is found over sandy and rocky bottoms, around reefs, and underwater objects at depths between 0 to 200 m (109 fathoms), possibly even beyond 1200 m (656 fathoms). Adults favor deeper water in the northern Gulf. Spawning occurs in offshore waters from May to October at depths of 18 to 37 m (10 to 20 fathoms) over fine sand bottom away from reefs. Eggs are found offshore in summer and fall. Larvae, postlarvae and early juveniles are found July through November in shelf waters ranging in depth of 17 to 183 m (9 to 100 fathoms). Early and late juveniles are often associated with structures, objects or small burrows, but also are abundant over barren sand and mud bottom. Late juveniles are taken year round at depths of 20 to 46 m (11 to 25 fathoms). Adults are concentrated off Yucatan, Texas, and Louisiana at depths of 7 to 146 m (4 to 80 fathoms) and are most abundant at depths of 40 to 110 m (22 to 60 fathoms). They commonly occur in submarine gullies and depressions, and over coral reefs, rock outcroppings, and gravel bottoms. The setting of TAC is not anticipated to have a negative effect on EFH.

7.2 Red Snapper Recreational Minimum Size Limit

Proposed Alternative: Set the recreational red snapper minimum size limit at 16 inches total length.

Rejected Alternative: Set the recreational red snapper minimum size limit at:

- a. a higher size limit, up to 18 inches total length**
- b. a lower size limit - 14 inches total length**

- c. status quo - 15 inches total length
- d. no minimum size limit, keep the first 4 (or other bag limit) fish caught

Rationale

The one-inch size limit increase to 16 inches TL will reduce the recreational harvest rate by approximately 9 percent (based on the NMFS quota options Excel spreadsheet). In combination with a 4-fish bag limit, it will allow approximately a six and a half month long recreational season. Higher minimum size limits could slow down harvest rate further, but due to uncertainty about the true level of release mortality, they increase the risk of creating a higher total fishing mortality rate and a negative impact on SPR. Reductions in the minimum size limit would increase the harvest rate and shorten the season, and could require a reduction in TAC. Under the proposed action to increase the minimum size limit to 16 inches TL, there will be no significant impact on achieving the 20 percent SPR target in 2019 at 20 percent release mortality, according to analyses presented to the Council in January 1999 by NMFS biologist Michael Schirripa. A NMFS sponsored stakeholders workshop held on September 27, 1999 to consider red snapper management measures recommended that the red snapper minimum size limit be set no higher than 16 inches.

It should also be noted that the recently completed pilot study using charter boat captains to provide effort data concluded that the new methodology is superior to current Marine Recreational Fishery Statistics Survey method for estimating charter vessel effort. The new methodology will become the standard for assessing charter vessel effort in the future, and the revised estimates could have an impact on future recreational harvest estimates and length of season. During the first year of the pilot study, charter vessel effort was estimated to be 24 percent less than the estimate from the current methodology.

Biological Impacts

A minimum size limit increase from 15 inches TL to 16 inches TL is biologically neutral, provided that the assumption of a 20 percent release mortality in the recreational fishery is valid. At high release mortalities, increasing the minimum size limit could have a negative impact on the SPR level in 2019 (Figure 2). Anecdotal information from recreational fishermen, particularly from Texas, suggests that release mortality is much higher than the assumed 20 percent level. However, scientific studies support the assumption of a low release mortality. Goodyear (1995) summarized the results of a number of studies, as follows.

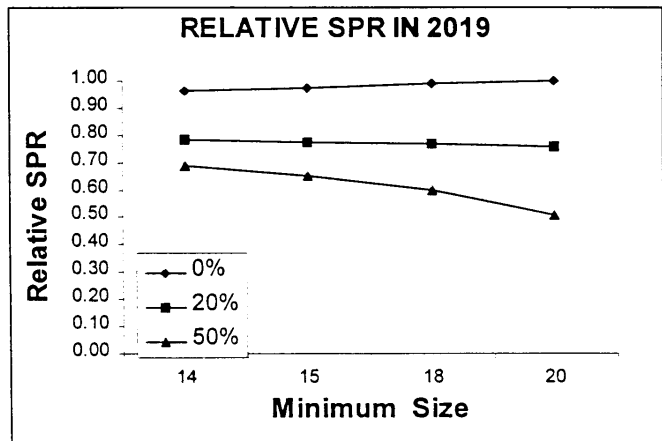


Figure 2. Relative SPR in 2019 as a function of minimum size assuming release mortalities of 0, 20, and 50 percent (source: personal communication, Michael Schirripa, January 1999)

Data from some recent studies of the mortality of reef fishes after being caught and released

were summarized by Parker (1991) who in an earlier report observed no immediate mortality of 30 red snapper (<40 cm [16 inches] TL) caught from 30 m (98 ft) off the Texas coast and released at the surface (Parker 1985). That report also described experiments which found a mortality of 21 percent for red snapper that were caught from 22 m (72 ft), returned to the capture depth and held in wire cages. A similar study at 30 m (98 ft) resulted in 11 percent mortality. Gitschlag and Renaud (1994) found that mortality of small (<32 cm [13 inches]) red snapper caught by hook and line off Texas and released at the surface was 1 percent at 21-24 m (69-79 ft) (n=138), 10 percent at 27-30 m (89-98 ft) (n=27), and 44 percent at 37-40 m (121-131 ft) (n=47). These authors also observed a mortality of 36 percent for red snapper that were caught from 50 m (164 ft), returned to the capture depth and held in wire cages. No significant survival benefit was observed for venting the air bladder with a syringe. Render and Wilson (1993) also found no benefit from mechanical bladder deflation. The latter study found mean mortality to be 20 percent for red snapper caught at 21 m (69 ft) and released at the surface into a 9-m (30 ft)-deep cage after 48 hours. Release mortality was higher in the fall than spring. Also, there was a non-significant increase in mortality with depth of capture. Data from an ongoing mark-recapture study also suggests that mortality increased when capture depth increased from 20 to 30 m (66 to 98 ft). About 14 percent of the fish at 30 m (98 ft) showed signs of stress upon release (R. Shipp, personal communication).

In addition to the studies summarized by Goodyear (1995) more recent studies also support the assumption of a low red snapper release mortality. Studies by the University of South Alabama (U. South Al. 1998, Watterson et al. 1998), found release mortalities of less than 7 percent for red snapper caught at 65 feet, 9 percent at 84 feet, and 12 percent at 100 feet. The study also found that most of the mortality at these depths was due to hooking injuries, and almost all of the mortality in 65 feet or less was due to hooking injuries. Watterson et al. (1998) noted that the release mortalities observed in their study were within the range of estimates from a previous study (Render and Wilson 1994).

Since the average size of red snapper is smaller at shallower depths, and release mortality is also less at shallower depths, it is reasonable to conclude that there is a minimum size limit that will optimize the benefits from the released fish that survive, even after taking into account the losses from those that die. The Council uses an estimate of 20 percent average release mortality for the recreational red snapper fishery. At that level, the yield-per-recruit analyses conducted by Goodyear (1995) found that maximum benefits occurred with a minimum size limit of 21 inches TL (approximately age-6). Because of concern about the deep-water release mortality, the Council has not gone to that high of a minimum size limit. However, minimum sizes within the range that the Council has been considering (14 to 18 inches) have essentially neutral biological impacts at 20 percent average release mortality, and can thus be used to control the rate of harvest and length of the recreational season.

In addition to the hooking and handling mortality, predation of released fish may be important in areas with significant concentrations of large predators. Parker (1985) noted 19.5% mortality of reef fish caught and released in 20-30m (65-98 feet) depths off Daytona, Florida due to predation. In contrast, Gitschlag and Renaud (1994) noted that predation was not apparent in their study.

Under the Rejected Alternative, the temporary 18-inch red snapper recreational minimum size limit that was implemented for part of the 1999 recreational red snapper fishing season was effective in reducing the harvest rate and extending the season. At 20 percent release mortality, this minimum

size limit increase would have very little impact on SPR in 2019, but at 50 percent or higher release mortality there would be a reduction in the SPR in 2019 (see Figure 2). Although scientific studies support the assumption of a lower release mortality, the Council received numerous comments from recreational fishermen stating that most of their undersized released fish were suffering high release mortalities. Consequently, a conservative approach which considers that the release mortality could be higher than assumed argues against adoption of a substantially higher minimum size limit.

Reducing the minimum size limit to 14 inches TL would also have no significant impact on SPR at 20 percent release mortality, and a small positive impact on SPR at 50 percent release mortality (Figure 2). However, since smaller fish are in the population in greater abundance, this increased availability of legal sized fish would likely increase the catch rate such that the harvest in pounds would be 5 percent faster than at 15 inches TL, and 14 percent faster than at the 16 inches TL minimum size (based on the NMFS quota monitoring Excel spreadsheet), thus shortening the recreational season.

The status quo 15-inch TL minimum size limit will result in a 5 percent faster harvest rate than the proposed 16-inch TL minimum size limit. In addition, yield-per-recruit can be improved by increasing the minimum size limit from status quo. The minimum size limit that produces maximum yield-per-recruit was calculated by Goodyear (1995) to be 23 inches at 10 percent release mortality, 21 inches at 20 percent release mortality, and 18 inches at 33 percent release mortality.

Eliminating the minimum size limit and requiring fishermen to keep the first 4 (or other bag limit) red snapper caught was not analyzed in the NMFS quota monitoring Excel spreadsheet. However, the greater availability of legal sized fish would be expected to increase the catch rate even more than the 14-inch TL minimum size limit. Furthermore, a requirement to keep the first 4 fish caught would not be enforceable, and could result in highgrading. Even without highgrading, the increase in catch of young, immature red snapper would reduce SPR and yield-per-recruit, and would likely require a reduced TAC to achieve the target of 20 percent SPR in 2019. Goodyear (1995) reported that, at a 20 percent release mortality, the maximum gain in yield per recruit associated with a size limit was 14 percent. Thus, eliminating the minimum size limit could result in a required reduction in TAC of up to 14 percent (7.84 million pounds).

Council Recommendation on the Use of Circle Hooks

Since hooking injuries appear to be the major cause of red snapper release mortality in depths of less than 100 feet, the Council is encouraging red snapper fishermen to use circle hooks, which usually hook the fish in the mouth rather than the gut. The use of circle hooks is not currently required, but may be considered as a management tool in the future.

Economic Impacts

The choice of a minimum size limit for red snapper potentially affects both the quality of fishing trips and the number of trips taken by anglers. Given a fixed bag limit, fishing season, and fishing cost, catching bigger fish may be considered to improve the angler's fishing quality. In this scenario, the Proposed Alternative to raise the minimum size limit from 15 to 16 inches TL or Rejected Alternative (b), which would raise the minimum size limit from 15 to 18 inches TL, could generate higher consumer surplus to the recreational sector. With an improved fishing quality, the number of trips

taken by recreational anglers would also tend to increase. This increase in the number of trips would increase further the overall consumer surplus to the recreational angler and would also likely increase the revenues (and possibly profits) of for-hire vessels. If, on the other hand, the higher minimum size limit forces anglers to catch fewer than the bag limit, then the increase in consumer surplus from an improved fishing quality could be negated by the loss in consumer surplus from keeping fewer fish. In addition, if the increase in the number of angler trips resulting from an improved fishing quality shortens further the fishing season, then there is a good possibility that the increase in consumer surplus from an improved fishing quality may be entirely negated. A shortened season would also adversely affect the revenues and profitability of the for-hire sector. The net outcome then of an increase in the minimum size limit may be viewed as indeterminate with respect to changes in angler consumer surplus and profitability of the for-hire sector.

As mentioned above, raising the minimum size limit from 15 inches TL to 16 inches TL could reduce recreational catches by as much as 9 percent. This may then help in preventing a further reduction in fishing season for the recreational fishery, but only to the extent that such reduction is not offset by an increase in fishing, and particularly catch, effort. Hence, even under this particular scenario the resulting effect on consumer surplus and profitability of the for-hire sector is indeterminate.

While the change in size limit alone has an indeterminate effect on the direction of changes in the consumer surplus and profitability of the for-hire sector, it could have some determinate effect when combined with the other measures in this regulatory amendment. The discussion of the combined effects of all proposed measures in this regulatory amendment is postponed to a later section below after the individual effects of each proposed measure have been considered.

Environmental Consequences

Physical Environment: The alternatives in this section are anticipated to have no impact on the physical environment.

Human Environment: The state of Florida has had a 16-inch TL minimum size limit in effect since 1998, and the proposed size limit increase will therefore have no impact on the human environment for recreational fishermen from that state. Elsewhere, the minimum size limit increase will benefit the human environment by extending the season and providing increased recreational fishing opportunities, relative to the status quo. Having a larger minimum size limit for recreational fishing than for commercial fishing will create a perception of unequal access to the resource by some recreational fishermen, however, the commercial harvest will be constrained by limited access, trip limits, monthly openings, and the commercial quota.

Fishery Resources: The proposed one-inch increase to a 16-inch TL minimum size limit will have little impact on SPR in 2019 even at higher release mortalities, but will help to reduce the harvest rate by about 9 percent (based on the NMFS quota monitoring Excel spreadsheet) and extend the season.

Impact on Other Fisheries: The proposed action will have a small positive impact on other fisheries by extending the recreational fishing season and reducing the time when recreational anglers are directing their effort elsewhere.

Effect on Wetlands: The alternatives have no effect on wetlands.

Effect on Essential Fish Habitat (EFH): The red snapper EFH is summarized in the environmental consequences section under setting red snapper TAC (section 7.1). The minimum size limit is not anticipated to have a negative effect on EFH.

7.3 Red Snapper Recreational Bag Limit

Proposed Alternative 1: Status Quo: Set the recreational red snapper bag limit at 4 fish.

Proposed Alternative 2: Reinstate the 4-fish red snapper bag limit for the captain and crew of recreational for-hire vessels.

Rejected Alternative 1: Set the recreational red snapper bag limit at:

- a. A lower bag limit (3 or 2 fish)
- b. A higher bag limit (5 or more fish)

Rejected Alternative 2: Status Quo: Retain the zero-fish red snapper bag limit for the captain and crew of recreational for-hire vessels.

Rationale

The 4-fish bag limit, in combination with a 16-inch TL minimum size limit, will allow a recreational fishing season of approximately six and a half months. This bag limit was supported by everyone who testified on this issue at the November 1999 Council meeting in Orlando, Florida. In addition, the NMFS sponsored stakeholders workshop held on September 27, 1999 to consider management measures for red snapper recommended a 4-fish bag limit, and reinstatement of the red snapper bag limit allowance for the captain and crew of recreational for-hire vessels.

When the Council originally proposed a zero bag limit for the captain and crew of recreational for-hire vessels in the December 1998 red snapper regulatory amendment, it was part of a combination of management measures intended to delay the closing of the recreational season until late in the year. The Council felt that if the other proposed 1998 measures could keep the season open into late November or December when catch rates were at reduced levels, then the zero bag limit for the captain and crew would provide several additional days and possibly even avoid a quota closure. This would be fair and equitable to the captains and crew because the loss of the bag limit would be offset by the additional income that could be generated by the addition of several more fishing days. Subsequent analyses by NMFS, however, projected that the measure would result in only 3 to 10 additional fishing days. The Council feels that this time span will not create enough additional income to justify the loss of harvest privileges for captain and crew. Any additional benefits to the Nation will be incremental at best, but will create an inequitable distribution of fishing benefits. The negative impact with respect to National Standard 4 will be far greater than the slight positive impact with respect to National Standard 1. Therefore, continuation of the zero bag limit for captain and crew cannot be justified, and the bag limit should be reinstated.

Biological Impacts

Under Proposed Alternative 1, the 4-fish bag limit in combination with a 16-inch TL minimum size limit is projected by NMFS to allow a recreational season (under a 9.12 million pound TAC) from mid-April through October, 2000. Although a 16-inch red snapper weighs approximately 0.4 pounds more than a 15-inch red snapper², the lesser availability of larger fish is expected to result in a net reduction in harvest rate, in terms of both numbers and pounds landed (based on the NMFS quota monitoring Excel spreadsheet).

Under Proposed Alternative 2, reinstating the 4-fish red snapper recreational bag limit for the captain and crew of recreational for-hire vessels is functionally equivalent to the 1999 status quo, since the zero-fish bag limit for the captain and crew was approved after the 1999 recreational season closed and has not yet been implemented on the water. Therefore, this proposed action will have no impact relative to 1999. It is estimated by NMFS that the bag limit for the captain and crew will increase the harvest rate by 3 percent compared to having a zero-fish bag limit for the captain and crew. This will reduce the recreational season by 3 to 10 days, depending upon when the recreational season is opened. Since the recreational fishery is managed under a quota, this action affects the length of the season but not the overall harvest.

Rejected Alternative 1a, which would reduce the bag limit, could effectively extend the recreational fishing season as well as, or in combination with, minimum size limit increases. However, many fishermen have indicated that, given the cost of making an offshore red snapper fishing trip, bag limits below the current 4-fish limit would not be acceptable. Reduced bag levels could lead to effort shifting toward other species, and to highgrading of red snapper. An increase in the bag limit (Rejected Alternative 1b) would offset any benefits from a reduced harvest rate due to an increased minimum size limit, and would shorten the recreational season.

Rejected Alternative 2 would have retained the zero-fish bag limit for captain and crew of recreational for-hire vessels and would reduce the recreational harvest rate by only 3 percent. This translates into just 3 to 10 days of fishing, fewer days in the middle of the season when fishing pressure is high, or slightly more days during the lower pressure months at the beginning and end of the year. While this measure could provide a small increase in the length of the recreational season, it would do so by selectively prohibiting a segment of the fishing public from retaining a recreational bag limit of red snapper. This could be a violation of National Standard 4, which requires that management measures be fair and equitable to all fishermen. Provided that the number of recreational fishing days is adjusted to reflect the presence or absence of a bag limit for captain and crew, there is no biological difference in the impacts of Rejected Alternative 2 and Proposed Alternative 2 other than a slight increase in the harvest rate under Proposed Alternative 2.

Economic Impacts

The proposed alternative of a 4-fish bag limit is the status quo, and thus would not effect a change in the economic status of fishing participants. A lower bag limit may be expected to reduce angler consumer surplus per trip but would also tend to lengthen the season and thus could result in an increase in overall consumer surplus if the increase in the number of trips more than compensates for the reduction in consumer surplus per trip. The opposite situation occurs if the bag limit were increased to 5 fish. There is a good possibility that two effects from a change (higher or lower) in

² The weight difference between a 15-inch and 16-inch red snapper was calculated from the whole weight-total length formula in the 1999 red snapper stock assessment (Schirripa and Legault 1999): $WW(lbs) = 4.40E04 * TL(in)^3.056$

the bag limit could possibly cancel each other out. With respect to the effects on the for-hire sector, a longer season from a reduction in bag limits offers a relatively higher probability of improved revenue and profitability conditions than a shorter season from a higher bag limit. This conclusion, however, has to be tempered by the fact that a longer season does not necessarily translate to an increase in the number of trips taken by anglers through the for-hire fishing mode. Even if it does, the increase in the number of trips could be achieved only at the expense of reducing the fees paid by for-hire vessel customers, particularly if anglers perceive that a 3-fish bag limit is not worth expending the prevailing for-hire fishing fees. Hence, as with the minimum size limit case, the net economic outcome of changes in bag limits from 4 to 5 fish or from 4 to 3 fish is indeterminate, particularly for the individual anglers.

The zero-fish bag limit to captain and crew of for-hire vessels was proposed for the 1999 season but to date has not yet been implemented. Allowing a 4-fish bag limit for the captain and crew (Preferred Alternative 2) would reduce the fishing season by 3 to 10 days. The captain and crew's bag limit may be used for their own consumption, as a buffer to avoid violation of the bag limit by the customers, or as an additional enticement to paying clients. Such benefits could potentially offset the reduction in vessel income from undertaking fewer trips due to a shortened season. But there is the possibility that these benefits may not totally offset the losses to private recreational anglers who would be faced with a relatively shorter fishing season. Landings information indicate that the for-hire sector has been accounting for a major portion of total recreational landings of red snapper, but the private mode still dominates in terms of the number of trips taken. There exists then the possibility that allowing a 4-fish bag limit for captain and crew of for-hire vessels would result in net loss to the recreational fishery.

Environmental Consequences

Physical Environment: The alternatives in this section are anticipated to have no impact on the physical environment.

Human Environment: The status quo 4-fish bag limit and reinstatement of the bag limit for captain and crew of recreational for-hire vessels was strongly supported in public testimony at the November 1999 Council meeting. Maintaining the status quo bag limit will benefit the human environment by promoting stability in the regulations. Reinstating the bag limit for captain and crew of recreational for-hire vessels will benefit the human environment by correcting a situation of inequitable access to the resource that was created by the zero-fish bag limit for captain and crew of recreational for-hire vessels.

Fishery Resources: The 4-fish bag limit, in combination with the 16-inch TL minimum size limit and the mid-April through October fishing season, is projected to keep the recreational sector within its quota, and will thus benefit the red snapper resource by maintaining the recovery schedule.

Impact on Other Fisheries: Fishermen who are able to quickly fill their 4-fish bag limit may switch to fishing for other species. However, this has been the case since the 4-fish bag limit was implemented in 1998. Thus, the proposed actions will have no net change in impacts on other fisheries.

Effect on Wetlands: The alternatives have no effect on wetlands.

Effect on Essential Fish Habitat (EFH): The red snapper EFH is summarized in the environmental consequences section under setting red snapper TAC (section 7.1). The 4-fish bag limit and reinstatement of the bag limit for captain and crew of recreational for-hire vessels is not anticipated to have a negative effect on EFH.

7.4 Red Snapper Recreational Fishing Season

Proposed Alternative 1: Set the recreational red snapper fishing season from April 15 through October 31. (Note: The Regional Administrator has revised these dates to be April 21 through October 31 via interim rule.)

Proposed Alternative 2: Authorize the Regional Administrator to adjust the opening and closing dates of the recreational red snapper fishing season to accommodate the reinstatement of the 4-fish bag limit for captain and crew of for-hire vessels.

Rejected Alternative 1: Set the recreational red snapper fishing season to:

- a. Open on January 1 and close when the quota is filled (status quo)
- b. Open in January and February, then reopen in Spring/Summer until the quota is filled

Rejected Alternative 2: Do not authorize the Regional Administrator to adjust the opening and closing dates of the recreational red snapper fishing season to accommodate the reinstatement of the 4-fish bag limit for captain and crew of recreational for-hire vessels (status quo).

Rejected Alternative 3: Establish regional recreational red snapper fishing seasons and regulations.

Rationale

The combination of a 16-inch recreational minimum size limit, 4-fish bag limit (with a zero-fish bag limit for captain and crew of recreational for-hire vessels), and April 15 through October 31 recreational red snapper season was projected by NMFS to allow the recreational fishery to fill its quota. This proposal provides the longest recreational season that is consistent with maintaining the 4-fish bag limit and allowing the recreational season to be open in the summer and fall, when recreational fishing is at its peak. It is also consistent, to the extent possible given the need to adhere to a 4.47 million pound recreational quota, with a recommendation from the NMFS sponsored stakeholders workshop held on September 27, 1999, that the recreational red snapper season be set from March through October.

Recreational red snapper quota monitoring is a projection based on historical survey data and the current status of the stock. Little, if any, additional survey data becomes available during the fishing season. It is therefore possible to project both the opening and closing dates prior to the season with the available data. Making these projections in advance allows the recreational fishermen and fishing industry to plan accordingly, and enhances stability of the fishery.

The opening and closing dates proposed in Proposed Alternative 1 were based on having a zero-fish bag limit for the captain and crew of recreational for-hire vessels. Reinstating that bag limit requires that the season be shortened by 3 to 10 days, depending upon the time of year, to accommodate the additional harvest. Under the Magnuson-Stevens Act, the Regional Administrator has an obligation to close the fishery when the quota is projected to be filled regardless of any proposed closing dates. The March 1997 red snapper regulatory amendment authorized the Regional Administrator to close the recreational fishery at such time as projected to be necessary to prevent the recreational sector from exceeding its allocation, but did not authorize him to adjust the opening dates. Based on historical catches and public comments, October is a more important recreational fishing month than April. This Proposed Alternative, therefore, authorizes the Regional Administrator to adjust the opening as well as closing dates to accommodate the bag limit for captain and crew. In the red snapper interim rule³, this action was accomplished by changing the opening date for the 2000 season from April 15 to April 21.

Regional management of the red snapper resource was considered (Rejected Alternative 3), but this action would require more in-depth consideration of issues relating to the impacts of regional allocation, fairness and equity, and management of the resource as a single unit throughout its range than could be dealt with in a Regulatory Amendment. Consequently, the Council determined that this alternative is more appropriate for consideration under a full plan amendment.

Biological Impacts

The recreational season as defined under Proposed Alternative 1, in combination with the proposed 4-fish bag limit and 16-inch recreational minimum size limit, will benefit the resource by keeping the projected recreational red snapper harvest within its quota. While the overriding biological concern is to keep the overall fishing mortality rate within the bounds needed for the recovery schedule, the selection of mid-April through October for the open season could have some negative impact on release mortality in comparison to other months. The open season corresponds approximately to MRFSS waves 3 through 5 (May through October), which, for the years 1993-1997, had higher mean percentages of released fish (55 to 65 percent) than during the remaining months (41 to 47 percent) (Table 5). These results are corroborated by anecdotal information from recreational fishermen that the larger, legal-size fish are closer to shore in the winter months and further offshore during the summer.

³ *Federal Register*, volume 64, number 243: pages 71056-71060

Mean of 1993-1997			
WAVE	Kept	Rel	%Rel
1	259	167	40.64
2	173	153	46.62
3	115	130	56.44
4	116	156	55.00
5	180	327	64.60
6	248	236	47.72
1998			
WAVE	Kept	Rel	%Rel
1	165	126	43.30
2	344	303	46.80
3	273	171	38.50
4	228	213	48.30
5	229	369	61.70
6	0	108	99.80

Table 5. (Table 23 in Schirripa and Legault 1999). Estimates of fractions of red snapper caught and released by recreational fishers by wave for mean of the years 1993-1997, and for the year 1998 based on the MRFSS data. Units are in thousands of fish.

Proposed Alternative 2 allows the Regional Administrator the flexibility to adjust both the opening and closing dates of the recreational fishery rather than only the closing date to accommodate reinstating the red snapper recreational bag limit for the captain and crew. The last year that the recreational red snapper fishery was open in October was 1997. During the years 1993 to 1997, the mean number of red snapper harvested by recreational fishermen was approximately the same in MRFSS Wave 2 (March-April) as in Wave 5 (September-October): 173,000 vs. 180,000 fish (Table 5). These numbers suggest that the number of fishing days that would have to be eliminated to accommodate the bag limit for the captain and crew would be about the same in either April or October.

Under Rejected Alternative 1a, the NMFS projected closing date for the recreational red snapper season in 2000 with a January 1 opening, 4-fish bag limit, 15-inch TL minimum size limit, and zero-fish bag limit for captain and crew of recreational for-hire vessels, was July 29 (*Federal Register*, December 20, 1999, page 71057). The combination of increasing the minimum size limit to 16 inches (9 percent decrease in harvest rate) and reinstating the captain and crew bag limit (3 percent increase in harvest rate) would extend the season slightly, but still result in a late July or early August closure. This would result in the recreational season closing at a time when there is still heavy demand for recreational red snapper fishing opportunities.

Rejected Alternative 1b was considered because of a request from fishermen in south Texas to find some way to allow the recreational season to be open in January and February to accommodate a winter Texas fishery. One NMFS scenario would be to have a 16-inch TL minimum size limit, a January 1 - February 15 season with a 3-fish bag limit, and a May 15 - October 14 season with a 4-

fish bag limit⁴. However, this scenario and any other scenario to include a winter fishery would eliminate several weeks from the Spring/Summer/Fall fishery. The Council felt that optimizing benefits to the Nation in terms of recreational red snapper fishing opportunities would be best accomplished by maximizing the length of the Spring/Summer/Fall season.

Rejected Alternative 2 would have limited the Regional Administrator to adjusting only the closing date of the recreational red snapper season to accommodate the bag limit for captain and crew. As discussed above, the number of days eliminated would likely have been about the same in either the April or October.

Under Rejected Alternative 3, regional differences in fishing regulations could be biologically neutral on a Gulfwide basis provided that the overall fishing mortality rate remains consistent with the rebuilding schedule. However, regional impacts could vary and would need to be evaluated for specific scenarios.

Economic Impacts

An economic analysis done by NMFS (2000) as a supporting document to the Interim Rule implementing, among others, the season for the recreational fishery developed several scenarios for the recreational fishing season taking into account the minimum size and bag limits. The various scenarios are presented in the table below.

Table 6. Alternative management scenarios for the 2000 Gulf of Mexico recreational red snapper season

Scenario	Season	Min. Size Limit	Bag Limit*	Overage (lbs.)
Status Quo	Jan1-Jul29	16	4/0	0
1	Apr15-Oct31	16	4/0	207,000
2	Apr26-Oct31	16	4/0	0
3	Apr15-Oct31	16	4	351,000
4	May3-Oct31	16	4	0
5	Apr21-Oct31	16	4	237,000

*4/0 refers to a 4-fish angler bag limit and a zero-fish captain and crew bag limit. 4 refers to a uniform 4-fish bag limit.
Source: NMFS(2000).

As can be gleaned from Table 6, the status quo provides the longest recreational fishing season with zero overage, but it should be noted that this assumes a zero-fish bag limit for captain and crew. Proposed Alternative 1 (Scenario 3) would result in the highest overage, although an overage would still occur even if the bag limit for captain and crew were reduced to zero- fish (Scenario 1). The second lowest overage occurs under the fishing season implemented through the Interim Rule (Scenario 5).

⁴ This option was included in an attachment to a letter to Council Chairman Hal Osburn from William Hogarth dated August 19, 1999.

The economic consequences of the various scenarios for the recreational red snapper fishing season are summarized in the table below.

Table 7. Effects of alternative management scenarios for the Gulf of Mexico recreational red snapper season.

Scenario	Season Length (Days)	Angler Target Trips	Consumer Surplus (Million \$)	Potential Trip Cancellations	Forgone Gross Revenues (\$1000)	
					Charterboat	Headboat
Status Quo	210	192,000	41	7,000-18,000	245-620	96-244
1 (Apr15-Oct31)	200	199,000	42	5,000-13,000	180-455	71-179
2 (Apr26-Oct31)	189	189,000	40	6,000-14,000	199-504	78-199
3 (Apr15-Oct31)	200	199,000	42	5,000-13,000	180-455	71-179
4 (May3-Oct31)	182	183,000	39	6,000-15,000	213-538	84-212
5 (Apr21-Oct31)	194	194,000	41	5,000-14,000	190-482	75-190

Source: NMFS (2000).

As can be inferred from Table 7, the status quo while providing the longest fishing season does not give the best short-term economic results. The two scenarios for an April 15-October 31 season (Scenarios 1 and 3) result in the highest consumer surplus of \$42 million and lowest revenue reductions of \$180-455 thousand for charterboats and \$71-179 thousand for headboats. Recall, however, that Scenario 3 results in the highest overage while Scenario 1, the third lowest overage. The major difference between the two is the provision for zero-fish (Scenario 1) or 4-fish (Scenario 3) bag limit for captain and crew of for-hire vessels. If these potential overages are realized, the possibility exists that the next recreational fishing season would have to be shortened further, or if kept about the same, more stringent measures would have to be imposed.

One major reason for the low economic outcome of the status quo scenario is that it results in the largest number of fishing trip cancellations, implying that more trips have been historically taken during the closed period under the status quo than during the closed period of the other alternatives. Those cancelled trips are assumed to be cancelled for the entire year and not just re-scheduled for the open days. In the absence of other information, consumer surplus is assumed to be fixed on a per trip basis regardless of when or where the fishing trip occurs. In this case, consumer surplus is taken to vary in direct proportion to the number of trips taken. Also, the revenue figures for the charterboats and headboats are considered fixed regardless of when and where the fishing trip is taken so that, as with consumer surplus, for-hire vessel revenues are taken to vary in direct proportion to the number of trips taken. This treatment of both consumer surplus and for-hire vessel revenues would not allow an economic evaluation of the effects of regional recreational red snapper fishing seasons (Rejected Alternative 3). On the other hand, a different fishing season such as the one provided under Rejected Alternative 1b could be evaluated if the actual dates are specified, since one crucial piece of information that has to be known is the number of trip cancellations associated with the dates chosen for closure.

Proposed Alternative 2 provides a more convenient and speedy means of adjusting the recreational fishing season relative to the bag limit for the captain and crew of for-hire vessels. As mentioned earlier, the 4-fish or 0-fish bag limit for captain and crew has a relatively minor effect on the length

of the season. In this sense, the adjustments that may be introduced by the RA to the recreational season would have minimal effects on fishing participants.

One other aspect associated with the choice of a particular recreational fishing season is the fact that some months are more important for red snapper fishing in one geographic area than in others, particularly from the standpoint of for-hire vessel operations. To the degree that Winter anglers have less flexibility to adjust their fishing patterns than Summer and Fall anglers, changing the closed season from the Summer-Fall period (status quo) to the Winter period (e.g., Proposed Alternative) will reduce consumer surplus associated with the red snapper fishery (NMFS 2000). An analogous situation could occur in the for-hire fishery. For example, the Winter for-hire fishery in one area could be faced with limited choices of species such that if red snapper were an important target species and fishing for the species were prohibited during this time, there would be few species left for targeting and/or catching by anglers in for-hire vessels. This could disrupt the fishing operations of for-hire vessels as anglers choose not to fish. Some of the operating losses could be recouped if anglers merely postpone their fishing trips to the open months, but there is the chance that they would be competing with the usual customers for the open months. In this latter case, for-hire vessel operators may raise their prices to accommodate an increase in demand, but given the highly competitive nature of for-hire vessel operations, an increase in prices is very unlikely if for-hire businesses want to stay competitive.

Given the seasonal importance of fishing for red snapper in various geographic areas, the potential impacts of any choice of fishing season for the recreational fishery would be disproportionately distributed across for-hire vessels from different geographic areas. Some public testimonies indicate that red snapper is an important target species of for-hire vessels in Texas, particularly South Texas, during Winter so that the Winter closure (Proposed Alternative) would adversely affect their operations possibly more than for-hire vessels in other parts of the Gulf. The reverse situation is bound to occur if the closure were to occur during Summer-Fall (status quo).

With the expected longer closure this year for the red snapper recreational fishery, practically all major activity centers for the for-hire fishery from the Florida Panhandle through Texas would be adversely affected. Given the distributional effects of the proposed April 15 (21)-October 31 season, larger negative impacts would fall on activity centers in the Texas area. Sutton et al. (1999) listed the following as major activity centers for charterboats: South Padre Island, Port Aransas, and Galveston-Freeport in Texas; Grand Isle-Empire-Venice in Louisiana; Gulfport-Biloxi in Mississippi; and, Orange Beach-Gulf Shores in Alabama. They also found the following as major activity centers for headboats: South Padre Island, Port Aransas, and Galveston-Freeport in Texas; and, Orange Beach-Gulf Shores in Alabama. Holland et al. (draft 1999) considered the following as major activity centers in the Florida Panhandle: Destin, Panama City (and Panama Beach), and Pensacola for charterboats; and, Destin and Panama City (and Panama Beach) for headboats. These are essentially the areas that would bear the cost of shorter red snapper recreational fishing season, with major activity centers in Texas being likely more negatively affected under the April 15 (21)-October 31 fishing season.

Environmental Consequences

Physical Environment: The alternatives in this section are anticipated to have no impact on the physical environment.

Human Environment: The proposed actions will enhance stability in the human environment by allowing recreational fishermen to plan in advance, based on the fixed opening and closing dates. Based on public comments to the Council and to NMFS, keeping the recreational red snapper fishery open during Summer and Fall was deemed to be of high importance. The proposed actions benefit the human environment by establishing the longest open season that is consistent with that objective, along with a 4-fish bag limit, a 16-inch TL minimum size limit, and a 4.47 million pound recreational quota (under a 9.12 million pound TAC).

Fishery Resources: Red snapper spawning occurs primarily from May to October over fine sand bottom away from the reefs. Thus, the larger spawners will be off of the reefs and less available to fishermen during most of the fishing season, and those fish available on the reefs will be of a smaller average size. This could result in an increase in release mortality compared to fishing during months when spawning activity is not as prevalent. However, the primary concern for the red snapper recovery is to keep fishing mortality within the levels consistent with the recovery program. The proposed actions will benefit the red snapper resource by being consistent with the recovery schedule and keeping the recreational harvest within its 4.47 million pound quota.

Impact on Other Fisheries: During the closed season, effort shifting could occur toward alternative species, such as vermilion snapper and triggerfish, or toward inshore fisheries under states jurisdictions, such as sea trout. These impacts are not expected to be major, and have been minimized by providing the longest season that is consistent with a 4-fish bag limit, a 16-inch TL minimum size limit, a Summer/Fall red snapper fishery, and a 4.47 million pound recreational quota.

Effect on Wetlands: The alternatives have no effect on wetlands.

Effect on Essential Fish Habitat (EFH): The red snapper EFH is summarized in the environmental consequences section under setting red snapper TAC (section 7.1). The opening and closing dates for the recreational red snapper season is not anticipated to have a negative effect on EFH.

7.5 Red Snapper Spring Commercial Fishing Season

Proposed Alternative: Set the red snapper commercial Spring season to open on February 1, from noon on the 1st to noon on the 10th of each month until the Spring subquota is reached.

Rejected Alternative: Status Quo - Set the red snapper commercial Spring season to open on February 1, from noon on the 1st to noon on the 15th until the Spring sub-quota is reached.

Rationale

Shortening the commercial red snapper monthly openings during the February (Spring) season to the first 10 calendar days of each month (noon on the 1st to noon on the 10th, 9 full fishing days) will extend the season, reduce the harvest rate, and reduce the likelihood of overfishing. Projections by the Socioeconomic Panel and the experience of the 10-day openings during the Fall season suggest that the reduced harvest rate will also help maintain price stability. This action will allow commercial red snapper fishermen to generate more revenue with the same amount of catch, which will help reduce the incentive to derby fish.

In the three years since the 15 days per month strategy was adopted in 1997, the commercial Spring fishery has had 53, 39, and 42 fishing days respectively. Under the Proposed Alternative to have 10-day openings, this would result in the Spring quota harvest being spread out over 4 to 6 months, compared to 3 to 4 months for the Rejected (status quo) Alternative. The Rejected Alternative would concentrate harvest into a shorter time period, producing a greater market glut and lower prices, and it would force the market to increase its dependency on foreign imports during the closed season over a longer time period.

Biological Impacts

The commercial fishing season change to the first 10 days per month instead of 15 during the Spring (February 1) opening will spread harvest out over more months and could reduce short-term localized fishing pressure. However, the Spring sub-quota will still likely be filled, and the Proposed and Rejected Alternatives will therefore have no differential biological impacts.

Economic Impacts

The only difference between the Proposed and Rejected Alternatives is the shorter number of days (10) per month for fishing that the former allows. A shorter open season each month has the tendency to partially hold in check the surge in red snapper landings for the month. One result of this is that the calendar fishing season would be extended although not necessarily in terms of actual fishing days. Table 1 shows that the 1996 Spring season lasted 53 days, but the 1997 Spring season lasted only 39 days despite the adoption of the 15-day a month open season. There was a slight increase in the 1999 Spring season. However, while the 1997 Spring season covered February and March, the 1998 and 1999 Spring seasons extended through April. With a further reduction in the number of open days per month, as in the Proposed Alternative, there is some good possibility that the Spring season may be extended further in terms of months the fishery is open, as was the case for the Fall season in 1999. The major advantage of this extension is that landings may be spread out over a longer period so that fishermen may be able to get better ex-vessel prices for their landings. There is, however, also the possibility that this type of benefits to the fishermen may be short-lived. This type of arrangement does very little to address the derby mentality of fishermen.

NMFS (2000) has pointed out some of the problems associated with the 10-day mini-season. Fishermen who wait still risk losing the opportunity to harvest larger shares of the overall quota. Reducing the mini-seasons from 15 to 10 days probably will result in a further rush for fish that could compress the actual fishing time, although the fishery will be open more months during the calendar year. Also, the rush for fish within the 10-day mini-seasons could result in additional risks to the safety of boats and fishermen if they feel compelled to fish during inclement weather. In addition, biological improvements make fish easier and less costly to catch, and will continue to do so as the red snapper population recovers over time. Eventually, there will be excessive quantities of red snapper landed during each 10-day mini-season, with sharp declines in wholesale and ex-vessel prices.

Environmental Consequences

Physical Environment: The alternatives in this section are anticipated to have no impact on the physical environment.

Human Environment: The proposed alternative will benefit the human environment by spreading out the Spring harvest of red snapper, reducing the market glut and extending the time when fresh red snapper is available to the market.

Fishery Resources: The alternatives in this section will have no change in impact on the red snapper resource, since the Spring sub-quota will be filled under either alternative.

Impact on Other Fisheries: By extending the commercial red snapper season, effort shifting to other species may be reduced.

Effect on Wetlands: The alternatives have no effect on wetlands.

Effect on Essential Fish Habitat (EFH): The Red Snapper Advisory Panel, at its October 25, 1999 meeting, expressed concern that the bottom longline fishery may be increasing its participation in the red snapper fishery as the stock recovered, and recommended that longlines and buoy gear be prohibited from commercial harvest of red snapper. Longline vessels are restricted to operating in waters deeper than 50 fathoms west of Cape San Blas, Florida and 20 fathoms east of Cape San Blas. In 1992, the Florida Marine Fisheries Commission (now the Florida Fish and Wildlife Conservation Commission) expressed concern to the Council that damage to live bottom assemblages is possible from the dragging of bottom longlines or the snagging of the hooks (letter from Russell Nelson to Council Chairman Gilmer Nix dated April 15, 1992). The longline fishery operates primarily off of Florida targeting grouper, but some longline fishermen have reported increased incidental catches of red snapper in recent years. The 10-day monthly openings in the commercial red snapper fishery make it logistically difficult for red snapper to be targeted or landed by longline vessels, which may stay out at seas for more than 10 days at a time. As long as these short monthly openings exist, the longline fishery is unlikely to target red snapper. Consequently, the short monthly openings will either have no negative impact on EFH, or a small positive impact by discouraging the use of longlines to target red snapper.

7.6 Red Snapper Fall Commercial Fishing Season

Proposed Alternative: Set the red snapper commercial Fall season to open on October 1, from noon on the 1st to noon on the 10th of each month until the remaining quota is filled.

Rejected Alternative: Status Quo - Set the red snapper commercial Fall season to open on September 1, from noon on the 1st to noon on the 10th of each month until the remaining quota is filled.

Rationale

Seafood dealers have stated that there is low demand for seafood in September, but that demand and prices improve in October. Delaying the start of the Fall commercial season until October is intended to allow fishermen to get better prices for their catches and make fresh red snapper available at a time when the consumer demand is greater.

Biological Impacts:

The Fall (September 1, proposed change to October 1) season has never had more than 28 open days under the current 4.65 million pound quota. The 10-day per month openings beginning October 1 suggest that the Fall season will extend into December. Declining weather conditions late in the year could further reduce the monthly commercial harvest rate by reducing the number of fishable days during the open periods, and there is a possibility that the commercial quota will not be filled even after December. In this case, the proposed action could reduce the total annual commercial harvest, albeit by a small amount, and help to accelerate the recovery program. If the quota is filled, then there will be no difference in biological impact between the Proposed and Rejected Alternatives.

Economic Impacts

The only change that the Proposed Alternatives would introduce is the October rather than September start of the Fall season. The 10-day a month open season for the Fall season has only been in effect for the 1999 Fall season. The two previous Fall seasons had a 15-day a month open season. It was only in 1999 that the Fall season extended through early November. NMFS (2000) reported that for the 1999 Fall season, the ex-vessel prices were about \$2.15, \$2.25, and \$2.40 per pound for September, October, and November. There has been some report indicating that higher prices in October were partly due to stronger demand. While the Proposed Alternative would possibly allow fishermen to take advantage of higher prices in October and November (or possibly December), such higher prices could simply be the result of having smaller supply in these months. If the Fall red snapper season starts in October, a favorable fishing condition may bring about a surge in landings with concomitant reduction in prices as happened in 1998 when the price fell to \$1.50 or even \$1.25 per pound during the second week of October. An October opening then of the Fall season may not bring about the anticipated increase in revenues if there is a surge in landings due to more favorable weather conditions. In the event weather conditions are not very conducive to fishing, the smaller boats would be placed at a disadvantage in harvesting whatever quota remains.

An earlier statement regarding the 10-day a month open Spring season also applies to the 10-day a month open Fall season (see “Economic Impacts” section on page 32).

Environmental Consequences

Physical Environment: The alternatives in this section are anticipated to have no impact on the physical environment.

Human Environment: Delaying the opening of the Fall season unit October 1 is expected to benefit fishermen economically by allowing harvest to occur at a time when they can get better prices. This will shift the Fall season into a period when there is generally worse weather conditions but also when there is less danger of hurricanes and tropical storms. Due to a large overlap between the current and proposed Fall seasons and the monthly 10-day openings, this shift will affect at most 10 fishing days, and is not expected to have a substantial impact on the human environment from the standpoint of lost fishing days due to weather.

Fishery Resources: Under the proposed alternative, there is a slight possibility that the commercial quota will not be filled before the end of the year, which would provide a positive benefit to the resource. If the quota is filled, then there is no change in impacts to the red snapper resource under either alternative.

Impact on Other Fisheries: The alternatives have no effect on other fishery resources.

Effect on Wetlands: The alternatives have no effect on wetlands.

Effect on Essential Fish Habitat (EFH): The red snapper EFH is summarized in the environmental consequences section under setting red snapper TAC (section 7.1). The opening date for the commercial Fall season is not anticipated to have a negative effect on EFH.

7.7 Red Snapper Commercial Minimum Size Limit

Proposed Alternative: Status quo - Retain the red snapper commercial minimum size limit at 15 inches total length.

Rejected Alternative: Set the commercial red snapper minimum size limit at:

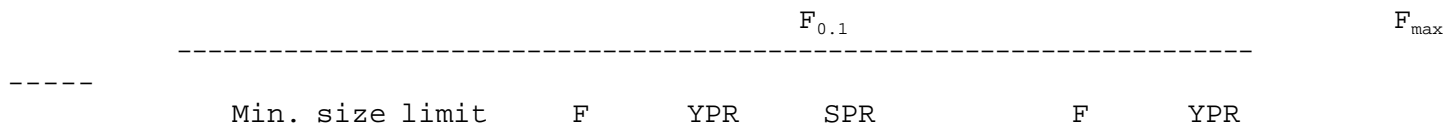
- a. a higher size limit, up to 18 inches total length
- b. a lower size limit - 14 inches total length
- c. no minimum size limit, keep the first 2,000 (or 200) pounds of fish caught

Rationale

The commercial harvest rate is controlled by limited access (license limitation), trip limits, and days-per-month openings. Because these other methods are available to control the commercial harvest rate, minimum size limit increases to control the harvest rate are not needed. The commercial red snapper fishery is assumed to have a higher release mortality rate (33 percent) than the recreational fishery (20 percent). Thus, an increase in the minimum size limit is likely to have a greater negative effect on commercial release mortality than on recreational release mortality. Decreasing the minimum size limit would reduce yield-per-recruit, and may require a decrease in TAC. Consequently, there is no current justification to either increase or reduce the commercial minimum size limit from the status quo of 15 inches TL.

Biological Impacts

At 33 percent release mortality, over a broad range of minimum size limits from 14 to 18 inches TL, there is little difference in the maximum YPR, SPR at maximum YPR, or fishing mortality rates corresponding to $F_{0.1}$ and F_{max} . Eliminating the minimum size limit entirely produces only a small decrease in maximum YPR and may increase SPR slightly. However, to achieve these levels, the fishing mortality rate would need to be reduced by 10 to 14 percent from the fishing mortality rate that produces maximum yield-per-recruit at 15 inches TL, resulting in a corresponding decrease in TAC. For minimum sizes from 14 to 18 inches TL, increasing the size limit results in a slight increase in yield-per-recruit, reduction in SPR at maximum yield-per-recruit, and increase in the fishing mortality rate needed to achieve maximum YPR, but the differences are negligible (Table 8).



SPR						
0.209	No size limit	0.066	2.68	0.355	0.108	2.90
0.196	14 inches	0.072	2.83	0.347	0.122	3.08
0.194	15 inches	0.073	2.86	0.346	0.125	3.11
0.194	16 inches	0.075	2.89	0.346	0.128	3.14
0.194	18 inches	0.077	2.92	0.348	0.133	3.18

Table 8. Maximum yield-per-recruit (lbs.), SPR, and fishing mortality rates corresponding to $F_{0.1}$ and F_{max} under different minimum size limits. Natural mortality rate is $M=0.1$ and release mortality of 33 percent. (From Goodyear 1995, Table 114, values converted from metric to English.)

Economic Impacts

Being the status quo, the Proposed Alternative would not bring about changes in the economic status of the commercial fishing participants. The implications, however, of maintaining the status quo may be elicited by evaluating the effects of changing the minimum size limits.

Reducing the minimum size limit to 14 inches TL (Rejected Alternative b) would result in the 2-pound fish entering the market, and a further reduction to 13 inches TL would result in 1- to 2-pound fish entering the market. Given a fixed commercial quota that has been reached every season, a change in the minimum size limit would not affect the total landings of the commercial sector, but it would affect the timing of those landings and the revenue structure of vessels.

The commercial sector has historically caught and sold red snapper in the 1 to 2 pound categories. These market categories were lost to the commercial fishery when the minimum size limit was increased from 13 inches TL to 14 inches TL and eventually to 15 inches TL (the current minimum size limit). Imports have essentially filled these categories in more recent years.

The commercial red snapper pricing system among dealers, as described in Amendment 5, historically used from 1 to 4 tiers of pricing red snapper based on pound sizes, with 1 to 2 tiers being the most common. Whatever the tier system used, the 2 to 4 pound category generally commanded a premium price over smaller or larger sizes. The 1 to 2 pound category commanded a premium price when a 2-tier system was used, but only a secondary price with 3 to 4 tiers. Given the information that a 2-tier system is most common, it is not readily ascertainable whether a 1 to 2 pound fish commanded higher prices than a 2 to 4 pound fish since both sizes were found to command 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 to 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 to 4 pound sizes had been higher than for those of smaller sizes for the period

mentioned. On the other hand, information for 1993 appeared to indicate that the 1 to 2 pound fish command higher wholesale prices (Antozzi 1993). Recently, Antozzi and Waters (1998) reinforced that finding when they indicated that fish of 1 to 2 pounds were sometimes priced 15 to 25 cents more than larger fish. This reasoning implies higher ex-vessel prices for smaller size categories 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 (Keithly and Prochaska 1985), it provides only very general quantitative relationships between snapper price, snapper landings, imports, and income. A similar remark may be made of a more recent estimate of the relationship between red snapper price and landings (Waters 1997). Since these estimations were done for a different purpose, they understandably lack 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 opposite changes in snapper price. In many previous public hearings held throughout the Gulf, it has been contended that 1 to 2 pound red snappers command a relatively higher demand, especially among restaurants. While this claim is supported by the premium price for smaller snappers in the 1993 open fishing season, it does not appear to support the premium price attached to 2 to 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.

Supply factors may be of some use to explain the mentioned price reversal. If demand is assumed constant, one possible explanation for the price reversal is that the supply of 1 to 2 pound fish in 1993 must have been relatively low compared to those of previous years and to the 1993 supply of larger fish. The 1989 and 1990 year classes of juvenile red snapper were well above previous average years, with the former being 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 inches TL, respectively, and a 1 to 2 pound fish is smaller than 16 inches TL. Although it remains to be fully validated by an examination of commercial landings by size categories, there appears to be 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 averaged about 19.8 and 16.7 inches TL, respectively, so that larger size fish would then command lower prices than smaller fish because the 1991 year class was not as strong as the 1989 or 1990 year classes. Similar price conditions would exist in subsequent years since subsequent year classes were also not as strong. Hence, under the condition that the 1989 and 1990 year classes dominated subsequent year classes, catches of larger fish would be very likely higher and would likely depress prices for these size categories. Thus, it is very likely that the price reversal was caused by more supply of larger fish.

Whether the described condition continues into the future is not certain. In more recent years, recruitment has not been as high as that in 1989, but it has generally been increasing since 1993. The 1996 year class would be about 1 to 2 pounds in 1999, indicating that in that year the price of 1 to 2 pound fish category relative to larger fish categories would not be as high as in 1993. In this case, there is a possibility that a reduction in the minimum size limit to 14 or 13 inches TL would be accompanied by substantial increases in the 1 to 2 pound fish. The expected revenue to the commercial sector would then not be as high as what could be expected in 1993. The price differential between small and large fish could still exist once the size limit is reduced, but there is no guarantee that total revenues to the industry would substantially increase. In addition to these

considerations about price differential, the effect of a minimum size limit reduction on the length of the season is also important. If more fish become available to fishermen, the likelihood of the quota being met sooner becomes high. Thus, there is a good possibility that a reduction in the minimum size limit would only worsen the derby condition in the commercial fishery.

The foregoing analysis of pricing structures readily applies to the alternative eliminating the minimum size limit (Rejected Alternative c). Under this alternative, there is a strong possibility that the multi-tiered pricing structure would reappear, with the 1 to 2 pound fish potentially commanding some price premium over other size categories but again assuming that supply across various size categories do not vary significantly.

Raising the minimum size limit to 18 inches TL would likely curtail domestic catches and thus extend the fishing season. While this condition may tone down the derby condition in the fishery, revenues to commercial fishermen may not necessarily increase for two reasons. First, bigger size categories generally command lower prices than smaller ones, particularly the 1- to 2-pound fish category. Second, imports can readily fill the missing size categories. NMFS (2000) reported that the quantity of fresh snappers (all Lutjanid species combined) imported more than doubled between 1991 and 1997, from 10.8 to a record 24.2 million pounds, with slight decline to 22.2 million pounds in 1998. If imports further increase as a result of low production due to the higher minimum size limit, the benefits from a relatively higher price due to a longer season may be totally negated. If on top of this, domestic production of larger fish bring in relatively lower prices, the overall impact of an 18-inch minimum size limit may be a reduction in revenues and likely profits to the commercial fishing vessels.

Environmental Consequences

Physical Environment: The alternatives in this section are anticipated to have no impact on the physical environment.

Human Environment: Fishermen can sometimes get a higher price for smaller red snapper, and the proposed alternative will therefore benefit fishermen economically. Having a smaller minimum size limit for commercial fishing than for recreational fishing will create a perception of unequal access to the resource by some recreational fishermen; however, the commercial harvest will be constrained by limited access, trip limits, monthly openings, and the commercial quota.

Fishery Resources: At 33 percent release mortality, red snapper yield-per-recruit is maximized at a minimum size limit of 18 inches TL. However, the difference in yield-per-recruit, SPR, and the fishing mortality that produces maximum yield-per-recruit is very small over a range of sizes from 14 to 18 inches TL and can be considered negligible. Eliminating the minimum size limit entirely would decrease maximum yield-per-recruit and would increase SPR slightly, but would require a 10 to 14 percent reduction in the fishing mortality rate to achieve these results (Table 8). The impact of maintaining the status quo 15-inch TL minimum size limit is neutral.

Impact on Other Fisheries: The alternatives have no effect on other fishery resources.

Effect on Wetlands: The alternatives have no effect on wetlands.

Effect on Essential Fish Habitat (EFH): The red snapper EFH is summarized in the environmental

consequences section under setting red snapper TAC (section 7.1). The red snapper commercial minimum size limit is not anticipated to have a negative effect on EFH.

7.8 Red Snapper Commercial Sub-Quota Allocations

Proposed Alternative: Set the red snapper commercial Spring season sub-quota at 2/3 of the commercial quota, and Fall season sub-quota at the remaining commercial quota.

Rejected Alternative: Status Quo - Set the red snapper commercial Spring season sub-quota at 3.06 million pounds, and Fall season sub-quota at the remaining commercial quota.

Rationale

In 1996, the Council proposed an increase in the red snapper TAC from 6 million pounds to 9.12 million pounds. The fixed 3.06 million pound commercial Spring sub-quota adopted in 1996⁵ was the original commercial quota under a 6 million pound TAC and would allow the existing quota to be harvested pending review and approval of the TAC increase, with the additional quota from the TAC increase to be harvested in a Fall fishery. The fixed sub-quota was retained in subsequent years, resulting, under a 9.12 million pound TAC and 4.65 million pound commercial quota, in a split of approximately 2/3 of the quota being caught in the Spring and the remaining 1/3 in the Fall. Although red snapper management is under a constant catch strategy, it is likely that the TAC will be changed in future years in response to new recovery schedules and targets, changes in management strategy (e.g., constant catch vs. constant fishing mortality rate), or changes in the stock assessment due to improvements in data collection or analytical methodology.

Switching from a fixed Spring sub-quota (3.06 million pounds) to a proportion of annual quota (2/3 in Spring, remainder in Fall) will allow any changes in the TAC and resulting commercial quota to be distributed proportionately between the Spring and Fall seasons. Under the present system, any increases in the quota will accrue solely to the Fall season, and may not be fully harvested before the end of the year. Likewise, any reductions in the quota down to a 6 million pound TAC (3.06 million pound commercial quota) would be applied solely against the Fall season. At a TAC of 6 million pounds, the Fall season would be eliminated entirely, and any further reductions would then be applied against the Spring season.

Biological Impacts

The Proposed Alternative under the current 9.12 million pound TAC will increase the Spring sub-quota from 3.06 to 3.10 million pounds, and reduce the Fall sub-quota from 1.59 to 1.55 million pounds (before adjusting for over/under harvest in the Spring), a shift of 40,000 pounds. In 1999, the Spring season landings averaged 66,547 pounds per day and Fall landings averaged 64,165 pounds per day. The Proposed Alternative would therefore be expected to lengthen the Spring season and shorten the Fall season by not more than one day. This small change is unlikely to have any biological impact.

⁵ Addendum to the Regulatory Amendment to the Reef Fish Fishery Management Plan to Set 1996 Red Snapper Total Allowable Catch, March 1996.

Economic Impacts

The Proposed Alternative would only slightly alter the allocation of the commercial between the Spring and Fall seasons, and is thus expected to minimally affect the economic status of fishing participants. In the absence of empirically estimated seasonal demand for red snapper and seasonal revenues and costs of commercial vessels, it is not possible to estimate the economic significance of the proposed quota split. It is, however, very likely that the economic effects of differing allocation ratios would not differ significantly from one another considering that a derby would still likely characterize the fishery whatever allocation ratio is chosen. Nonetheless, the fixed allocation ratio could minimize the administrative cost of deciding an appropriate allocation once the TAC is changed.

Environmental Consequences

Physical Environment: The alternatives in this section are anticipated to have no impact on the physical environment.

Human Environment: The alternatives in this section will have no impact on the human environment as long as TAC is not changed. If the TAC is changed, the change would be applied to the Fall season only under the rejected alternative. An increase in TAC could result in the commercial sector being unable to harvest its quota, and a decrease in TAC could eliminate the Fall season or reduce the Fall sub-quota to a point where it is not economically feasible to fish for red snapper. The proposed alternative spreads out a change in TAC proportionately between the Spring and Fall seasons, which should optimize the beneficial impacts from an increase in TAC, and reduce the potential of eliminating the Fall fishery from a decrease in TAC.

Fishery Resources: The allocation of commercial quota between the Spring and Fall seasons will have no impact on the red snapper resource.

Impact on Other Fisheries: The alternatives have no effect on other fishery resources.

Effect on Wetlands: The alternatives have no effect on wetlands.

Effect on Essential Fish Habitat (EFH): The red snapper EFH is summarized in the environmental consequences section under setting red snapper TAC (section 7.1). The allocation of commercial quota between the Spring and Fall seasons is not anticipated to have a negative effect on EFH.

7.9 Private and Public Costs

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 specific action include:

Council costs of document preparation, meetings, public hearings, and information dissemination.....	\$25,000
NMFS administrative costs of document preparation, meetings and review.....	\$ 16,000
Law enforcement costs.....	\$ none
Public burden associated with permits.....	\$ none
NMFS costs associated with permits.....	\$ none
TOTAL.....	\$41,000

The Council and Federal costs of document preparation are based on staff time, travel, printing and any other relevant items where funds were expended directly for this specific action. The proposed measures are not expected to incur additional enforcement cost and permit cost of significant amount to either the public or NMFS.

Summary and Net Impact of Proposed Action

The proposed regulatory action constitutes changes in management for red snapper in the EEZ under the jurisdiction of the Gulf Council. The emphasis of the summary is on the expected economic impact of the proposed alternatives.

The Proposed Alternative to set the red snapper TAC at 9.12 million pounds for 2000 and 2001 is expected to result in minimal impacts on both the commercial and recreational sectors of the red snapper fishery. The immediate effects of this proposed action involves mainly a maintenance of a longer planning horizon for commercial and for-hire businesses.

The individual economic effects of the Proposed Alternatives to set the recreational red snapper minimum size limit at 16 inches TL, the 4-fish recreational red snapper bag limit, and the reinstatement of the 4-fish bag limit for captain and crew of for-hire vessels are adjudged to be largely indeterminate. But in combination, these actions provide for some flexibility in the choice of the fishing season for the recreational sector. Among the alternatives considered for the recreational fishing season, the Proposed Alternative is one of the two scenarios that would result in the highest consumer surplus to anglers and the least revenue reductions to charterboats and headboats. The regional effects, however, vary with the South Texas for-hire fishery bearing a relatively higher cost of the proposed recreational red snapper fishing season.

The Proposed Alternative authorizing the RA to adjust the opening and closing dates of the recreational red snapper fishing season to accommodate the reinstatement of the 4-fish bag limit for captain and crew has no immediate economic impacts.

The Proposed Alternative setting the red snapper commercial Spring season to open February 1 for the first 10 days of each month would allow a longer fishing season in terms of months open for fishing, potentially resulting in a better pricing structure for red snapper. To the extent this action

does not address the derby fishing mentality, the benefits from this proposed action may not last long.

The Proposed Alternative to set the red snapper commercial Fall season to open on October 1, for the first 10 days of each month, until the quota is filled could possibly allow fishermen to take advantage of better prices in October through December. However, there is some possibility that better prices could mainly be driven by generally lower supply of red snapper on these months. If favorable weather conditions prevail during October and also November, the surge in landings has the potential to wipe out the better pricing conditions experienced in the 1999 Fall season.

The Proposed Alternative to retain the status quo red snapper commercial minimum size limit at 15 inches TL has no immediate economic impacts on fishing participants. Also, the Proposed Alternative to allocate 2/3 of the commercial quota to the Spring season and the rest to the Fall season has minimal impacts on the commercial fishery.

The proposed regulatory action is estimated to cost the Federal government \$41,000, all of which are one-time cost associated with the design and implementation of the proposed regulatory action. The proposed measures are not expected to incur additional enforcement cost or permit cost of significant amount to either the public or NMFS.

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; 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; or d) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

The entire commercial red snapper fishery had an ex-vessel value of about \$9 million in 1998 (Waters 1999). There is currently no adequate measure of the recreational red snapper fishery impacted by the proposed regulation, but the estimated impacts of the proposed regulation are relatively small relative to the \$100 million a year benchmark. Analysis of the impacts of the proposed red snapper recreational fishing season which incorporated the effects of bag and size limits shows a reduction in revenues of \$180-455 thousand for charterboats and \$71-179 thousand for headboats. Thus, given the size of the fishery and the segment of the fishery directly affected by the proposed regulation, it is concluded that any revenue or cost impacts on the fishery would be significantly less than \$100 million annually.

Since the commercial quota is maintained and merely spread out over a possibly longer period through the adoption of the 10-day a month fishing season, there is no expected major increases in revenues and profits to the commercial sector. Commercial cost of fishing operation remains largely unaffected. Prices to consumers are also not expected to increase with the regulations contained in this amendment affecting the commercial harvest of red snapper. As a whole the various measures affecting the for-hire fishery would tend to cushion the larger negative impacts if the status quo were maintained. Some for-hire vessels, however, in some areas such as South Texas would be adversely affected by the proposed season for the recreational fishery. It cannot be ascertained to what extent these adverse effects would affect competition, employment, investment, productivity, or innovation

in the for-hire fishery. As can be gleaned from the cost estimates, there are no major increases in cost to the Federal, State, or local government agencies. In fact the cost incurred by these agencies are only those that are directly related to the formulation of the proposed regulation. Since the proposed regulation has no material adverse effects on the commercial and for-hire sectors, any of the sub-items under item (c) above would not apply.

All measures proposed in this amendment have already been considered by the Council in the past. The major issue raised against the fishing season for the recreational fishery is that it would be bias against for-hire vessels in South Texas. The rationale for this proposed measure appears to adequately address the extent of the problem raised by this issue.

Based on the foregoing, it is concluded that this regulation if enacted would not constitute a "significant regulatory action" under any of the criteria enumerated above.

Initial Regulatory Flexibility Analysis

Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to relieve small businesses, small organizations, and small governmental entities from burdensome regulations and record keeping requirements. The category of small entities likely to be affected by the proposed plan amendment is that of commercial and for-hire businesses currently engaged 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.

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

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

In general, a "substantial number" of small entities is more than 20 percent of those small entities engaged in the fishery (NMFS 1998). In 1992 when the moratorium on the issuance of new commercial permits first began, a total of 2,200 permits were issued to qualifying individuals and attached to vessels, and are deemed to comprise the reef fish fishery in the U.S. Gulf of Mexico. There are currently 1,204 active permits while others are in the process of being renewed. NMFS (2000) reported that trip logbook reports indicate that about 400 boats reported having landed red snapper during the peak open months of 1993 and 1994, and that the number of boats declined to about 250 during the peak open months of 1998. The number of boats per year that reported at least one trip with red snapper declined from about 625 in 1993 to about 450 in 1998. Given this number, it may be considered that about 450 to 625 commercial boats would be directly affected by the measures in this amendment.

There are currently 1,203 active reef fish charter permits, distributed by homeport state as follows:

111 in Alabama, 728 in Florida, 51 in Louisiana, 69 in Mississippi, 212 in Texas, and 32 in other states outside of the Gulf. These vessels are deemed to comprise the universe of for-hire vessels that would be directly affected by this amendment.

The Small Business Administration (SBA) defines a small business in the commercial fishing activity as a firm with receipts of up to \$3.0 million annually. The SBA also defines a small business in the charterboat activity as a firm with receipts of up to \$5 million per year. Practically all current participants of the reef fish fishery readily fall within such definition of small business. Hence, it is clear that the criterion of a substantial number of the small business entities comprising the red snapper commercial and for-hire sectors being affected by the proposed rule will be met. The outcome of "significant impact" is less clear but can be triggered by any of the five conditions or criteria discussed below

The regulations are likely to result in a change in annual gross revenues by more than 5 percent. The proposed alternatives affecting the commercial fishery are not expected to materially change commercial vessel revenues. Revenues could initially rise if the 10-day per month season were successful in extending the season. In any event, the effects would be likely less than the 5 percent threshold. The proposed measures for the recreational fishery, particularly the choice of fishing season have been determined to reduce the revenues of the for-hire vessels, but to a lesser degree than maintaining the status quo. However, the Texas for-hire vessels are likely to experience greater reductions in revenues than those of other states. Such reduction is likely to exceed the 5 percent threshold.

Annual compliance costs (annualized capital, operating, reporting, etc.) increase total costs of production for small entities by more than 5 percent. The public burden to comply with the provisions of this amendment has been estimated to be practically nil as no additional permits or gear modifications are required.

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

Capital costs of compliance represent a significant portion of capital available to small entities, considering internal cash flow and external financing capabilities. General information available as to the ability of small business fishing firms to finance items such as a switch to new gear or new species or new fishing areas indicate that this would be a problem for at least some of the firms. The evidence is that the banking community is becoming increasingly reluctant to finance changes of this type, especially if the firm has a history of cash flow problems. To the extent, however, that the major change in the commercial sector is mainly a lengthening of the season (as intended), no additional capital costs may be expected. In the event of closure in the recreational fishery, for-hire vessels may be forced to substitute other reef fish or fish in other areas. However, this condition is not expected to force for-hire vessels to incur major capital costs.

The requirements of the regulation are likely to result in a number of the small entities affected being forced to cease business operations. This number is not precisely defined by SBA but a "rule of thumb" to trigger this criterion would be two percent of the small entities affected. The accompanying RIR indicates that the action to set the recreational fishing season from April 15 (21) to October 31 would impinge the revenues of for-hire vessels in Texas than in other states, but it cannot be ascertained if some vessels would be forced out of the for-hire fishery.

Mainly because of the choice for the red snapper recreational fishing season which would adversely impact vessels in Texas, the conclusion is that small businesses in the for-hire sector of the red snapper fishery will be significantly affected by the proposed rule. Hence, the determination is made that the proposed rule will have a significant economic impact on a substantial number of small business entities and an Initial Regulatory Flexibility Analysis (IRFA) is required.

The full details of the economic analysis conducted for the proposed rule are contained in the RIR and some of the relevant results are summarized for the purposes of the IRFA.

Description of the reasons why action by the agency is being considered: The need and purpose of this action are set forth in the section on Purpose and Need for Action.

Statement of the objectives of, and legal basis for, the proposed rule: Refer to the section on Management Objectives and Optimum Yield. The Magnuson-Stevens Fishery Conservation and Management Act of 1976 provides the legal basis for the rule.

Description and estimate of the number of small entities to which the proposed rule will apply: The proposed rule will apply to about 450 to 625 commercial reef fish harvesting firms that currently hold permits to fish in the Gulf of Mexico and have landed red snapper. According to a recent survey (Waters 1996), on average these small firms typically operate fishing vessels that have a length of 38 feet, have a current estimated resale value of \$52,817, provide \$52,000 in gross sales of reef fish and other species, and produce a net income of \$12,000.

There are about 1,204 for-hire vessels with permits to fish for reef fish in the Gulf. Sutton et al. (1999) reported that charterboats have an average length of 47 feet in Alabama, 43 feet in Louisiana, 41 feet in Mississippi, and 35 feet in Texas and have average annual receipts of about \$80,000 in Alabama, \$70,000 in Louisiana, \$48,000 in Mississippi, and \$63,000 in Texas. They also reported that headboats in Alabama through Texas have an average length of 72 feet in Alabama through Texas and have average annual receipts of \$137,000. Holland et al. (1999 draft) reported that Florida charterboats have an average length of 37 feet with average annual receipts of about \$56,000 (\$68,000 using an alternative estimation method). Florida headboats have an average length of 62 feet with average annual receipts of about \$140,000 (\$325,000 using an alternative estimation method). They also reported that the average annual receipts for charterboats in Georgia, South Carolina, and North Carolina total to about \$60,000, \$26,000, and \$60,000, respectively. The average annual receipts for headboats in these areas amount to about \$123,000.

Description of the projected reporting, record keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records: The reporting, record keeping and other compliance requirements of the proposed rule are not materially different from the current practice.

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

Description of significant alternatives to the proposed rule and discussion of how the alternatives attempt to minimize economic impacts on small entities: Several alternatives have been considered as ways to meet the FMP objectives. Regarding the TAC, higher and lower TACs were considered. Lower TACs would definitely result in short-term economic losses. A higher TAC could slightly

alleviate the short-term plight of the red snapper fishery, but with overruns in TAC the choice of a higher TAC could only result in more stringent measures in the near future.

Several alternatives for red snapper recreational minimum size limits and bag limits have also been considered, but the bag and size limits chosen are possibly the ones providing more flexibility in determining the fishing season for the recreational fishery. In view of the fact that the recreational fishery is expected to reach its quota, all alternatives for the recreational fishing season (being defined given the proposed bag and size limits) involve some closed months. Any of such alternatives would adversely affect recreational anglers and for-hire vessels in one geographic area more than in others. The proposed alternative to open the season from April 15 (21) to October 31 would impose the least burden on for-hire vessels in the Northern Gulf at the expense of those in the lower Gulf, particularly South Texas. The reverse situation would happen under the status quo. Relative to the overall recreational fishery, the proposed open season would provide the largest consumer surplus and the least forgone revenues (due to trip cancellations) for the for-hire fishery. The proposed measure to reinstate the 4-fish bag limit for captain and crew of for-hire vessels could partly offset the loss in income to these individuals from fishery closure. However, such reinstatement would slightly reduce the recreational fishing season with the cost being borne more by private boat anglers.

The proposed measures for both the Spring and Fall commercial seasons offer the possibility of generating higher short-run revenues than the rejected alternatives. It is, however, likely that bigger boats may have some advantage over smaller ones under the proposed October opening of the Fall season due to possible unfavorable weather conditions this time of the year. As for the minimum size limit for the red snapper commercial fishery, a higher minimum size limit such as 18 inches TL could potentially result in lower revenues since larger snapper would generally command relatively lower prices. In addition, imports may increase to fill the missing size categories, with the 1 to 2-pound category being the highly priced fish. A lower minimum size limit, such as 14 inches TL, would likely generate higher revenues for the fishermen, but it also could intensify the derby situation if smaller fish become more abundant, thus negating the potential benefits from a lower minimum size limit.

8.0 ENVIRONMENTAL ASSESSMENT

The purpose and need for action for this regulatory amendment are contained in Section 3, and is incorporated in this section by reference. The proposed and rejected alternatives, including rationale, discussion, and environmental consequences, are in Sections 7.1 to 7.8, and are also incorporated in this section by reference.

Environmental Consequences

Physical and Human Environment: The proposed and rejected measures do not have any effect on the physical environment. However, several benefits to the human environment will result from the proposed measures:

- Maintaining the status quo 9.12 million pound TAC will maintain stability in the fishery by continuing the same harvest level that has been in effect since 1996. The stated intent to maintain this TAC for the next two years (2000 and 2001) should further help to promote stability, although whether this can be accomplished is dependent upon review of a red

snapper stock assessment update in 2000, and on whether new overfishing definitions and recovery schedules that conform to the requirements of the Sustainable Fisheries Act of 1996 are implemented and require adjustments to TAC.

- Announcing the opening and closing dates for the recreational season in advance will allow users to plan ahead.
- Reinstating the 4-fish red snapper recreational bag limit for the captain and crew of recreational for-hire vessels will enhance the human environment by eliminating an inequity in the allocation of the recreational quota among recreational users.
- Authorizing the Regional Administrator to adjust either the opening or closing dates of the recreational fishery to accommodate the captain and crew bag limit provides an additional level of flexibility in optimizing the benefits of the recreational fishery to the users. It should be noted that this provision only allows for an adjustment to be made based on a change in the projection model parameters, from 0-bag limit for captain and crew to a 4-fish bag limit. It does not authorize the Regional Administrator to make changes in the opening or closing dates once they have been announced. Due to the nature of the recreational harvest survey methods and the long time periods needed to translate raw survey data into catch estimates, the dates for the recreational fishing season can only be based at present on catch projections, and additional data will not be available in a timely enough manner to make mid-season adjustments to the projection. Even if additional data were to be made available, it would likely carry a high degree of uncertainty, and any changes to a previously announced closing date would create disruptions for the resource users.
- The proposal to change the monthly openings for the Spring commercial season from the first 15 days per month to the first 10 days per month, and the proposal to change the opening date of the Fall commercial season from September 1 to October 1, will help to spread out the commercial red snapper catch, stabilize prices, and allow harvest to occur at times when demand for the product is higher. The change in the Spring commercial sub-allocation of quota from a fixed 3.06 million pounds to two thirds of the quota (currently 3.10 million pounds) assures that any future changes to TAC will be allocated proportionately to both the Spring and Fall seasons, and will assure continuation of two sub-seasons.

Fishery Resource:

- The status quo 9.12 million pound TAC will allow the red snapper recovery to proceed on schedule toward a target of 20 percent SPR in 2019, provided that the assumptions of the recovery model, particularly that of a 50 percent shrimp trawl bycatch reduction, is realized. The bycatch reduction is currently at 40 percent, and NMFS gear specialists have stated that a 50 percent reduction is feasible with the current technology. In addition, new technology is being developed that could result in higher bycatch reductions in the future. It should be noted that the stock assessment assumes that recreational release mortality is 20 percent and commercial release mortality is 33 percent. At this level, there is little change in projected SPR across a broad range of minimum size limits (14 to 20 inches). If release mortality is significantly higher than assumed, then there is in effect an unreported kill of small fish that is not being accounted for in the stock assessment. This impact, if documented, would have to be accounted for in the stock assessment, and could result in changes (most likely reductions) to future ABC recommendations.
- The increase in the recreational minimum size limit to 16 inches TL will have a negligible impact on the resource at a 20 percent release mortality level, and will help to spread out the recreational harvest over a longer season. At release mortality rates of 50 percent or higher, increases in the minimum size limit could have a negative impact on SPR level in 2019. The

- proposed 1-inch increase will have only a slight impact, but larger size limit increases could have a correspondingly greater impact.
- The April 15 to October 31 recreational fishing season, as adjusted to accommodate a bag limit for captain and crew of recreational for-hire vessels, allows recreational fishing at a time when demand for recreational fishing opportunities is greatest. This will reduce any likelihood for illegal fishing and unreported catches.
 - The proposed commercial regulatory changes will help to spread out the commercial season. With a shorter closed season, out-of-season incidental catch of red snapper and the associated release mortality will be reduced. Commercial red snapper fishing is assumed to have a higher release mortality than recreational fishing. If the release mortality is greater than the 33 percent assumed in the stock assessment, any negative impacts from increasing the minimum size limit would be greater in the commercial fishery than in the recreational sector. The proposed action for a status quo, 15-inch commercial minimum size limit, avoids the possibility of creating negative impacts from an increased size limit, and other regulatory measures are used to extend the season (i.e., days-per-month, trip limits, and license limitation).

Effect on Endangered Species and Marine Mammals: The NOAA will conduct a consultation under Section 7 of the Endangered Species Act. A consultation was previously conducted regarding the impact of Amendment 1 which included the framework measures under which this action is being taken. A biological opinion resulting from that consultation found that neither the directed fisheries nor the proposed action jeopardize the recovery of endangered or threatened species or their critical habitat.

Effect on Wetlands: The proposed actions will have no effect on flood plains, wetlands, or rivers.

Effect on Essential Fish Habitat (EFH): The Generic Amendment for Addressing EFH Requirements (GMFMC 1998) states that adult red snapper are demersal and are found over sandy and rocky bottoms, around reefs, and underwater objects at depths between 0 to 200 m (0 to 656 ft.), possibly even beyond 1200 m (3,937 ft.). Adults favor deeper water in the northern Gulf. Spawning occurs in offshore waters from May to October at depths of 18 to 37 m (59 to 121 ft.) over fine sand bottom away from reefs. Adults are concentrated off Yucatan, Texas, and Louisiana at depths of 7 to 146 m (23 to 479 ft.) and are most abundant at depths of 40 to 110 m (131 to 360 ft.). They commonly occur in submarine gullies and depressions, and over coral reefs, rock outcroppings, and gravel bottoms.

The primary recreational fishing gear used to catch red snapper is hook and line, which does not have a significant impact on the bottom habitat. Commercial gear used is predominately hook and line (including bandit gear), some bottom longline, and a very small harvest from fish traps. Bottom longlines and fish traps come in contact with and could potentially impact the bottom. The impacts of these gears are reviewed in Reef Fish Amendments 1 and 5. The use of fish traps is being phased out under Amendment 14. It is restricted to approximately 86 fish trap endorsement holders and federal waters beyond the stressed area (10 fathom or 20 fathom boundary depending upon location) from off of Cape San Blas, Florida to the Gulf of Mexico/South Atlantic Council boundary. Fish traps account for less than 1 percent of commercial red snapper harvest. Longlines were restricted under Amendment 1 to the 50 fathom contour offshore west of Cape San Blas, Florida, and the 20 fathom contour east of Cape San Blas. Red snapper landings from longlines accounted for 8 percent of commercial landings in 1990, and have dropped every year from 1990 to 1995. From 1992 to 1995 they accounted for less than 1 percent of the commercial red snapper harvest (Goodyear 1995).

The area where fish traps and longlines to 20 fathoms are allowed is within the historical range of the red snapper stock, but until recently has not been productive for red snapper harvest due to the decline of the stock. In recent years, however, anecdotal information suggests that red snapper are becoming more abundant in these areas as the stock recovers and is redistributed by storms. As a result, incidental harvest of red snapper by fish traps and longlines could increase in the future. Many of the vessels fishing this area may not have received a red snapper license under the red snapper license limitation system. In the case of longline vessels, the multi-day length of their trips may conflict with the derby-style red snapper fishery and prevent them from landing their red snapper catch within the 10-day monthly open periods, even if they possess a red snapper license. Thus, these gears could play a minor but increasing role in red snapper adult bycatch mortality as the stock recovers and expands. Other than the 10-day monthly openings as they relate to longline incidental catch of red snapper, the proposed measures are not expected to have any negative impact on EFH.

Mitigating Measures: No mitigating measures related to the proposed action are necessary because there are no harmful impacts to the environment.

Unavoidable Adverse Affects: There are no unavoidable adverse impacts caused by implementation of this amendment.

Irreversible and irretrievable commitments of resources: There are no irreversible commitments of resources caused by implementation of this amendment.

Finding of No Significant Environmental Impact

The proposed amendment is not a major action having significant impact on the quality of the marine or human environment of the Gulf of Mexico. The proposed action is an adjustment of the original regulations of the FMP under the framework procedure set forth in Amendment 1 to rebuild overfished reef fish stocks. The proposed action should not result in impacts significantly different in context or intensity from those described in the environmental impact statement and environmental assessment published with the regulations implementing the FMP and Amendment 1.

Having reviewed the environmental assessment and available information relative to the proposed actions, I have determined that there will be no significant environmental impact resulting from the proposed actions. Accordingly, the preparation of a formal environmental impact statement on these issues is not required for this amendment by Section 102(2)(c) of the National Environmental Policy Act or its implementing regulations.

Approved: _____
Assistant Administrator for Fisheries

Date

9.0 OTHER APPLICABLE LAW

Habitat Concerns

Reef fish habitats and related concerns were described in the FMP and updated in Amendments 1 and 5 and in the Generic Amendment for Addressing Essential Fish Habitat Requirements in the Fishery Management Plans of the Gulf of Mexico. The actions in this regulatory amendment do not affect the habitat.

Vessel Safety Considerations

A determination of vessel safety with regard to compliance with 50 CFR 600.355(d) has been requested from the U.S. Coast Guard. The reduction in monthly openings in the Spring commercial season from the first 15 days to the first 10 days per month may increase the number of monthly openings and reduce the feeling by fishermen that they are obligated to fish under adverse conditions. The proposed action to change the opening date of the commercial Fall red snapper season from September 1 to October 1 will shift the Fall season into a period when there is generally worse weather conditions but also when there is less danger of hurricanes and tropical storms. Due to a large overlap between the current and proposed Fall seasons and the monthly 10-day openings, this shift will affect at most 10 fishing days. Consequently, actions in this regulatory amendment are therefore not expected to have significant negative impacts on vessel safety.

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 red snapper in the EEZ of the Gulf of Mexico will make no changes in federal regulations that are inconsistent with the objectives of either existing or proposed state regulations. Changes to the recreational size minimum size limit and recreational fishing season may vary from existing state regulations, but are designed to optimize short-term recreational fishing opportunities in the Gulf of Mexico while achieving the long-term stock recovery goals.

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 regulatory amendment is consistent with the Coastal Zone Management programs of the states of Alabama, Florida, Louisiana, Mississippi and Texas to the maximum extent possible. This determination has been 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, Louisiana and Texas.

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 regulatory amendment, to establish any reporting requirements or burdens.

Federalism

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

10.0 REFERENCES

- Antozzi, W. 1993. Memorandum for Richard Raulerson on the subject of red snapper price system. National Marine Fisheries Service, Southeast Regional Office, 9721 Executive Center Drive, North, St. Petersburg, Florida 33702. 2 p.
- Antozzi, W.O. and J.W. Waters. 1998. Comments on factors affecting red snapper prices during the fall 1998 season. National Marine Fisheries Service, Southeast Regional Office, 9721 Executive Center Drive, North, St. Petersburg, Florida 33702. SERO-ECON-98-27. 2 p.
- Gitschlag, G.R. and M.L. Renaud. 1994. Field experiments on survival rates of released red snapper. North American Journal of Fisheries Management 14:131-136.
- GMFMC. 1999a. September 1999 report of the reef fish stock assessment panel. Gulf of Mexico Fishery Management Council, Tampa, Florida. 29 p.
- GMFMC. 1999b. Report of the socioeconomic panel meeting on reef fish. Gulf of Mexico Fishery Management Council, Tampa, Florida. 64 p.
- GMFMC. 1998. Generic amendment for addressing essential fish habitat requirements in the following fishery management plans of the Gulf of Mexico. Gulf of Mexico Fishery Management Council, Tampa, Florida. 238 p. + app.
- Goodyear, C. P. 1995. Red snapper in U.S. waters of the Gulf of Mexico. Contribution: MIA 95/96-05. National Marine Fisheries Service, Southeast Fisheries Center, Miami, Florida. 171 p.
- Goodyear, C. P. 1992. Red snapper in U.S. waters of the Gulf of Mexico. Contribution: MIA 91/91-170. National Marine Fisheries Service, Southeast Fisheries Center, Miami, Florida. 156 p.
- Holland, S.M., A.J. Fedler, and J.W. Milon. 1999 Draft. The operations and economics of the charter and head boat fleets of the eastern Gulf of Mexico and South Atlantic coasts. Department of Recreation, Parks and Tourism and Department of Food and Resource Economics, University of Florida. Gainesville, FL 32611. MARFIN Grant No. NA77FF0553.
- Keithly, W.R. and F.R. Prochaska. 1985. The demand for major reef fish species in the Gulf and South Atlantic region of the United States. Proceedings of the 10th Annual Tropical and Subtropical Fisheries Technological Conference of the Americas. Texas A&M Sea Grant TAMU-SG-86-102. p. 59-72.
- NMFS. 2000. Economic consequences of an Interim Rule to implement changes in management regulations for red snapper in the exclusive economic zone of the Gulf of Mexico. National Marine Fisheries Service, Southeast Regional Office, 9721 Executive Center Drive, North, St. Petersburg, Florida 33702. 17 p.
- NMFS, 1998. Appendix 2.d: Guidelines for regulatory analysis of fishery management actions. National Marine Fisheries Service, Southeast Regional Office, 9721 Executive Center Drive, North, St. Petersburg, Florida 33702.

- Parker, R. O. 1991. Survival of released fish – a summary of available data. Report to South Atlantic and Gulf of Mexico Fisheries Management Councils, Charleston, South Carolina, and Tampa, Florida.
- Parker, R.O. 1985. Survival of released red snapper. Progress report to South Atlantic and Gulf of Mexico Fisheries Management Councils, Charleston, South Carolina, and Tampa, Florida.
- Render, J.H. and C.A. Wilson. 1993. Mortality rate and movement of hook-and-line caught and released red snapper. Final report for Cooperative Agreement #NA90AAHMF762 Marine Fisheries Initiative (MARFIN) Program. Coastal Fisheries Institute, Center for Coastal, Energy, and Environmental Resources, Louisiana State University, Baton Rouge, LA. LSU-CFI-93-8.
- Render, J.H. and C.A. Wilson. 1994. Hook-and-line mortality of caught and released red snapper around oil gas platform structural habitat. Bull. Mar. Sci. 55:1106-1111.
- Schirripa, M.J. and C.M. Legault. 1999. Status of the red snapper in U.S. waters of the Gulf of Mexico: updated through 1998. Contribution: SFD- 99/00-75. National Marine Fisheries Service, Southeast Fisheries Science Center, Sustainable Fisheries Division, Miami, Florida. 86 p. + app.
- Sutton, S.G., R.B. Ditton, J.R. Stoll, and J.W. Milon. 1999. A cross-sectional study and longitudinal perspective on the social and economic characteristics of the charter and party boat fishing industry of Alabama, Mississippi, Louisiana, and Texas. Texas A&M Univ., College Station, TX. Memo. Rpt. 198 p.
- University of South Alabama. 1998. Site fidelity and homing behavior in red snapper (*Lutjanus campechanus*). MARFIN Final Report No. NOAA #NA57FF0054.
- Waters, J.R. 1999. Review of the commercial red snapper and grouper fisheries in U.S. waters of the Gulf of Mexico. SERO-ECON-00-01. Report prepared for the Gulf of Mexico Fishery Management Council Reef Fish Fishery Socioeconomic Panel Meeting, October 14-15, 1999. NMFS-SERO at Beaufort, 101 Pivers Island Road, Beaufort , NC 28516. 31 p.
- Waters, J.R. 1997. Economic assessment of the commercial reef fishery in the U.S. Gulf of Mexico. National Marine Fisheries Service, Southeast Regional Office, 9721 Executive Center Drive, North, St. Petersburg, Florida 33702. 3 p + attachments.
- Waters, J.R. 1996. An economic survey of commercial reef fish vessels in the U.S. Gulf of Mexico. NMFS-SERO at Beaufort, 101 Pivers Island Road, Beaufort , NC 28516. 637 p. + tables, figures, and appendices.
- Waters, J. R. 1992. Economic assessment of the commercial reef fishery in the U.S. Gulf of Mexico. National Marine Fisheries Service, Southeast Regional Office, 9721 Executive Center Drive, North, St. Petersburg, Florida 33702. 23 p + figures.
- Watterson, J.C., W.F. PattersonIII, R.L. Shipp, and J.H. Cowan, Jr. 1998. Movement of red snapper, *Lutjanus campechanus*, in the north central Gulf of Mexico: potential effects of hurricanes. Gulf of Mexico Science, 1998(1):92-104.

11.0 PUBLIC REVIEW

A public hearing to obtain public comments on the provisions of this regulatory amendment was held during the Gulf Council meeting in November 1999 in Orlando, Florida. Copies of this document may be obtained from the Gulf of Mexico Fishery Management Council office, 3018 U.S. Highway 301 North, Suite 1000, 331, Tampa, Florida 33619-2266, (813)228-2815.

LIST OF AGENCIES CONSULTED

Gulf of Mexico Fishery Management Council's
-Reef Fish Stock Assessment Panel
-Socioeconomic Panel
-Standing and Special Reef Fish Scientific and Statistical Committee
-Red Snapper Advisory Panel

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

RESPONSIBLE AGENCY:

Gulf of Mexico Fishery Management Council
The Commons at Rivergate
3018 U.S. Highway 301 North, Suite 1000
Tampa, Florida 33619-2266
(813) 228-2815
gulfcouncil@gulfcouncil.org

LIST OF PREPARERS

Gulf of Mexico Fishery Management Council
- Steven Atran, Population Dynamics Statistician
- Antonio Lamberte, Economist