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FRAMEWORK SEASONAL ADJUSTMENT

OF HARVEST LEVELS AND PROCEDURES

UNDER THE

FISHERY MANAGEMENT PLAN

FOR COASTAL MIGRATORY PELAGIC RESOURCES (MACKERELS)

IN THE

GULF OF MEXICO AND SOUTH ATLANTIC REGION

INCLUDING ENVIRONMENTAL ASSESSMENT

REGULATORY IMPACT REVIEW

JULY 1999

GULF OF MEXICO FISHERY MANAGEMENT COUNCIL
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ABBREVIATIONS USED IN THIS DOCUMENT

ABC	Acceptable Biological Catch
AP	Advisory Panel
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
F	Rate of Instantaneous Fishing Mortality
FL	Fork Length
FMP	Fishery Management Plan
GMFMC	Gulf of Mexico Fishery Management Council
IRFA	Initial Regulatory Flexibility Analysis
MFMT	Maximum Fishing Mortality Threshold
MP	Million Pounds
MRFSS	Marine Recreational Fisheries Statistics Survey
MSAP	Mackerel Stock Assessment Panel
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OY	Optimum Yield
RA	Regional Administrator (NMFS Southeast Regional Office)
RFA	Regulatory Flexibility Act of 1980
RIR	Regulatory Impact Review
SAFMC	South Atlantic Fisheries Management Council
SBA	Small Business Administration
SEFSC	Southeast Fisheries Science Center
SFA	Sustainable Fisheries Act
SEP	Socioeconomic Panel
SPL	Saltwater Products License
SPR	Spawning Potential Ratio
SSC	Scientific and Statistical Committee
TAC	Total Allowable Catch
TL	Total Length

I. HISTORY OF MANAGEMENT

Species in the Fishery for Coastal Migratory Pelagics:

King mackerel	*Scomberomorus cavalla*
Spanish mackerel	*S. maculatus*
Cobia	*Rachycentron canadum*
Cero	*S. regalis*
Little tunny	*Euthynnus alleteratus*
Dolphin	*Coryphaena hippurus*
Bluefish (Gulf of Mexico only)	*Pomatomus saltatrix*

The Coastal Migratory Pelagics "Mackerel" fishery management plan (FMP), approved in 1982 and implemented by regulations effective in February of 1983, treated king and Spanish mackerel each as one U.S. stock. Allocations were established for recreational and commercial fisheries, and the commercial allocation was divided between net and hook-and-line fishermen.

FMP Amendments:

Amendment 1, implemented in September of 1985, provided a framework procedure for pre-season adjustment of total allowable catch (TAC), revised king mackerel maximum sustainable yield (MSY) downward, recognized separate Atlantic and Gulf migratory groups of king mackerel, and established fishing permits and bag limits for king mackerel. Commercial allocations among gear users, except purse seines that were allowed 6 percent of the commercial allocation of TAC, were eliminated. The Gulf commercial allocation for king mackerel was divided into Eastern and Western Zones for the purpose of regional allocation, with 69 percent of the remaining allocation provided to the Eastern Zone and 31 percent to the Western Zone.

Amendment 2, implemented in July of 1987, revised Spanish mackerel MSY downward, recognized two migratory groups, established allocations of TAC for the commercial and recreational sectors, and set commercial quotas and bag limits. Charterboat permits were required, and it was clarified that TAC must be set below the upper range of acceptable biological catch (ABC). The use of purse seines on overfished stocks was prohibited, and their allocation of TAC was redistributed under the 69 percent/31 percent split.

Amendment 3 was partially approved in August 1989, revised, resubmitted, and approved in April 1990. It prohibited drift gill nets for coastal pelagics and purse seines for the overfished groups of mackerels.

Amendment 4, implemented in October 1989, reallocated Spanish mackerel equally between recreational and commercial fishermen on the Atlantic group.

Amendment 5, implemented in August 1990, made a number of changes in the management regime which:

- Extended the management area for Atlantic groups of mackerels through the Mid-Atlantic Council's area of jurisdiction;
- Revised problems in the fishery and plan objectives;
- Revised the fishing year for Gulf Spanish mackerel from July-June to April-March;
- Revised the definition of "overfishing;"
- Added cobia to the annual stock assessment procedure;
- Provided that the South Atlantic Fishery Management Council (SAFMC) will be responsible for pre-season adjustments of TACs and bag limits for the Atlantic migratory groups of mackerels while the Gulf Council will be responsible for Gulf migratory groups;
- Continued to manage the two recognized Gulf migratory groups of king mackerel as one until management measures appropriate to the eastern and western groups can be determined;
- Re-defined recreational bag limits as daily limits;
- Deleted a provision specifying that bag limit catch of mackerel may be sold;
- Provided guidelines for corporate commercial vessel permits;
- Specified that Gulf king mackerel may be taken only by hook-and-line and run-around gill nets;
- Imposed a bag limit of two cobia per person per day;
- Established a minimum size of 12 inches (30.5 cm.) fork length (FL) or 14 inches (35.6 cm.) total length (TL) for king mackerel and included a definition of "conflict" to provide guidance to the Secretary.

Amendment 6, implemented in November of 1992, made the following changes:

- Identified additional problems and an objective in the fishery;
- Provided for rebuilding overfished stocks of mackerels within specific periods;
- Provided for biennial assessments and adjustments;
- Provided for more seasonal adjustment actions;
- Allowed for Gulf king mackerel stock identification and allocation when appropriate;
- Provided for commercial Atlantic Spanish mackerel possession limits;
- Changed commercial permit requirements to allow qualification in one of three preceding years;
- Discontinued the reversion of the bag limit to zero when the recreational quota is filled;
- Modified the recreational fishing year to the calendar year; and
- Changed the minimum size limit for king mackerel to 20 inches FL, and changed all size limit measures to fork length only.

Amendment 7, implemented in November 1994, equally divided the Gulf commercial allocation in the Eastern Zone at the Dade-Monroe County line in Florida. The suballocation for the area from Monroe County through Western Florida is equally divided between commercial hook-and-line and net gear users.

Amendment 8, implemented March 1998, made the following changes to the management regime:

- Clarified ambiguity about allowable gear specifications for the Gulf group king mackerel fishery by allowing only hook-and-line and run-around gill nets. However, catch by permitted, multi-species vessels and bycatch allowances for purse seines were maintained;
- Established the Council's intent to evaluate the impacts of permanent jurisdictional boundaries between the GMFMC and SAFMC and development of separate FMPs for coastal pelagics in these areas;
- Established a moratorium on commercial king mackerel permits until no later than October 15, 2000, with a qualification date for initial participation of October 16, 1995;
- Increased the income requirement for a king or Spanish mackerel permit to 25 percent of earned income or $10,000 from commercial sale of catch or charter or head boat fishing in 1 of the 3 previous calendar years, but allowed for a 1-year grace period to qualify under permits that are transferred;
- Legalized retention of up to 5 cut-off (barracuda damaged) king mackerel on vessels with commercial trip limits;
- Set an optimum yield target at 30 percent static spawning potential ratio (SPR);
- Provided the SAFMC with authority to set vessel trip limits, closed seasons or areas, and gear restrictions for Gulf group king mackerel in the North Area of the Eastern Zone (Dade/Monroe to Volusia/Flagler county lines);
- Established various data consideration and reporting requirements under the framework procedure;
- Modified the seasonal framework adjustment measures and specifications (see Appendix I);

Amendment 9, currently under review by the National Marine Fisheries Service (NMFS), would:

- Reallocate the percentage of the commercial allocation of TAC for the North Area (Florida east coast) and South/West Area (Florida west coast) of the Eastern Zone to 46.15% North and 53.85% South/West and retain the recreational and commercial allocations of TAC at 68% recreational and 32% commercial;
- Subdivide the commercial hook-and-line king mackerel allocation for the Gulf group, Eastern Zone, South/West Area (Florida west coast) by establishing 2 subzones with a dividing line between the 2 subzones at the Collier/Lee County line;

- Establish regional allocations for the west coast of Florida based on the 2 subzones with 7.5% of the Eastern Zone allocation of TAC being allowed from Subzone 2 and the remaining 92.5% being allocated as follows:

  50% - Florida east coast

  50% - Florida west coast that is further subdivided:

  50% - Net Fishery

  50% - Hook-and-Line Fishery
- Establish a trip limit of 3,000 pounds per vessel per trip for the Western Zone;
- Establish a moratorium on the issuance of commercial king mackerel gill net endorsements and allow re-issuance of gill net endorsements to only those vessels that: (1) had a commercial mackerel permit with a gill net endorsement on or before the moratorium control date of October 16, 1995 (Amendment 8), and (2): had landings of king mackerel using a gill net in one of the two fishing years 1995-96 or 1996-97 as verified by NMFS or trip tickets from the FDEP; allow transfer of gill net endorsements to immediate family members (son, daughter, father, mother, or spouse) only; and prohibit the use of gill nets or any other net gear for the harvest of Gulf group king mackerel north of an east/west line at the Collier/Lee County line
- Increase the minimum size limit for Gulf group king mackerel from 20 inches to 24 inches FL;
- Allow the retention and sale of cut-off (damaged), legal-sized king and Spanish mackerel within established trip limits.

Amendment 10 incorporated essential fish habitat (EFH) provisions for the South Atlantic Fishery Management Council (SAFMC), and Amendment 11 included proposals for mackerel in the SAFMC's Comprehensive Amendment Addressing Sustainable Fishery Act Definitions and other Provisions in Fishery Management Plans of the South Atlantic Region. To date, neither of these amendments have been implemented.

Framework Seasonal Adjustments (Regulatory Amendments):

Prior to the 1986 regulatory amendment, Amendment 1 established a TAC of 14.4 million pounds (MP). At the request of the Gulf Council in October 1985, NMFS implemented an emergency action in March 1986 that reduced TAC to 5.2 MP for the 1985-86 fishing year. The 1986 regulatory amendment, submitted in May 1986, set TAC for Gulf group king mackerel at 2.9 MP with a 0.93 MP commercial quota and a 1.97 MP recreational allocation. The bag limits for Gulf group king mackerel for-hire and other recreational vessels were unchanged from those established under Amendment 1, i.e., 3 fish per person per trip, excluding captain and crew, or 2 fish including captain and crew, whichever is greater. For all other vessels, the bag limit was 2 fish per person per trip. The commercial quota was allocated 6% for purse-seines, 64.5% for all other commercial gear in the Eastern Zone (Florida) and 29% for all other gear in the Western Zone (AL-TX). The regulatory amendment also established criteria for allowing charterboats to obtain commercial permits and fish as either a charter or commercial vessel. It also provided that the recreational and commercial fisheries would be closed when their respective allocations were taken. These regulatory actions were implemented on July 1, 1986.

The 1987 regulatory amendment, submitted in May 1987, proposed a reduction in TAC for Gulf group king mackerel to 2.2 MP with the commercial quota set at 0.7 MP and a recreational

allocation of 1.5 MP. The purse-seine allocation was set at zero; thus the commercial allocation was divided only between the Eastern and Western Zones at 69% and 31%, respectively. The TAC for Gulf group Spanish mackerel was set at 2.5 MP with a commercial quota of 1.4 MP and a recreational allocation for 1.1 MP. The bag limit for Gulf group king mackerel remained the same; and for Gulf group Spanish mackerel, it was set at 3 fish per person per trip. These regulatory actions were implemented on June 30, 1987.

In 1988, the Council's regulatory amendment, submitted May 1988, proposed to increase TAC for Gulf group king mackerel to 3.4 MP with a commercial allocation of 1.1 MP and a recreational allocation 2.3 MP. The TAC for Gulf group Spanish mackerel was increased to 5.0 MP with 2.15 MP allocated to the recreational sector and 2.85 MP to the commercial sector. The bag limit for Gulf group Spanish mackerel was set at 4 fish off Florida and 10 fish off AL-TX. These regulatory actions were implemented on July 1, 1988.

The regulatory amendment for 1989, submitted in May 1989, again proposed an increase in TAC for Gulf group king mackerel to 4.25 MP with a commercial quota 1.36 MP and a recreational allocation 2.89 MP. The bag limit remained unchanged. The TAC for Gulf group Spanish mackerel was requested to be increased to 5.25 MP, and the allocation ratio between the commercial (57%) and recreational (43%) sectors would remain unchanged, as well as the bag limit. These regulatory actions were implemented on July 1, 1989.

The regulatory amendment for 1990, submitted May 1990, recommended that the TAC and bag limit for Gulf group king mackerel remain unchanged (4.25 MP and 2 fish per person, or 3 fish for charter persons when the captain and crew are excluded). The TAC for Gulf group Spanish mackerel (5.25 MP) also did not change; however, the bag limits for Spanish mackerel changed to 4 fish off FL, 3 fish off TX, and 10 Fish off AL-LA at the request of the states. These regulatory actions were implemented on August 1, 1990.

The 1991 regulatory amendment, submitted in May 1991, recommended that TAC for Gulf group king mackerel be increased to 5.75 MP with a 1.84 MP commercial quota and 3.91 MP recreational allocation. The bag limit for Gulf group king mackerel was modified to 2 fish off Florida and status quo (3 fish/2 fish) for AL-TX (see 1986 regulatory amendment discussion above). The TAC for Gulf group Spanish mackerel was increased to 8.6 MP with a 4.9 MP commercial allocation and a 3.7 MP recreational allocation. The bag limit was modified to 3 fish off TX, 5 fish off FL, and 10 fish off AL-LA. These regulatory actions were implemented on September 4, 1991.

The 1992 regulatory amendment, submitted in May 1992, proposed an increase in TAC for Gulf group king mackerel to 7.8 MP with a commercial quota of 2.50 MP and a recreational allocation of 5.3 MP. The king mackerel bag limit was reduced to 2 fish per person, including captain and crew of charter and head boats for the entire Gulf exclusive economic zone (EEZ). The TAC for Gulf group Spanish mackerel remained at 8.6 MP. The bag limits for Spanish mackerel were increased to 7 fish off TX, and 10 fish off FL-LA. These regulatory actions were implemented on September 18, 1992.

Because of increased catch on the west coast of Florida in 1992-93, an emergency action was taken by NMFS in February 1992 to add 259,000 pounds of Gulf group king mackerel to the 1992-93 TAC under a 25 fish trip limit. A second emergency action (October 1993) that was subsequently added to Amendment 7 equally divided the Eastern Zone allocation of TAC between the Florida east and west coasts. The 1993 regulatory amendment, submitted in July 1993, recommended that TAC and bag limits remain the same as in the 1992-93 fishing year for Gulf group king and Spanish mackerel. In the Eastern Zone (Florida) commercial hook and line fisheries, the trip limit for the Florida east coast was proposed at 50 fish until 50 percent of the subquota was taken, and then reduced to 25 fish. For the Florida west coast, no trip limit was recommended until 75% of the subquota was taken; afterwards, it would be reduced to 50 fish. These regulatory actions were implemented on November 1, 1993.

The 1994 regulatory amendment, submitted in June 1994, proposed a 25,000 pound trip limit for the gill net fishery until 90 percent of their allocation was taken, then 15,000 pounds per trip. When implementing this amendment on November 21, 1994, the NMFS rejected this step down; and commercial gill net boats fishing for king mackerel in the Eastern Zone (Florida) were limited to 25,000 pounds per trip. The TAC and bag limits remained unchanged for Gulf group king mackerel; however, the trip limit for hook and line vessels on the Florida east coast was modified to 50 fish until 75 percent of their TAC allocation was taken, then it was reduced to 25 fish. The TAC and bag limits for Gulf group Spanish mackerel remained unchanged.

During the 1994-95 fishing year, mild weather, increased effort, or both, resulted in most of the commercial TAC allocation of Gulf group king mackerel for the west coast of Florida being taken before the fish migrated to the more historical fishing grounds in the Florida Keys. Consequently, the NMFS implemented an emergency rule in February 1995 that provided a supplemental allocation of 300,000 pounds under a 125 fish trip limit. The 1995 regulatory amendment, submitted in May 1995, recommended that TAC and bag limits remain unchanged for Gulf group king and Spanish mackerel. The hook-and-line trip limit for the Florida west coast of the Eastern Zone was set at 125 fish until 75% of the subquota was taken, then it became 50 fish. For the east coast of Florida, the trip limit remained at 50 fish; however, if 75 percent of the quota was not taken by March 1, the 50-fish trip limit would remain in effect until the close of the season on March 31. These regulatory actions were implemented on December 18, 1995, with the exception of the 125 fish trip limit which became effective on November 22, 1995. Additionally, a control date for the commercial king mackerel fishery was published on October 16, 1995.

The 1996 regulatory amendment, submitted in August 1996, recommended that TAC and bag limits remain unchanged for Gulf group king mackerel, except that the bag limit for captain and crew of charter and head boats was set at zero. The commercial hook-and-line trip limit for the Florida west coast of the Eastern Zone was set at 1,250 pounds per trip until 75% of the subquota was taken; subsequently, it reverted to 500 pounds per trip until the suballocation was taken and the fishery closed. For the Florida east coast hook and line fishery, the trip limit was initially

set at 750 pounds, but reverted to 500 pounds when 75% of the suballocation was taken, provided that 75 percent of the quota was taken by February 15. If not, the trip limit remained at 750 pounds until the quota was taken or the season ended on March 31. The TAC for Gulf group Spanish mackerel was reduced to 7.0 MP; however, the bag limits remained unchanged. These regulatory actions were implemented on June 2, 1997.

The 1997 regulatory amendment, submitted in June 1997, recommended that TAC be increased to 10.6 MP for Gulf group king mackerel. The zero-fish bag limit for captain and crew of charter and head boats was rescinded. The commercial hook and line trip limit for the Florida east coast was changed to 50 fish until the subquota was taken. The TAC and bag limits remained unchanged for Gulf group Spanish mackerel. These regulatory actions were implemented on February 19, 1998.

For the 1998-99 season, the regulatory amendment, submitted July 1998, proposes to retain the TAC for the Gulf group king mackerel at 10.6 MP, but set the bag limit for captain and crew of charter and head boats at zero. The minimum size limit for king mackerel would increase to 24 inches FL. The commercial king mackerel hook-and-line trip limit for the Western Zone (AL-TX) would be set at 3,000 pounds.

The present management regime for king mackerel recognizes two migratory groups, the Gulf migratory group and the Atlantic migratory group. These groups are hypothesized to mix on the east coast of Florida. For management and assessment purposes, a boundary between groups was specified as the Volusia-Flagler County border on the Florida east coast in the winter (November 1-March 31) and the Monroe-Collier County border on the Florida southwest coast in the summer (April 1-October 31). For allocation purposes, the Gulf migratory group is also divided into the Eastern and Western Zones at the Florida-Alabama border (Figure 1).

For the purpose of allocating a limited resource among users, the FMP has set ratios based on historic, unregulated catches. The Gulf migratory group is divided by allocating 68 percent of the TAC to recreational fishermen and 32 percent to commercial fishermen. The commercial allocation is further subdivided at 69 percent for the Eastern Zone and 31 percent for the Western Zone.

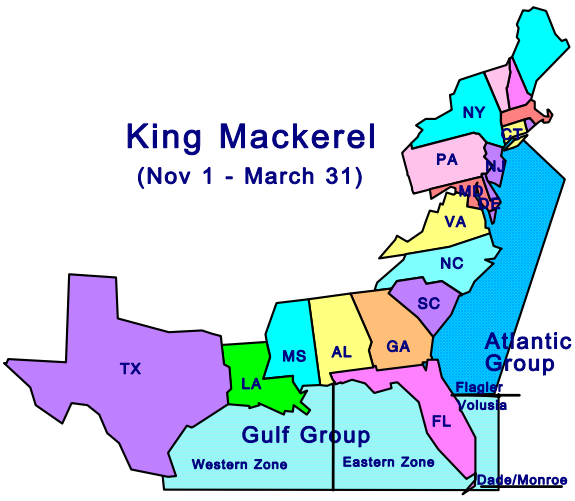


Figure 1. Seasonal boundaries and divisions of the Gulf and Atlantic migratory groups of king mackerel.

Management Objectives

The current FMP as amended lists eight plan objectives:

1. The primary objectives of the FMP are to stabilize yield at MSY, allow recovery of overfished populations, and maintain population levels sufficient to ensure adequate recruitment.

2. To provide a flexible management system for the resource which minimizes regulatory delay while retaining substantial Council and public input in management decisions and which can rapidly adapt to changes in resource abundance, new scientific information, and changes in fishing patterns among user groups or by areas.

3. To provide necessary information for effective management and establish a mandatory reporting system for monitoring catch.

4. To minimize gear and user group conflicts.

5. To distribute the TAC of Atlantic migratory group Spanish mackerel between recreational and commercial user groups based on the catches that occurred during the early to mid 1970's, which is prior to the development of the deep water run-around gill-net fishery and when the resource was not overfished.

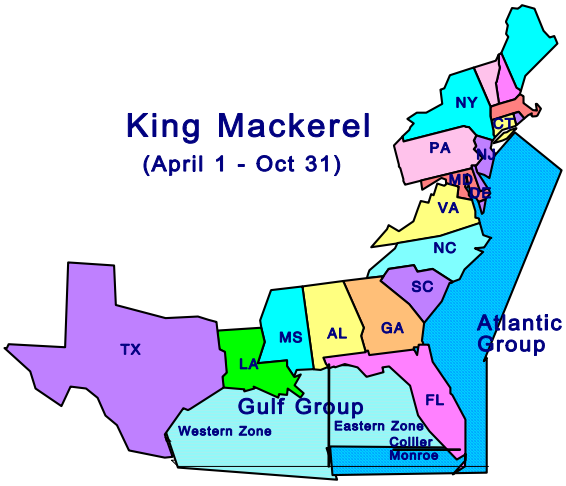
6. To minimize waste and bycatch in the fishery.

7. To provide appropriate management to address specific migratory groups of king mackerel.

8. To optimize the social and economic benefits of the coastal migratory pelagic fisheries.

II. PURPOSE AND NEED FOR ACTION

The proposed action is based on adjustments to the ABC ranges for Gulf migratory group king and Spanish mackerel as provided in the 1999 Mackerel Stock Assessment Panel (MSAP) Report. As a result, it recommends that TAC for Gulf group king mackerel be maintained at the 1997-98 and 1998-99 level of 10.6 MP for the 1999-2000 fishing year.



In specifying TAC, this regulatory amendment addresses the fact that in the last 2 years TAC overruns in the Gulf group king mackerel fishery have been virtually eliminated and there is no need to implement or continue a zero-fish bag limit for the captain and crew of for-hire vessels. The proposed action provides for changes to the opening date of the commercial gill net fishery for Gulf group king mackerel and in-season closures to prevent overruns of this sectors allocation of TAC that occurred in the 1998-99 fishing year. It specifically does not include: (1) measures to change the current trip limits for the commercial fisheries of Gulf group king mackerel on the west coast of Florida (South/West Area of the Eastern Zone), (2) any request to change the proposed increase in the minimum size limit from 20 inches FL to 24 inches FL that was recommended in the 1998 regulatory amendment, or (3) any modification of the proposed 3,000-pound trip limit on the commercial hook-and-line fishery for Gulf group king mackerel in the Western Zone that was also included in the 1998-99 regulatory amendment. Due to the extensive and rapid recovery of the Gulf group Spanish mackerel stocks, measures are proposed to increase the TAC from 7.0 to 9.1 MP and to increase the bag limit from 10 to 15 fish per person per day.

In recommending TACs, the Council considered the comments of its MSAP, Socioeconomic Panel (SEP), Scientific and Statistical Committee (SSC), and Mackerel Advisory Panel (AP). This year's stock assessment calculated a range of ABC for Gulf group king mackerel, within which the Council sets TAC, of between 8.0 and 12.5 MP. This range was similar to the 1997 stock assessment recommendation of 6.0 to 13.7 MP and above the 1998 range of 7.1 to 10.8 MP. Additionally, the mid-point estimate of the ABC range (10.1 MP) that has been recommended by the MSAP is similar to the current and proposed level of TAC (10.6 MP). Transitional and static SPR continue to increase with present estimates at 25% and 28%, respectively. Static SPR, which is used to determine whether the current fishing mortality rate (F) will ultimately lead to a stock becoming overfished, has continually increased since 1996 from 19% to 28%. The current estimate of static SPR at 28% is very near the Council's goal of 30%, and there may not be a significant difference between these estimates. Although the estimates of recruitment dropped slightly in 1998, biomass in terms of relative egg production remains at the highest level since 1981. Based on this information and testimony from users, the Council's proposed action is to maintain the 10.6 MP TAC for the 1999-2000 fishing year.

The issue of a zero-fish bag limit for captain and crew of for-hire vessels arose following the 1996 stock assessment, which was very pessimistic and included an ABC range of only 4.7 to 8.8 MP. Estimates of transitional and static SPR were 23% and 19%, respectively. Because this is primarily a recreational fishery and available data indicated that this sector was consistently overrunning its share of TAC, the Council looked at various options to reduce landings by the recreational king mackerel fishery including: reducing bag limits, increasing minimum size limits, imposing maximum size limits, slot limits, incorporating a combination of bag and size limit adjustments, and eliminating bag limits for captain and crew on for-hire vessels. The Council was advised by the for-hire industry that a reduction in the bag limit to one fish would be disastrous to their businesses. Consequently, the Council concluded that imposing a zero-fish bag limit for captains and crew of for-hire vessels was the least disruptive measure to the industry that would bring catches in line with the recreational suballocation of

TAC. This regulation was not implemented until June 1997. The 1997 update of the stock assessment for Gulf group king mackerel indicated that the Gulf group king mackerel stock had improved; consequently, with the 1997 regulatory amendment, the Council reversed the previous action, and the 2-fish daily bag limit for the captain and crew of for-hire vessels was reinstated. Because the 1998 stock assessment was not quite as optimistic and the recreational overruns for 1997-98 were estimated to be about 1.1 MP, the Council proposed to reinstate the zero-fish bag limit for captains and crew to reduce catch and potential overruns, again because it constituted the least disruptive management measure.

Instead of a 1.1 million pound overrun of TAC, actual catches in 1997-98 were only about 200,000 pounds over the 7.2 million pound allocation, the smallest overrun since the 1986-87 fishing year. The projected recreational landings of Gulf group king mackerel for 1998-99 are 6.2 MP which is about 1.0 MP under the allocation. Additionally, the 1999 stock assessment update shows that the stock continues to rebuild with the ABC range at 8.0 to 12.5 MP. Based on the notable improvement in the Gulf group king mackerel stock and the fact that recreational overruns have been substantially reduced or eliminated, this action proposes to reinstate the 2-fish bag limit for captain and crew (if it is not maintained by rejection of the zero-fish bag limit proposal in the 1998 regulatory amendment).

For Gulf group Spanish mackerel, the MSAP (1999) calculated an ABC range of 9.1 to 17.2 MP (mid-point 12.9 MP) and transitional SPR at 42 percent. This fishery has recovered above the Council's target optimum yield (OY) level, and the current level of commercial effort is very low. This is mainly because the majority of commercial catches have been taken with gill nets in Florida waters. Since gill nets are no longer allowed in Florida state waters and these fish are rarely congregated in federal waters, it is currently not economically feasible to harvest large numbers under average conditions. Since the fishery has recovered and is able to sustain a higher fishing mortality, this action proposes an increase in TAC to the lower end of the ABC range (9.1 MP) in order to allow participants to take advantage of opportunities to harvest Gulf group Spanish mackerel as they may occur. It also includes an increase in the recreational bag limit from 10 fish to 15 fish per person per day for all states in the Gulf in order to provide the recreational sector increased opportunities to harvest Spanish mackerel and possibly reduce recreational effort on other, more vulnerable stocks.

III. AFFECTED ENVIRONMENT

Description of the Fishery

King mackerel and Spanish mackerel are major target species of commercial, recreational, and for-hire fishermen throughout the Gulf and South Atlantic regions, particularly in South Florida. King mackerel are particularly important to the charterboat and offshore private boat fleets.

Most of the commercial fishery for king mackerel occurs in Florida, and most fish are taken in south Florida from November through March. A winter troll fishery takes place along the east and south coast, and a run-around gill net fishery occurs in the Florida Keys (Monroe County)

during January. To address the potential for derby fishing, Florida attempted to allocate king mackerel catches among fishermen in different geographic areas by subquotas and landing (trip) limits. The Florida trip limit regulations were overturned in December 1992, by a federal court ruling, and the commercial quota was quickly taken in the Florida Keys with 900,000 pounds being landed there during a 10-day period in January, 1993.

A commercial hook-and-line fishery for king mackerel developed off Louisiana in the winter of the 1982-83 fishing season. This trolled-handline fishery was similar to the Florida hook-and-line fishery and was centered in the Grand Isle, Louisiana area. Due primarily to increased effort in the Western Zone, this winter fishery has not been operative since about 1990 because this area's allocation of TAC has been taken by the end of October. Additionally, this winter fishery included many catches of larger fish that in recent years have become less desirable or marketable. The current commercial fishery operates as both hook-and-line and gill net components off the west coast of Florida and hook-and-line only off Alabama, Mississippi, Louisiana, and Texas.

King mackerel have been a popular target for recreational fishermen, throughout the Gulf, for many years. Total recreational catches have been relatively stable since about 1992 at between 6.0 and 7.5 MP (MSAP 1999). Recreational fishing for king mackerel is an important component of coastal economy in many areas, and it includes both direct and support industries.

The habitat of king mackerel was described and updated in Amendments 1 and 3. Additionally, habitat requirements and ecological relationships were updated in the Council's Essential Fish Habitat Generic Amendment (1998) that is currently under review by NMFS.

Current Status of the Fishery

The Gulf migratory groups of king and Spanish mackerel were determined to be overfished in the mid 1980s, and a rebuilding program of reduced allowable catches was implemented. Both stocks improved to a level that in 1995 the mackerel stock assessment panel recommended that they no longer be considered as overfished. This conclusion was reinforced by Mace et al. (1996), wherein the overfished definition was recommended to be a 20 percent transitional SPR. The Gulf Council accepted this recommendation and included the change from a 30 percent SPR to 20 percent transitional SPR in Amendment 8. The NMFS rejected this portion of Amendment 8 because of changes to the definitions of "overfished" in the Sustainable Fisheries Act (SFA); consequently, the overfished and overfishing definitions for Gulf group king and Spanish mackerel remained at 30 percent SPR. Currently, the estimates of transitional and static SPR for Gulf group king mackerel are 25 percent and 28 percent, respectively; and for Gulf group Spanish mackerel, they are 42 percent and 53 percent, respectively. Consequently, the Gulf group king mackerel fishery is still considered to be "overfished" and undergoing overfishing because transitional and static SPR estimates are below 30 percent. In accordance with NMFS guidelines developed as a result of the SFA amendment to the Magnuson-Stevens Act, both the SAFMC and the Gulf Council submitted Generic SFA Amendments that would change the definitions of overfishing and overfished and relate them to estimates of fishing

mortality and biomass at MSY. Under a control rule developed by MSAP (1999) in accordance with a proposed framework procedure in the Gulf Council's Generic SFA amendment, the minimum stock size threshold (MSST) would not be exceeded at current estimates of spawning stock biomass. Consequently, if these proposed changes, via the Gulf Council's Generic SFA Amendment and subsequent regulatory amendments, are approved by NMFS, Gulf group king mackerel would not be considered as overfished. This stock would, however, still be undergoing overfishing because the fishing mortality rate was estimated to be above the maximum fishing mortality threshold (MFMT) under the control rule.

Atlantic migratory groups of king and Spanish mackerels are not defined as being overfished or undergoing overfishing. Proposed actions in the SAFMC's Generic SFA Amendment that have been submitted to NMFS for approval would not change these classifications.

IV. MANAGEMENT ALTERNATIVES AND REGULATORY IMPACT REVIEW

Introduction

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

The RIR also serves as the basis for determining whether any proposed regulations are a "significant regulatory action" under certain criteria provided in Executive Order 12866 and whether the proposed regulations will have a "significant economic impact on a substantial number of small 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 alternatives in this regulatory amendment to the Coastal Migratory Pelagics Fishery Management Plan (FMP) would have on the commercial and recreational mackerel fisheries.

Problems and Objectives

The general problems and objectives are enumerated in the FMP, as amended. The purpose and need for the present regulatory amendment are found in Section II of this document. Specifically, the current regulatory amendment addresses the following issues:

1. TAC for Gulf group king mackerel for the fishing year 1999-2000.
2. Gulf group king mackerel bag limit for captains and crew of for-hire vessels.
3. Commercial gill net fishing season for Gulf group king mackerel.
4. TAC for Gulf group Spanish mackerel for the fishing year 1999-2000.
5. Gulf group Spanish mackerel recreational bag limit.

Methodology and Framework for Analysis

Ideally, the expected present values of net yield streams over time associated with the different alternatives would be compared in evaluating impacts. Net yield streams in the present context mean producer and consumer surpluses in the commercial sector and angler-consumer surplus and for-hire vessel profits in the recreational sector of the Gulf group king mackerel fishery. Unfortunately, estimates of the yield streams and their associated probabilities are not available, so the approach taken instead is to describe and/or quantify the changes in short-term net benefits. This task is complemented by a qualitative discussion of the long-term impacts. In this document, the "Economic Impacts" section comprises the bulk of the RIR.

Action 1: TAC level for Gulf group king mackerel.

> **Proposed Alternative 1.A: Status Quo - Gulf group king mackerel TAC remains at 10.6 million pounds.**
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> **Rejected Alternative 1.B: Set the TAC for Gulf group king mackerel at the mid-point of the ABC range (10.1 million pounds) or some lower, more conservative level within the range of ABC of 8.0 to 12.5 million pounds.**

Discussion and Rationale: Since 1981-82, catches of Gulf group king mackerel have ranged from a low of 3.0 MP in 1987-88 to a high of 12.3 MP in 1982-83 (MSAP 1997). With the exception of the 1997-98 and projected 1998-99 landings, Gulf group king mackerel catches have consistently exceeded TAC; and from the 1992-93 fishing year through the 1998-99 fishing year, catches averaged about 10.0 MP, although TAC was only 7.8 MP through 1996-97 (Table 1).

Despite these overruns, the stock has continued to recover and the range of ABC has continued to increase. The 1996 stock assessment determined that the ABC range was between 4.7 and 8.8 MP; however, the updated assessment in 1997 provided an estimate of between 6.0 and 13.7 MP. Although the updated assessment used primarily the same data as in 1996, an additional year showing good recruitment was the primary factor that caused the estimate of ABC to increase. The 1998 stock assessment calculated a range of ABC for Gulf group king mackerel between 7.1 and 10.8 MP. This range was slightly lower than the 1997 ABC range on which the Council voted to increase TAC from 7.8 MP in 1996-97 to 10.6 MP in 1997-98. Although the range of ABC that was calculated in 1998 was somewhat narrower than in 1997, the midpoints were about the same, 8.9 MP and 8.7 MP, respectively, and both were significantly higher than the 6.8 MP midpoint in 1996.

In recommending TAC for Gulf group king mackerel, the Council considered the comments of its MSAP, SEP, SSC, and Mackerel AP. The 1999 stock assessment update calculated a range of ABC for Gulf group king mackerel, within which the Council sets TAC, of between 8.0 and 12.5 MP. This range was similar to the 1997 stock assessment recommendation of 6.0 to 13.7 MP and above

the 1998 range of 7.1 to 10.8 MP. Additionally, the mid-point estimate of the ABC range (10.1 MP) that has been recommended by the MSAP is similar to the current and proposed level of TAC (10.6 MP). Transitional and static SPR continue to increase with present estimates at 25% and 28%, respectively. Static SPR, which is used to determine whether the current fishing mortality rate will ultimately lead to a stock becoming overfished, has continually increased since 1996 from 19% to 28%. The current estimate of static SPR at 28% is very near the Council's goal of 30%, and there may not be a significant difference between these estimates.

Analyses from the 1998 stock assessment showed that the biomass of the fishable stock (ages 4+) has continued to increase since about 1989, increasing from only about 25 MP to a projected level of slightly less than 50 MP for the 1998-99 fishing year. Additionally, biomass in terms of relative egg production remains at the highest level since 1981. Recruitment in terms of numbers of age 1-3 fish has also more than doubled over the same period; however, the estimates of recruitment dropped slightly in 1998.

In reviewing the 1999 stock assessment update, the MSAP also looked at the status criteria for Gulf group king mackerel using a default control rule, as proposed in the Council's Sustainable Fisheries Act Generic Amendment. This method will likely be used in future stock assessments for all finfish species under management by the Council. In viewing Gulf group king mackerel using this method, the stock would probably not be considered as overfished because the median point estimate of biomass relative to biomass at MSY is above the MSST. Under this new criteria the Gulf group king mackerel fishery would still be characterized as undergoing overfishing because the most recent estimate of the fishing mortality rate (F) is above the proxy for F_{MSY}. This observation may change in the future because, as noted above, static SPR has continued to increase every year since 1996.

As shown in Table 2 and Figure 2, the Gulf group king mackerel stock is expected to recover above the 30% transitional SPR level by 2007, assuming a 10.6 MP TAC and only the average recruitment level for the 1987 to 1996 period. Table 2 also shows that if recruitment continues at a higher level, which has been the case for the past 4 to 5 years, recovery could occur as early as next year (2000). Based on the aforementioned data, the recommendations of the Council's Mackerel AP and SEP, and testimony from users; the Council's proposed action is to maintain the 10.6 MP TAC for the 1999-2000 fishing year.

In maintaining the status quo, 10.6 MP TAC, the Council also took other actions to reduce potential overruns that are discussed in the following sections. Furthermore, it is expected that the recommended increase in the minimum size limit for Gulf group king mackerel to 24 inches FL that was approve with the 1998 framework measure will also contribute to reducing the recreational catch and ameliorating the possibility of overruns.

Biological Impacts: The biological impacts of maintaining the status quo 10.6 MP TAC for the third year in a row primarily relate to the level of risk associated with achieving recovery of the Gulf group king mackerel stock. Since the 1986-87 fishing year, the Council has often set TAC near the upper (more risk) limit of the ABC range (Table 1). However, over this same period recruitment and spawning stock size (measured in either pounds of age 4+ fish or relative egg production) has continued to increase. Landings have also been relatively stable at around 9.0 to 10.0 MP since the 1992-93 fishing year (Table 1). As discussed above, SPR has also continually increased, albeit gradually, and the stock may not be in an overfished condition any longer. Finally, Table 2 and Figure 2 show that under average recruitment conditions from 1987 to 1996 (4.48 million fish) and maintaining a 10.6 MP TAC, the Gulf group king mackerel stock will recover to the 30% transitional SPR level by 2007. This rebuilding schedule is within the 10-year requirement of the SFA and that proposed by the Council in its Generic SFA Amendment. Although a lower TAC would be less risky

and probably expedite the recovery, maintaining the 10.6 MP TAC avoids the near-certain, negative social and economic impacts of a lesser TAC that are discussed below.

Economic Impacts: While maintaining the status quo TAC would, in principle, have no short-term economic impacts on fishing participants, its choice presents certain economic implications that can be better addressed by assessing the impacts of some potential TAC alternatives within the ABC range. For this purpose, two alternative TACs, 8.0 MP and 12.5 MP, which are the lower and upper bound of the ABC range are considered along with the status quo TAC of 10.6 MP.

The SEP (1999) has estimated that at a TAC of 10.6 and a 32 percent commercial allocation, the commercial sector would generate about $4.252 million dollars of ex-vessel revenues, of which $0.340 million is an approximation of producer surplus. In the absence of an empirical model, producer surplus is assumed to equal 8 percent of ex-vessel revenues (Vondruska 1999). Using an estimated annual demand model, consumer surplus is estimated at $0.216 million. Mainly because the recreational fishery is not subject to quota closure, total recreational harvest will be determined by the effort applied, the availability of stock, and the degree to which existing bag and size limits restrict harvest. Weather related events affecting fishing effort, as has been claimed by some fishermen, could also affect the harvest level of the recreational sector.

At a lower TAC of 8.0 MP, the commercial sector is estimated to generate revenues of $3.256 million and producer surplus of $0.261 million. Consumer surplus is estimated at $0.139 million. The close to 25 percent reduction in TAC is accompanied by a less than proportionate reduction in ex-vessel revenues and producer surplus (about 23 percent) mainly because of the inflexibility of demand. In this particular case, an inflexible demand means that a reduction in quantity demanded (and supplied) raises the corresponding price, but the increase in price does not fully offset the reduction in the commercial quota so that an overall reduction in revenue still ensues. On the other hand, the 36 percent reduction in consumer surplus is more than the proportionate reduction in quota and revenues. This more than proportionate reduction in consumer surplus simply illustrates the possibility that consumers can experience changes in benefits of a magnitude that changes in consumer spending do not accurately reflect. One other important consequence of a lower TAC on the commercial sector is the higher probability of an early closure which may be expected to become more acute as more fish become available. In addition, the 1998-99 season has experienced for the first time a closure of all segments of the fishery, including the commercial fishery on the east coast of Florida. In previous years, this latter segment of the commercial fishery had remained open for the entire fishing season such that the closure experienced in the most recent past year only validates the fact that overcapacity (relative to the quota) exists in the commercial king mackerel fishery.

The effects of a lower TAC will be felt in the recreational fishery only if adjustments are made to the current management regime consisting mainly of bag and size limits. In principle, a TAC of 8.0 MP would reduce the recreational allocation by 23 percent, similar to that of the commercial quota. Considering that the recreational sector has historically been overrunning its allocation primarily because the fishery does not close when its allocation is met, the SEP (1999) used the 1992 to 1999 average recreational harvest as a benchmark, and estimated the allocation reduction to be approximately 20 percent. To achieve the necessary reduction, bag and size limits would need to be more restrictive, although the absence of fishery closure would still not necessarily

limit the recreational sector to its reduced allocation under a lower TAC. In a previous regulatory amendment that is still under review by NMFS, two major restrictive rules were proposed for the recreational sector. These are the minimum size limit increase from 20 inches FL to 24 inches FL, which was estimated to reduce recreational harvest by 10 percent, and the zero-bag limit for captain and crew of for-hire vessels, which was estimated to reduce recreational harvest by 12 percent. These two reductions are not necessarily additive so that their combined effects may be expected to be less than the sum of the individual effects. Since this current regulatory amendment proposes to restore the bag limit for captain and crew (see Action 2 below) and thus reduce the potential impact of last year's regulatory amendment to the 10 percent reduction from the size limit increase, a lower TAC of 8.0 MP would require additional measures to contain the recreational sector to its allocation. One thing to reckon here is that, under the FMP as amended specifically by Amendments 5 and 8, the NMFS Regional Administrator (RA) has the authority to reduce the recreational bag limit from 2 to 1 fish, or even zero fish, if the recreational allocation is projected to be exceeded. To date, the RA has not exercised this authority.

At the higher TAC of 12.5 MP, which is the upper end of ABC, the commercial sector is expected to generate $4.96 million in ex-vessel revenues and $0.397 million in producer surplus. These figures are approximately 17 percent above those for the 10.6 MP TAC. As with the lower TAC, the percent change in ex-vessel revenues is lower than the percent change in TAC and quota primarily due to the resulting price change. Consumer surplus is estimated at $0.281 million, or 30 percent above those for the 10.6 MP TAC. This particular percent increase in consumer surplus again reflects a magnitude of change in consumer benefits that significantly differs from the percent change in TAC. While a higher TAC of 12.5 MP could lengthen the commercial season for most of the various segments of this fishery, it is very unlikely that the extended season would be substantially longer than the current one, especially in the likely event that fishermen adjust their fishing effort to the higher TAC and quota.

A TAC of 12.5 MP would probably preclude the need to impose more restrictions on the recreational sector than what are currently in place, especially if the 1998-99 catch experience occurs, i.e., when recreational harvest stood at about 6.225 MP. This prediction is reinforced if the size limit increase from 20 to 24 inches FL is implemented and brings about the expected 10 percent reduction in harvests. In fact, only in the 1994-95 and 1997-98 seasons were the recorded harvests higher than the current recreational allocation of 7.21 MP. At a TAC of 12.5 MP, the recreational allocation would be 8.5 MP, and so far the recreational sector has not reached this level. The size of the recreational sector is, however, sufficiently large that any relaxation of current regulations could likely push the sector's harvest beyond 8.5 MP. At the least, the recreational sector would be operating under the same regulatory regime so that the benefits this sector derives from the fishery would be maintained if not slightly increased.

Among the various segments of the recreational sector, the for-hire industry would likely benefit more from an increase in TAC mainly because this is the dominant player in the industry. In the past 5 years or so, the for-hire sector has registered the highest increase in catch on an annual basis. The only exception was in 1998 when this sector experienced a 13 percent decline in

harvests. Industry representatives at the Council's Mackerel AP considered the unfavorable weather in the early part of the year as one major factor leading to the decline in harvests. In contrast, the private/rental mode registered a 57 percent increase in harvest in 1998 over that of 1997. If this pattern persists into the future, there exists a high likelihood that the private/rental mode would get most of the increase in recreational allocation if TAC were increased to 12.5 MP.

While TAC may be changed on an annual basis, each TAC choice has both short-term (as discussed above) and long-term implications. The long-term aspects of a TAC choice are determined by the future biological status of the stock under a chosen TAC and the type of management adopted for the fishery. On the biological side, the MSAP (1999) has determined that although the SPR for Gulf group king mackerel has increased, the stock is still overfished and undergoing overfishing. Also, the MSAP noted that recruitment appeared to have trended downwards in later years. Noting this information and the fact that TAC has been exceeded in all fishing seasons, except the 1998-99 season, the SEP (1999) recommended a TAC no greater than the status quo TAC of 10.6 MP. At this level which is only slightly above the MSAP's median ABC estimate of 10.1 MP, there is slightly less than a 50 percent probability of achieving the target SPR of 30 percent. A lower TAC would increase that probability while a higher one would reduce it. A higher TAC then, for example 12.5 MP, presents a low probability of the stock recovering to its target level, and it would only worsen if the SPR target is raised from 30 to 40 percent. Given this condition, the choice of a higher TAC would eventually give way to more stringent regulations in the future that would likely be accompanied by large reductions in future benefits to the fishing participants. The net effect between short-term benefits and long-term losses could very well be negative.

The type of management regime for the fishery in the future determines whether economic benefits from the fishery could be maintained or simply dissipated. The SEP (1999) noted that if management continues with a permit moratorium and the setting of an annual TAC, short-run economic benefits from maintaining a higher TAC will be dissipated by increasing fishing effort by existing participants in the fishery, causing harvest costs to increase as the length of the fishing season continues to be abbreviated. The alternative of cutting TAC now would incur costs from lost production and redirect effort to other commercial and recreational fisheries, imposing costs on these other fisheries. Increases in TAC in the future would attract new effort into the commercial and recreational fisheries and result in increased operating costs. Intuitively, maintaining the TAC at its present level would minimize these costs under the present management institution. Unless the problem posed by an open access system of management is addressed, any benefits from the fishery at whatever TAC level would only be dissipated.

Action 2: Bag limits for recreational fishermen and for captains and crew of for-hire vessels.

> **<u>Proposed Alternative 2.A</u>: Establish a 2-fish per person per day bag limit on Gulf group king mackerel for the captain and crew of for-hire vessels and retain this 2-fish bag limit for all other recreational fishermen.**

<u>Rejected Alternative 2.B</u>: Establish/maintain a zero-fish per person per day bag limit on Gulf group king mackerel for the captain and crew of for-hire vessels.

<u>Discussion and Rationale</u>: With the exception of the 1997-98 and 1998-99 fishing years, both the recreational and commercial suballocations of TAC have consistently been exceeded. The primary reason why catch has been less than or constrained to TAC in the last 2 years is that TAC was increased from 7.8 to 10.6 MP. Actual catches have been relatively stable at about 9 to 10 MP for the past 7 years, 1992-93 through 1998-99 (Table 1).

The majority of TAC (68%) has been allocated to the recreational fishery, and catches of Gulf group king mackerel by recreational fishermen have consistently exceeded their share of TAC since the 1986-87 fishing year, with the exception of the 1998-99 landings projections. Available data have also indicated that the for-hire sector has experienced the greatest increase in landings and effort and could be the major contributor to TAC overruns (SEP 1998).

In making its initial decision to implement a zero-fish bag limit for captain and crew of for-hire vessels, the Council was considering the 1996 stock assessment that was very pessimistic with an ABC range of only 4.7 to 8.8 MP and transitional and static spawning potential ratios (SPR) of 23% and 19%, respectively. Additionally, the recreational sector was consistently catching around 7.0 MP under a 2-fish bag limit, and the projected landings in 1996 for the 1997-98 fishing year were over 8.0 MP. The Council reviewed various options to reduce landings by the recreational king mackerel fishery including: (1) reducing bag limits, (2) increasing minimum size limits, (3) imposing maximum size limits, (4) slot limits, (5) incorporating a combination of bag and size limit adjustments, and (6) eliminating captain and crew bag limits on for-hire vessels. The Council was advised by the for-hire industry that a reduction in the bag limit to one fish would be disastrous to their businesses. Consequently, the Council concluded that imposing a zero-fish bag limit for captains and crew of for-hire vessels was the least disruptive measure to the industry that would bring catches in line with the recreational suballocation of TAC. This regulation was not implemented until June 1997.

The 1997 update of the stock assessment for Gulf group king mackerel indicated that the Gulf group king mackerel stock had improved (ABC was 6.0 to 13.7 MP, and transitional and static SPRs were 22% and 20%, respectively). Subsequently, with the 1997 regulatory amendment, the Council reversed the previous action, and the 2-fish daily bag limit for the captain and crew of for-hire vessels was reinstated.

Because the 1998 stock assessment was not quite as optimistic (ABC - 7.1 to 10.8 MP, and transitional and static SPR estimates were 23% and 21%, respectively) and the recreational overruns for 1997-98 were estimated to be about 1.1 MP, the Council proposed to reinstate the zero-fish bag limit for captains and crew to reduce catch and potential overruns, again because it constituted the least disruptive management measure. Instead of a 1.1 MP overrun of TAC,

actual catches in 1997-98 were only about 200,000 pounds over the 7.2 MP allocation, the smallest overrun since the 1986-87 fishing year (Table 1).

The projected recreational landings of Gulf group king mackerel for 1998-99 are 6.2 MP which is about 1.0 MP under the allocation; and as previously noted, the 1999 stock assessment update shows that the stock continues to rebuild with the ABC range at 8.0 to 12.5 MP. These phenomena have occurred under the allowance of a 2 fish bag limit for captain and crew of for-hire vessels.

The available data show that the Gulf group king mackerel stock continues to improve and may not be considered as overfished under future assessment criteria. Additionally, the recreational fishery appears to be able to operate within its allocation of TAC without the need of a zero-fish bag limit for captain and crew of for-hire vessels. Furthermore, since the 1998 framework measure is not scheduled for implementation until July 1999, reverting the bag limit to zero for captains and crew of for-hire vessels in the middle of the season would likely cause disruption and confusion among participants.

Biological Impacts: As with the consideration of TAC for the 1999-2000 fishing year, the major biological consideration of whether to allow a 2-fish bag limit for captain and crew is the added level of risk that continued overfishing and overruns of TAC will occur, and recovery of the Gulf group king mackerel stock will be curtailed. Based on MSAP (1999), it does not appear that the 2-fish bag limit for captain and crew would have an appreciable impact on the recovery of the Gulf group king mackerel stock. Since the 1992-93 fishing year annual recreational landings have been relatively stable at about 6.8 MP; and other stock assessment factors, namely recruitment, biomass, and SPR have been increasing. During most of this period, the 2-fish bag limit was in effect and overruns of TAC were the rule, more so than the exception. The recreational catch also appears to have been effectively confined to its allocation of TAC in the 1997-98 and 1998-99 fishing years under a 10.6 MP TAC; and as previously discussed, the Gulf group king mackerel stock is expected to recover above the 30% SPR target level by 2007 under the 10.6 MP TAC and only average recruitment levels (Figure 2). Additionally, the increase in the minimum size limit to 24 inches FL, which has been proposed but not yet implemented, would effect about 10% of the charter and headboat landings, which are the dominant source of fishing mortality (GMFMC 1998b). Higher than average recruitment levels in the future, which has been the case in recent years, coupled with the implementation of the increased minimum size limit could result in earlier recovery and provide additional relief from the need of a zero-fish bag limit for captain and crew of for-hire vessels.

On the other hand, the reduction in the recreational catch as a result of the zero-fish bag limit for captain and crew could be as high as 12.2% or about a 17% reduction in the for-hire sector's landings (Holiman 1996; SEP 1997). The zero-fish bag limit for captain and crew of for-hire vessels was in effect for more than 8 months of the 1997-98 fishing year (June 2, 1997 to February 19, 1998); and during this period, the recreational allocation was exceeded by approximately 200,000 pounds (Table 1).

In order to further determine the effectiveness, or lack thereof, of the zero-fish bag limit, catch and effort data for the period in 1997, when the zero-fish bag limit was in effect, were compared

with those of the corresponding period in 1994, 1995, and 1996. In 1997, the zero-fish bag limit was in effect from Wave 3 (half) through Wave 6.

Table 3 shows that recreational landings for Waves 3 through 6 totaled 2.74 MP in 1997 while the average landings for the corresponding waves in 1994, 1995, and 1996 were only 2.15 MP, which represents a 27 percent increase in landings during the time the zero-fish bag limit was in effect. For the same comparable period, target trips fell by 31 percent, but catch trips increased by 13 percent, resulting in the overall increase in recreational landings. Table 4, which breaks down the landings by wave into landings by the shore, charter, and private modes, shows that while charter catches were slightly lower (approximately 11 percent)in 1997 as opposed to 1996, they were higher than in 1994 or 1995, and exceeded the 1994 to 1996 average by about 20 percent. Consequently, no discernable change in for-hire landings can be detected from a zero-fish bag limit for captain and crew based on the available data. Because of the paucity of data available, retaining the zero-fish bag limit would, however, provide an additional safeguard to overruns of TAC.

Economic Impacts: These alternatives have been considered on various occasions inclusive of this regulatory amendment, with the proposed and rejected alternatives switching positions every time these alternatives are considered. It is then instructive to recount here the previous analysis with updates on some recently available information. It may also be noted that since there are only two alternatives considered, focusing the discussion on either of them suffices in determining the economic implications of the two alternatives.

In recent years, the for-hire sector has substantially increased its share of recreational landings and has displaced the private/rental mode as the recreational sector's largest segment in terms of landings. Table 5, based on Marine Recreational Fisheries Statistics Survey (MRFSS) data (Holiman 1999), presents catch and effort by fishing mode for 1990 through 1998. Effort data for 1998 are not yet available. This table shows that over the period 1990 to 1992, the private/rental mode was the dominant segment of the recreational sector and accounted for about 52 percent of total recreational landings. The charter mode's share of total recreational landings was only about 28 percent for the same period. It was followed closely by the shore mode with a landings share of 20 percent. Since 1993, charterboat landings have exceeded those of the private/rental and shore modes. For the 1993 to 1997 period, charterboat landings averaged 3.2 MP and accounted for 64 percent of total recreational landings, or more than double that of the 1990 to 1992 period. In contrast, the private/rental mode's landings share fell to 30 percent from its high of 52 percent in the 1990 to 1992 period. The landings share for the shore mode fell to 5 percent from 20 percent in the 1990 to 1992 period. Between 1990 and 1997, charterboat landings increased by 380 percent while those of private/rental mode increased by 35 percent. Shore mode landings dropped precipitously by 89 percent.

The landings performance by the various segments of the recreational sector can be partly explained by the trend in the number of trips targeting or catching king mackerel. In both target trips (i.e., trips for which king mackerel is the target species) and catch trips (i.e., trips in which

king mackerel is caught regardless of targeting behavior), the private/rental mode has been the dominant sector. For the period 1990 to 1997, the private/rental mode annually averaged 295,000 target trips and 140,000 catch trips. The corresponding annual averages for the other fishing modes are: 60,000 target trips and 140,000 catch trips for the charter mode; and 194,000 target trips and 40,000 catch trips for the shore mode. However, the changes in target or catch trips depict a different situation. For the period 1990 to 1997, charter mode target and catch trips rose by 207 percent and 163 percent, respectively. The private/rental mode registered a 0.2 percent decline in target trips but a 9 percent increase in catch trips. The shore mode registered a decline in both target trips (58%) and catch trips (76%). MRFSS data, thus, indicate the fast growing importance of the for-hire segment of the recreational fishery. This condition holds true even if preliminary 1998 data, which show a decrease in landings by all three fishing modes, are considered. According to preliminary 1998 data, charter mode landings fell by 13 percent while those of private/rental fell by 57 percent.

Rejected Alternative 2.B would place a curb on the fastest growing (and currently the largest) segment of the king mackerel recreational fishery. Holiman (1996) has estimated that this measure can reduce total recreational landings by about 584,000 pounds, or 12.2 percent of total recreational landings. Since the measure applies only to the for-hire boat captain and crew, the impacts of the measure will be borne by the for-hire sector. This landings reduction was estimated at roughly equivalent to 17 percent of charterboat landings.

While the reduction appears to be significant especially for the for-hire sector, there are several issues worth noting regarding the likely magnitude of effects. First, Holiman (1996) qualified his estimate by indicating that the estimated catch reduction is an upper bound, and actual savings are likely to be substantially less. This qualification is significant considering that charterboat landings have significantly increased from 1990 to 1997. The reduction in 1998 could be temporary in nature especially if the drop was mainly due to unfavorable weather. Second, both target and catch effort in the charter industry have significantly increased over the years. The rates of change in effort are bound to negate the projected reduction in landings. It may be particularly noted that the rejected alternative affects only the captain and crew and not the individual anglers who fish through the charter mode. Anglers' demand for fishing trips are virtually unaffected by a zero bag limit on captain and crew, unless charter operations raise the price for the trips. Because the charter fishing market is relatively competitive, price increases in charter trips seem unlikely. All these conditions appear to severely limit the rejected alternative's effect on total recreational landings.

The impacts of the rejected alternative on charter operations are shaped by the nature of charter operations. In some areas in the Gulf, specifically in Southwest Florida, for-hire boats holding Saltwater Product Licenses (SPL) with a restricted species endorsement can sell recreational bag limits of king mackerel caught in Florida's state waters even after the commercial season is closed in the EEZ. They can sell the captain and crew's bag limits as well as those left by customers. In various letters to the Gulf Council, Captain Bill Wickers (1996, 1998) indicated that in Key West, Florida, 75 percent of king mackerel caught on charterboats are left with the crew. Fish sales comprise 15 to 25 percent of the gross income of charterboats in the Key West, Florida area. In most charter operations, mates get half of the fish sales which make up 20 to 30 percent of their gross income. This practice of selling fish by charterboats remains unaffected

by the rejected alternative; however, charterboats would be limited to selling fewer fish. As such, a reduction in charterboat revenues and crew wages can be expected.

Since 15 to 25 percent of charterboat gross revenues comes from sale of fish (at least in the Key West, Florida area), a 17 percent reduction in charterboat landings would roughly result in a 2.6 to 4.3 percent reduction in their gross revenues. Also since fish sales contribute 20 to 30 percent of the mates' incomes, these individuals would stand to lose 3.4 to 5.1 percent of their gross income.

In the event that, as contended above, the actual landings reduction would be less than the estimated 17 percent for charterboats and 12.2 percent for the entire recreational fishery, the corresponding reductions in revenues to the charterboats and crew would be substantially less than estimated above.

It is worth stressing at this point that the earlier estimated 10 percent reduction in recreational harvests from a minimum size limit increase that was proposed in last year's regulatory amendment (not yet implemented) and the current 12.2 percent reduction from a zero bag limit on captain and crew are not additive. It is not known to what extent the two actions interact.

Since there are only two alternatives considered under this particular action, the discussed impacts of the rejected alternative would not materialize under the Proposed Alternative.

Action 3: Commercial gill net fishing season for Gulf group king mackerel

> **Proposed Alternative 3.A: the opening date of the gill net fishery for Gulf-group king mackerel be set at the Tuesday following the Martin Luther King, Jr. holiday, with the following weekend open as long as the quota has not been taken and all subsequent weekends and holidays closed as long as the season remains open.**
>
> **Proposed Alternative 3.B: the gill net fishery will be open at 6 a.m. eastern standard time (EST) on Tuesday following the Martin Luther King holiday. Weekend and holiday closures, if implemented, shall be from 6 a.m. Saturday to 6 a.m. Monday EST (or Tuesday if a Monday holiday is involved). During this period boats must be tied to the dock if a net is on board. If the net is removed, boats may fish for other species during the weekend.**
>
> **Rejected Alternative 3.C: Status Quo - the commercial gill net fishing season for Gulf group king mackerel opens at the same time as the commercial hook and line season, July 1.**

Discussion and Rationale: The commercial gill net fishery has historically operated primarily in the Florida Keys. This fishery typically begins in January following the opening of the commercial fishing season in July. Historically, there have been usually less than 20 participants in this fishery in a given year, and it generally opens more by "gentleman's

agreement" when schools of king mackerel become congregated nearshore in the winter. The gill net fishery operates under a 25,000 pound trip limit, and is allocated 50% of the Florida west coast suballocation of TAC, currently 585,000 pounds. Because of the large trip limit and the efficiency of this gear, the gill net suballocation of TAC is usually caught in a few days and the fishery is closed. Additionally, notification has not been a problem in the past due to the small number of participants.

In the 1998-99 fishing year, the fishery basically started on January 9, 1999 at which time only about 9% of the quota had been taken. By the Friday before the Martin Luther King, Jr. Holiday, January 15, 1999, the fishery was in full operation; and the quota was anticipated to be harvested over the weekend. Because of the Monday holiday, the closure notice for the gill net fishery could not be officially published until Wednesday, January 20, 1999; and by this time 168% if the suballocation had been taken. With residual landings, the final gill net catch was estimated at 1.05 MP.

Because the gill net fishery has the capability of harvesting large amounts of king mackerel in a short period of time, it is important to have the ability to implement a rapid closure. This is only possible when all entities involved with implementing such a closure are available to act on short notice. The proposed alternatives to delay the opening until the day after the Martin Luther King, Jr. Holiday and effectuate weekend closures after the first week will help insure that the gill net fishery can be closed when its suballocation of TAC is projected to be taken. Allowing the fishery to continue through the first weekend could pose some risk of the closure being needed during this weekend because in 1999 the gill net fishery harvested in excess of 600,000 pounds in 4 days (January 15, 1999 through January 18, 1999). With the implementation of Amendment 9 (anticipated in September 1999) that imposes further restrictions on the gill net fishery and may eliminate some participants, the possibility of catching the allocation of TAC in the first 4 or 5 days of the season may be lessened. The weekend closure measures in subsequent weeks, if needed, will allow vessels to fish in other fisheries while providing distinct parameters to deter illegal operations.

The status quo, rejected alternative would allow the gill net fishery to operate anytime during the fishing year July 1 to June 30 provided that the quota has not been harvested. Consequently, there is a potential for problems with implementing closures, when needed, as occurred in 1999; and further overruns of TAC.

Biological Impacts: The biological impacts associated with either the proposed of status quo alternatives would be about the same. Both rely on being able to start and close the gill net fishery when its allocation of TAC is expected to be harvested and not allow overruns. The biological impacts of potential overruns have been discussed previously.

Economic Impacts: The proposed alternatives appear to provide more control over the fishery and less likelihood of overruns occurring. On the other hand, the congregation of fish may occur before or after the proposed opening date. If this occurs before the opening there will be a greater impetus to fish illegally that could increase catch. If it occurs after fish have congregated and schools break-up, catches may be reduced and/or the season may be extended but only at a relatively higher cost to the gill net industry. Another possible scenario of the

proposed alternatives is that a time-certain opening near the time that fish typically become aggregated could initiate a more intensified derby fishery.

To the extent that the proposed alternatives can effectively minimize overruns of the gill net quota, the probability of imposing more stringent regulations in the future on this fishery in particular and the commercial fishery in general is lessened. In this way, the gill net industry may be considered to benefit from the proposed measures. However, it has to be noted that the gill net fishery is basically an opportunistic type of fishery in the sense that it is more likely to more than recoup its costs of operation when targeting congregated fish. Congregation of king mackerel may well occur before the Martin Luther King holiday and the fish disperse afterward. In that event, the industry may not be able to generate profits from vessel operation.

While the proposed alternatives directly affect the operation of gill net vessels, they also affect the operations of hook-and-line vessels. Although there is a separate quota for the hook-and-line fishery, particularly on the west coast of Florida, both gill net and hook-and-line fishermen compete in the market for king mackerel. Understandably, there is some distinction between the gill net fishermen's market, which is mainly the freezer market, and that for the hook-and-line fishermen, which is the fresh market. This distinction may lessen but not totally eliminate either group's effect on the king mackerel price structure faced by the other group. The gill net fishermen's effect on overall price structure is particularly important due to the large amount of fish they can land at any one time. During the open season for this segment of the commercial king mackerel fishery, prices may be expected to substantially drop. Outside of this season, hook-and-line fishermen face a higher probability of getting good prices for their landings. Under the proposed alternatives, the fishing season for the gill net fishery becomes a relatively predictable occasion. Hook-and-line fishermen could then plan accordingly their operations so as not to coincide with those of the gill net fishermen. In this way, the proposed alternatives would provide hook-and-line fishermen some flexibility in planning their fishing operations, and thus may provide some possibility of increasing the benefits to the hook-and-line segment of the commercial king mackerel fishery.

Action 4: TAC level for Gulf group Spanish mackerel.

> **Proposed Alternative 4.A: Set the TAC for Gulf group Spanish at the lower end of the ABC range, 9.1 million pounds.**
>
> **Rejected Alternative 4.B: Status Quo - Gulf group Spanish mackerel TAC remains at 7.0 million pounds.**

Discussion and Rationale: Since the 1989-90 fishing year, landings of Spanish mackerel have been below the TAC and usually at or below the lower range of ABC (Table 6). The TAC was set at 8.6 MP from the 1991-92 fishing year to the 1995-96 fishing year; however, it was reduced to 7.0 MP in 1996-97 to more closely align TAC with the midpoint of the ABC range until the stock status could be more thoroughly evaluated. Because of low market demand and the institution of the net ban in Florida in July 1995, landings were not expected to reach the 7.0 MP level. From the 1995-96 to 1998-99 fishing years landings were very consistent, averaging only about 2.5 MP while TAC remained at 7.0 MP.

The proposed alternative to increase TAC from 7.0 to 9.1 MP should not effect the current fishery because actual landings are so much lower than either of these potential harvest levels. The proposed increase in TAC to the lower point on the ABC range would, however, allow for expansion of the fishery if market demands, alternative harvest practices, or some combination of the two factors are effectuated. However, by not setting TAC above the lower end of the ABC range, any escalation in catches would be limited so as to prevent the stock from being compromised in a short period of time, perhaps as a result of increased fishing efforts of a nontraditional nature. Such a significant increase in fishing effort in the 1999-2000 fishing year is highly unlikely, and there will probably be little difference in the outcomes of the proposed alternative or status quo.

Biological Impacts: Although historical TACs have been low, unweighted, transitional SPR estimates were generally below 20% until 1995-96. In 1996-97, transitional SPR was estimated at 22 percent which was slightly above the overfished threshold of 20% SPR at that time. Since 1996-97, transitional SPR has increased dramatically to the current estimate for 1999 of 42% (MSAP 1999). At this level and under the more conservative management approach being proposed in the Council's Generic Sustainable Fisheries Act Amendment, the Gulf group Spanish mackerel stock would be considered as not overfished and not undergoing overfishing. The primary reason for this recovery is the significant reduction in landings since the 1991-92 fishing year (Table 6). The current fishing mortality rate for 1998-99 is only 0.14 per year which is substantially less than the $F_{30\%}$ static SPR that is currently proposed as a proxy for MSY.

The ABC range at $F_{30\%}$ SPR was recently calculated at between 9.1 and 17.2 MP with the 50th percentile mark at 12.9 MP (MSAP 1999). Static SPR, which is projected from the more recent years' fishing mortality rates, was estimated at 53%. At a 9.1 MP harvest, there is only a 16% chance that this level of fishing mortality would exceed the fishing mortality at $F_{30\%}$SPR, and the current harvest level is less than 30% of that potential catch. Consequently, there is virtually no chance that the fishery would be overfishing in the 1999-2000 fishing year with TAC set at 9.1 MP.

Economic Impacts: For a number of years now, the MSAP has declared the Gulf group Spanish mackerel as neither overfished nor undergoing overfishing. At the most recent stock assessment (MSAP 1999) the transitional SPR was estimated at 42 percent and static SPR at 53 percent. These levels are well above those that would render the stock to be considered overfished or undergoing overfishing. In particular, the static SPR is well above the 40 percent level proposed as optimum yield (OY) under the Council's Generic Sustainable Fisheries Act Amendment. The proposed TAC of 9.1 MP provides for a low probability that the stock would be brought down to an overfished or overfishing level.

Given the highly improved status of stock and the proposed OY level, the proposed TAC increase for Gulf group Spanish mackerel may be deemed as a first step towards a fuller utilization of the stock. Based on historically low landings of both the commercial and recreational sectors, this TAC increase may not immediately translate into increased harvests. The last time TAC was exceeded was in the 1988-89 season when TAC was set at 5.0 MP.

Since then total landings have remained well below TAC especially as TAC has been increased. The TAC was reduced in the 1996-97 season to 7.0 MP, which is the current TAC, but overall landings still remained well below TAC. In the last 5 years, overall landings have not reached 5.0 MP. The situation in the commercial sector was only exacerbated when the Florida net ban was implemented in 1995 which resulted in substantial reductions in commercial landings. In the 1998-99 season, commercial landings were 0.46 MP which were only 12 percent of the commercial quota.

The Florida net ban would still continue to limit the harvests of Gulf group Spanish mackerel in state waters and consequently overall harvests so that over the short run the proposed TAC increase may not yield additional benefits to fishing participants. At any rate, the proposed TAC increase does send out a signal to various user groups of the greater benefits that can potentially be derived from the fishery.

Action 5: Bag limits for Gulf group Spanish mackerel.

> **Proposed Alternative 5.A: Set the bag limit for Gulf group Spanish at 15 fish per person per day for the exclusive economic zone (EEZ), Florida through Texas, effective January 1, 2000.**
>
> **Rejected Alternative 5.B: Status Quo - the bag limit for Gulf group Spanish mackerel remains at 10 fish per person per day (EEZ off Florida through Louisiana) and 7 fish per person per day (EEZ off Texas).**

Discussion and Rationale: The bag limit for Gulf group Spanish mackerel has been set at 10 fish per person per day for all Gulf states, with the exception of Texas where it has been 7 fish per person per day, since the 1992-93 fishing year. (Note: Texas requested the 7-fish bag limit for compatibility with state regulations.) As noted in the above discussions, the present level of catch by both the commercial and recreational sectors is well below the estimated harvest that the stock could potentially bear. Additionally, available data from MRFSS indicate that only a small percentage of anglers are catching the bag limit at the present 10-fish level; however, the increased bag limit could provide additional fish for some recreational fishermen. The recreational landings have also been relatively stable over the past 5 years (Table 6). Consequently, the proposed alternative to increase the bag limit to 15 fish per person per day would probably have little impact on current catch.

The proposed alternative could, however, create even greater disparity between the commercial and recreational percentages of the total catch. In 1988, Amendment 2 established allocations of TAC at 57% commercial and 43% recreational for Gulf group king mackerel. Recreational catches averaged about 48% of TAC from the 1989-90 fishing year through the 1995-96 fishing year. Following the implementation of the ban on gill nets in Florida waters, however, the recreational catches from 1996-97 to 1998-99 amounted to about 80% of the total catch. On the other hand, under the increased TAC that is being proposed, commercial catches could also increase. As previously noted it is unlikely that either of these changes will change harvest levels appreciably.

Biological Impacts: As previously stated for the increase in TAC, there should be no negative biological impacts of increasing the bag limit to 15 fish per person per day because it is unlikely that this measure would change current fishing practices or harvest levels. Catches have been relatively stable in recent years at harvest levels well below the established TAC, and individual catches have seldom exceeded the current bag limit of 10 fish (FL - LA) and 7 fish (TX). Allowing additional fish to be taken by recreational fishermen will not necessarily result in increased catches, and available data indicate that any increase in catch would probably be small and insignificant.

Economic Impacts: An increase in recreational bag limit for Gulf group Spanish mackerel, as contained in the proposed alternative, complements the proposed increase in TAC, but this proposed increase is likely not enough to result in a marked increase in recreational harvests. There are some unknown factors, which could be related to the availability of Spanish mackerel in waters frequented by anglers or to the demand for Spanish mackerel and its substitutes such as king mackerel, that have prevented the recreational sector from fully harvesting its allocation.

In the last few years with the recreational bag limit set at 7 fish for Texas and 10 fish for the rest of the Gulf, recreational harvests hovered around 2.0 MP, which are about two-thirds of the entire recreational allocation of 3.01 MP (under a 7.0 MP TAC). With the exception of spikes in 1986 and 1992 which registered total target effort of over a million trips, total target effort fluctuated between 500,000 and 800,000 trips. Total catch effort mimicked the trend in target effort, with trips fluctuating between 500,000 and 900,000 trips and spikes of over a million trips in 1986 and 1992. In both target and catch trips, the number of trips remained relatively steady over the years, and this could partly explain the relatively low recreational landings of Gulf group Spanish mackerel.

A more telling picture is depicted by the average catch history of the recreational sector. Holiman (1999) reported that for the period 1994 to 97, about 99 percent of catch trips landed 10 or less Spanish mackerel. In fact, about 66 percent of catch trips landed 1 Spanish mackerel or less. This catch history indicates that an increase in the recreational bag limit from 7 or 10 to 15 fish per angler is not bound to immediately result in an increase in recreational harvest. As with the TAC increase, however, the proposed increase in recreational bag limit sends a signal to the recreational anglers that a greater level of benefits can potentially be derived from the fishery.

Government Costs of Regulation

Federal government costs of this action are associated with meetings, travel, preparation of various documents, and reviewing all documents. Other sources of additional costs include extraordinary research, additional statistics collection, additional monitoring activities, additional permitting requirements, and additional enforcement activities resulting from the action. For these other sources, no additional costs are anticipated. The proposed trip limit in the Western Zone may necessitate additional enforcement activities, but these activities may be considered part of current enforcement activities with no extra costs incurred.

Council costs of document preparation,
meetings, and information dissemination $20,600

NMFS administrative costs of document

preparation, meetings, and review 10,000

Law enforcement costs .....none

Permit costs.....none

TOTAL $30,600

Summary and Expected Net Impact of Proposed Action

The Proposed Alternative to retain the status quo TAC of 10.6 MP may be expected to maintain the current short-run profit configuration of commercial vessels. At this TAC level, ex-vessel revenues are estimated at $4.252 million, producer surplus at $0.34 million, and consumer surplus at $0.216 million. Current regulations for the recreational sector may also be maintained under this TAC choice, especially if the expected 10 percent reduction in recreational catch due to the proposed increase in minimum size limit would materialize. A lower alternative TAC of 8.0 MP would reduce commercial ex-vessel revenues to $3.256 million, producer surplus to $0.261 million, and consumer surplus to $0.139 million. Under this lower TAC, more stringent regulations of the recreational sector would be necessary to limit this sector to its allocation. A higher alternative TAC of 12.5 MP would increase commercial ex-vessel revenues to $4.96 million, producer surplus to $0.397 million, and consumer surplus to $0.281 million. This TAC level, coupled with the expected reduction in recreational harvest due to the minimum size limit increase, would provide a higher chance than the status quo that current rules governing the recreational sector would constrain the sector to its allocation.

The Proposed Alternative to restore the 2-fish recreational bag limit for captain and crew of for-hire vessels is expected to prevent a 12.2 percent reduction in total recreational landings, or 17 percent reduction in charterboat landings. Based on the report that 15 to 25 percent of charterboat gross revenues comes from the sale of fish, the Proposed Alternative would restore the 2.6 to 4.3 percent in gross revenues that were lost as a result of disallowing bag limits for captain and crew of for-hire vessels. Based also on the report that fish sales contribute 20 to 30 percent of the crew's income, these individuals would stand to regain the 3.4 to 5.1 percent reduction in gross income brought about by disallowing bag limits for the captain and crew of for-hire vessels.

The Proposed Alternative to change the opening date of the gill net fishery for Gulf group king mackerel would tend to mitigate the problem of overruns in this particular fishery. This change would make the fishing season for the gill net fishery known in advance, and the hook-and-line fishermen could plan their fishing operations in order to receive better ex-vessel prices for their harvests of king mackerel.

The Proposed Alternative to raise the TAC for Gulf group Spanish mackerel and the Proposed Alternative to increase the recreational bag limit for this fish are expected to have no immediate effects on the biological status of the stock or the level of harvests by both the commercial sector (for the TAC increase) and the recreational sector (for both the TAC and bag limit increase). Landings by both sectors have remained at low levels even with previous TAC increases.

Government costs for preparing and implementing these actions are estimated at $30,600.

Determination of a Significant Regulatory Action

Pursuant to Executive Order 12866, a regulation is considered a "significant regulatory action" if it is likely to result in a rule that may: (1) have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of the recipients thereof; or (4) 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 Gulf group king mackerel fishery is valued at approximately $4.2 million, which is significantly less than $100 million. The proposed TAC is expected to have no effect on revenues, since this is the same TAC established for the past two fishing seasons. No changes in the revenue structure of the for-hire vessels are expected from maintaining the status quo TAC. Restoring the recreational bag limit for captains and crew of for-hire vessels would also restore the previous 4.3 percent loss in revenue. The proposed change in the opening of the gill net fishery for king mackerel would not materially change the gross revenues of gill net vessels, but it could potentially improve by an unknown amount the revenues of hook-and-line vessels. Both the proposed increases in TAC for Gulf group Spanish mackerel and the recreational bag limit are not expected to have an immediate impact on the fishery. Hence, potential changes (if any) in gross revenues are deemed to fall well below the $100 million benchmark. Prices of fish to consumers are not expected to increase significantly as a result of this amendment, since there is expected to be no reduction in overall commercial and recreational harvest of king and Spanish mackerel. Overall cost increases to the mackerel vessels, including for-hire vessels, are not expected to occur. Costs to the local and federal governments are estimated at about $30,600, all of which are associated with the preparation of this amendment. The proposed measures are expected to have minimal adverse effects on employment, competition, and investment; although it may be noted that restoring the recreational bag limit for captain and crew of for-hire vessels could restore a maximum of 5.1 percent that was lost due to the disallowance of the bag limit.

The proposed regulation does not, in general, interfere or create inconsistency with an action of another agency, including state fishing agencies. In fact, the change in the opening date of the gill net fishing season may enhance the ability of federal and state governments to limit the gill net fishery to its quota. The proposed regulation does not contain any provision that would likely affect any entitlements, grants, user fees, or loan programs. Finally, it is deemed that no novel legal or policy issue is raised by the proposed regulation. All issues in this amendment, except the opening date of the gill net fishing season, have been considered in the past by the Council.

The foregoing discussion leads to the conclusion that this regulation, if enacted, would not constitute a significant regulatory action.

Determination of the Need for an Initial Regulatory Flexibility Analysis

Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to relieve small businesses, small organizations, and small governmental entities of 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 Gulf group king and Spanish mackerel fishery. The general impacts of the proposed action on these entities have been discussed above. The following discussion of impacts focuses specifically on the consequences of the proposed action on the mentioned business entities. An Initial Regulatory Flexibility Analysis (IRFA) is conducted to primarily determine whether the proposed action would have a "significant economic impact on a substantial number of small entities." Although an IRFA focuses more on adverse effects, determination of beneficial significant effects is also an integral component of the analysis. In addition to the analyses conducted for the RIR, the IRFA provides an estimate of the number of small businesses affected, a description of the small businesses affected, and a discussion of the nature and size of the impacts.

The RFA requires a determination as to whether a proposed rule has a significant impact on a substantial number of small entities. If the rule does have this impact then an 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.

Substantial Number of Small Entities Criterion

In the Gulf area, a total of 1,440 commercial mackerel permits and 1,113 coastal migratory pelagic charter permits have been issued. There are 12 to 20 gill net vessels that participate in the Gulf group king mackerel fishery. 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 and in the charter or party vessel activity as a firm with receipts of up to $5.0 million annually. Since taken all together the proposed action will affect practically all participants of the commercial and for-hire Gulf group king and Spanish mackerel fisheries, the "substantial number" criterion will be met in general.

The regulations are likely to result in a change in annual gross revenues by more than 5 percent. The proposed TAC of 10.6 MP is the status quo level. Consequently, no change in potential commercial vessel revenues may be expected. The revenue impacts of the other measures are generally expected to result in minimal change in revenues to vessels. It may only be noted that restoring the recreational bag limit for captains and crew of for-hire vessels would prevent

charterboats, at least those in the Florida Keys, from losing approximately 4.3 percent their gross revenue. The change in the opening date of the gill net fishing season for Gulf group king mackerel is not expected to change the revenues of these vessels relative to what they could earn if effectively limited to their quota. Both the proposed increases in TAC for Gulf group Spanish mackerel and the recreational bag limit for Gulf group Spanish mackerel are not expected to change the revenues of commercial or for-hire vessels participating in the fishery.
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. No additional capital expenditures are expected to result from any of the proposed measures in this amendment.

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. None of the provisions in this amendment is expected to adversely impact the fishing operations of commercial and for-hire vessels participating in the Gulf group king and Spanish mackerel fisheries. Thus, no business entity is expected to cease operation as a result of the proposed rule.

Conclusion

Considering all the various criteria for impact determination on small business entities, it is concluded that the proposed regulation, if enacted, would not result in a significant economic impact on small business entities. Therefore, an IRFA is not required.

V. ENVIRONMENTAL CONSEQUENCES

Physical Environment: To the extent that it can be ascertained, the action proposed in this amendment will have no impact on the physical environment. Gear traditionally used in this fishery (hook-and-line and run-around gill nets) have no adverse impact on the bottom substrate or other habitat. These gear are selective for the target species, and there is little bycatch. Continuing studies have provided no new information beyond that already contained in the FMP, as amended, and the Council’s Generic EFH Amendment that further defines the relationship between stocks and habitat.

Fishery Resources: The TACs previously developed and established under this framework seasonal adjustment are consistent with the Council's objective of rebuilding stocks. The

proposed action is intended to protect coastal pelagic fish stocks from recruitment and growth overfishing while fairly allocating allowable catch among fishermen. The proposed actions will have insignificant effects on the fishery resources.

Human Environment and Social Impact Assessment: The management of fisheries may directly affect the human environment. Current social data on users in the mackerel fishery affected by this amendment are sparse. Most of the known impact is of an economic nature. The net impact on the users of the resource by the proposed action is discussed in the RIR and IRFA (Section IV). The impact on fishery resource users in adjacent areas has been coordinated with the appropriate Council, where appropriate.

Effect on Endangered Species and Marine Mammals: The National Oceanic and Atmospheric Administration (NOAA) conducted a consultation under Section 7 of the Endangered Species Act (ESA) regarding the impact of Amendment 6 that included the framework measures under which this action is being taken; therefore, no additional Section 7 consultation is necessary. A biological opinion resulting from that consultation found that: (1) Amendment 6 did not contain any regulatory changes that would adversely affect listed species of sea turtles, marine mammals, or fish, or their respective habitats; and (2) the fisheries for coastal migratory pelagic resources will not jeopardize the continued existence of any listed species.

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

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

Unavoidable Adverse Affects: The proposed action does not create unavoidable adverse affects.

Irreversible and Irretrievable Commitments of Resources: There are no irreversible commitments of resources caused by implementation of this regulatory amendment.

Finding of No Significant Environmental Impact

The proposed action 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 6 and revised in Amendment 8 to rebuild overfished stocks. The proposed action should not result in impacts significantly different in context or intensity from those described in the environmental impact statement (EIS) and environmental assessment (EA) published with the regulations implementing the FMP and Amendments 6 and 8. The environmental consequences of this action are almost entirely economic in nature and are discussed in the RIR and IRFA (Section IV).

Having reviewed the EA 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 EIS on these issues is not required for this amendment by Section 102(2)(c) of the National Environmental Policy Act (NEPA) or its implementing regulations.

Approved: _____

Assistant Administrator for Fisheries Date

VI. OTHER APPLICABLE LAW

Impacts on Other Fisheries: The proposed action should have no additional impacts on other fisheries.

Vessel Safety: The proposed actions to: (1) maintain the total allowable catch (TAC) for Gulf group king mackerel at 10.6 million pounds; (2) establish a 2-fish per person per day bag limit on Gulf group king mackerel for all recreational fishermen, including the captain and crew of for-hire vessels; (3) establish the opening date of the gill net fishery for Gulf group king mackerel at 6 a.m. eastern standard time (EST) on the Tuesday following the Martin Luther King, Jr. holiday, with the following weekend open as long as the quota has not been taken and all subsequent weekends and holidays closed as long as the season remains open, along with other criteria; (4) set the TAC for Gulf group Spanish at the lower end of the acceptable biological catch (ABC) range, 9.1 million pounds; and (5) increase the bag limit for Gulf group Spanish from 10 to 15 fish per person per day for the exclusive economic zone (EEZ), Florida through Texas, effective January 1, 2000 should not change the current status of vessel safety. Therefore, the proposed actions do not impose requirements for use of unsafe (or other) gear, nor do they direct fishing effort to periods of adverse weather conditions.

Paperwork Reduction Act: The Council proposes no additional permit or data collection programs in this amendment.

Federalism: This proposed action does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under E.O. 12612.

VII. PUBLIC REVIEW

Public comment on the proposals contained in this regulatory amendment was received during the Gulf of Mexico Fishery Management Council meeting in Austin, Texas on May 12, 1999.

List of Agencies Consulted:

Gulf of Mexico Fishery Management Council's
- Scientific and Statistical Committee
- Mackerel Stock Assessment Panel
- Socioeconomic Assessment Panel
- Mackerel Advisory Panel

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

Partial List of Organizations Consulted:

- Concerned Fishermen of Florida
- Organized Fishermen of Florida
- Monroe County Commercial Fishermen, Inc.
- Coastal Conservation Association
- Southeast Fisheries Association

Responsible Agency:

Gulf of Mexico Fishery Management Council
3018 U.S. Highway 301, North
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813-228-2815

List of Preparers:

Gulf of Mexico Fishery Management Council
Richard Leard, Fishery Biologist
Antonio Lamberte, Economist

VIII. REFERENCES

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GMFMC. 1998b. Framework seasonal adjustment of harvest levels and procedures under the fishery management plan for coastal migratory pelagic resources (mackerels) in the Gulf of Mexico and South Atlantic region including environmental assessment, regulatory impact review, and initial regulatory flexibility analysis. Gulf of Mexico Fishery Management Council, 3018 U.S. Highway 301 North, Ste. 1000, Tampa, Florida 33619-2266. 34 pp, +tables and appendices.

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APPENDIX A

Section 6.1.1: Mechanism for Determination of Framework Adjustments, as modified by this and previous amendments is as follows:

Section 12.6.1.1

A. An assessment panel (Panel) appointed by the Councils will normally reassess the condition of each stock or migratory group of king and Spanish mackerel and cobia in alternate (even numbered) years for the purpose of providing for any needed preseason adjustment of TAC and other framework measures. However, in the event of changes in the stocks or fisheries, the Councils may request additional assessments as may be needed. The Councils, however, may make annual seasonal adjustments based on the most recent assessment. The Panel shall be composed of NMFS scientists, Council staff, Scientific and Statistical Committee members, and other state, university, and private scientists as deemed appropriate by the Councils.

The Panel will address the following items for each stock:

1. Stock identity and distribution. This should include situations where there are groups of fish within a stock which are sufficiently different that they should be managed as separate units. If several possible stock divisions exist, the Panel should describe the likely alternatives.

2. MSY for each identified stock. If more than one possible stock division exists, MSY for each possible combination should be estimated.

3. Condition of the stock(s) or groups of fish within each stock which could be managed separately. For each stock, this should include but not be limited to:

    a. Fishing mortality rate relative to F_{msy} and $F_{0.1}$ as well as $F_{20\%SPR}$, $F_{30\%SPR}$, and $F_{40\%SPR}$.
    b. Spawning potential ratio (SPR).
    c. Abundance relative to an adequate spawning biomass.
    d. Trends in recruitment.
    e. Acceptable Biological Catch (ABC) which will result in long-term yield as near MSY as possible.
    f. Calculation of catch ratios based on catch statistics using procedures defined in the FMP as modified.
    g. Estimate of current mix of Atlantic and Gulf migratory group king mackerel in the mixing zone for use in tracking quotas.

4. Overfishing:

a. A mackerel stock or migratory group is considered to be overfished when the transitional spawning potential ratio (SPR) is below 30 percent.

b. The South Atlantic Council's target level or optimum yield (OY) is 40 percent static SPR. The Gulf Council's target level or optimum yield (OY) is 30 percent static SPR. ABC is calculated based on the target level or optimum yield (SAFMC = 40 percent static SPR and GMFMC = 30 percent static SPR).

c. When a stock or migratory group is overfished (transitional SPR less than 30 percent), a rebuilding program that makes consistent progress towards restoring stock condition must be implemented and continued until the stock is restored beyond the overfished condition. The rebuilding program must be designed to achieve recovery within an acceptable time frame as specified by the Councils. The Councils will continue to rebuild the stock until the stock is restored to the management target (OY) within an unspecified time frame.

d. When a stock or migratory group is not overfished (transitional SPR equal to or greater than 30 percent), the act of overfishing is defined as a static SPR that exceeds the threshold of 30 percent (i.e., $F_{30\ percent}$). If fishing mortality rates that exceed the level associated with the static SPR threshold are maintained, the stock may become overfished. Therefore, if overfishing is occurring, a program to reduce fishing mortality rates toward management target levels (OY) will be implemented, even if the stock or migratory group is not in an overfished condition.

e. The Councils have requested the Mackerel Stock Assessment Panel (MSAP) provide a range of possibilities and options for specifying an absolute biomass level which could be used to represent a depleted condition or state. In a future amendment, the Councils will describe a process whereby if the biomass is below such a level, the Councils would take appropriate action, including but not limited to, eliminating directed fishing mortality and evaluating measures to eliminate any bycatch mortality in a timely manner through the framework procedure.

f. For species like cobia, when there is insufficient information to determine whether the stock or migratory group is overfished (transitional SPR), overfishing is defined as a fishing mortality rate in excess of the fishing mortality rate corresponding to a default threshold static SPR of 30 percent. If overfishing is occurring, a program to reduce fishing mortality rates to at least the level corresponding to management target levels will be implemented.

5. Management options. If recreational or commercial fishermen have achieved or are expected to achieve their allocations, the Panel may delineate possible options for nonquota restrictions on harvest, including effective levels for such actions as:

a. Bag limits.

b. Size limits.
c. Gear restrictions.
d. Vessel trip limits.
e. Closed season or areas, and
f. Other options as requested by the Councils.

6. Other biological questions as appropriate.

B. The Panel will prepare a written report with its recommendations for submission to the Councils each year (even years - full assessment, odd years - mini assessments) by such date as may be specified by the Councils. The report will contain the scientific basis for their recommendations and indicate the degree of reliability which the Council should place on the recommended stock divisions, levels of catch, and options for nonquota controls of the catch.

C. The Councils may take action based on the panel report or may take action based on issues/information that surface separate from the assessment group. The steps are as follows:

1. Assessment panel report: The Councils will consider the report and recommendations of the Panel and such public comments as are relevant to the Panel's report. A public hearings will be held at the time and place where the Councils consider the Panel's report. The Councils will consult their Advisory Panels and scientific and Statistical Committees to review the report and provide advice prior to taking final action. After receiving public input, the Councils will make findings on the need for changes.

2. Information separate from assessment panel reports: The Councils will consider information that surfaces separate from the assessment group. Council staff will compile the information and analyze the impacts of likely alternatives to address the particular situation. The Council staff report will be presented to the Council. A public hearing will be held at the time and place where Councils consider the Council staff report. The Councils consult their Advisory Panels and Scientific and Statistical Committees to review the report and provide advice prior to taking final action. After receiving public input, the Councils will make findings on the need for changes.

D. If changes are needed in the following, the Councils will advise the Regional Administrator (RA) of the Southeast Region of the National Marine Fisheries Service in writing of their recommendations, accompanied by the assessment panel's report, relevant background material, and public comment:

1. MSYs,
2. overfishing levels,

3. TACs,
4. quotas (including zero quotas),
5. trip limits,
6. bag limits (including zero bag limits),
7. minimum sizes,
8. reallocation of Atlantic group Spanish mackerel,
9. gear restriction (ranging from modifying current regulations to a complete prohibition),
10. permit requirements, or
11. season/area closure and reopening (including spawning closure).

Recommendations with respect to the Atlantic migratory groups of king and Spanish mackerel will be the responsibility of the South Atlantic Council, and those for the Gulf migratory groups of king and Spanish mackerel will be the responsibility of the Gulf Council. Except that the SAFMC will have responsibility to set vessel trip limits, closed seasons or areas, or gear restrictions for the northern area of the Eastern Zone (Dade through Volusia Counties, Florida) for the commercial fishery for Gulf group king mackerel. This report shall be submitted by such data as may be specified by the Councils.

E. The RA will review the Councils' recommendation, supporting rationale, public comments and other relevant information, and if he concurs with the recommendation, he will draft regulations in accordance with the recommendation. He may also reject the recommendation, providing written reasons for rejection. In the event the RA rejects the recommendation, existing regulations shall remain in effect until resolved. However, if the RA finds that a proposed recreational bag limit for Gulf migratory group or groups of king mackerels is likely to exceed the allocation and rejects the Councils' recommendation, the bag limit reverts to one fish per person per day.

F. If the RA concurs that the Councils' recommendations are consistent with the goals and objectives of the plan, the National Standards, and other applicable law, he shall implement the regulations by proposed and final rules in the Federal Register prior to the appropriate fishing year or such dates as may be agreed upon with the Councils. A reasonable period for public comment shall be afforded, consistent with the urgency, if any, of the need to implement the management measure.

Appropriate regulatory changes that may be implemented by the RA by proposed and final rules in the Federal Register are:

1. Adjustment of the point estimates of MSY for cobia, for Spanish mackerel within a range of 15.7 million pounds to 19.7 million pounds, and for king mackerel within a range of 21.9 million pounds to 35.2 million pounds. Adjustment of the overfishing level for king and Spanish mackerels.

2. Setting total allowable catches (TACs) for each stock or migratory group of fish which should be managed separately, as identified in the FMP provided:
   a. No TAC may exceed the best point estimate of MSY by more than 10 percent.
   b. No TAC may exceed the upper range of ABC if it results in overfishing as defined in Section 12.6.1.1(A)(4).
   c. Downward adjustments of TAC of any amount are allowed in order to protect the stock and prevent overfishing.
   d. Reductions or increases in allocations as a result of changes in the TAC are to be as equitable as may be practical utilizing similar percentage changes to allocations for participants in a fishery.

3. Adjusting user group allocations in response to changes in TACs according to the formula specified in the FMP.

4. The reallocation of Spanish mackerel between recreational and commercial fishermen may be made through the framework after consideration of changes in the social and/or economic characteristics of the fishery. Such allocation adjustments shall not be greater than a ten percent change in one year to either sector's allocation. Changes may be implemented over several years to reach a desired goal, but must be assessed each year relative to changes in TAC and social and/or economic impacts to either sector of the fishery.

5. Modifying (or implementing for a particular species):
   a. quotas (including zero quotas)
   b. trip limits
   c. bag limits (including zero bag limits)
   d. minimum sizes
   e. re-allocation of Atlantic group Spanish mackerel by no more than 10 percent per year to either the commercial or recreational sector.
   f. gear restriction (ranging from modifying current regulations to a complete prohibition)
   g. permit requirements, or
   h. season/area closures and reopenings (including spawning closure)

Authority is also granted to the RA to close any fishery, i.e., revert any bag limit to zero, and close and reopen any commercial fishery, once a quota has been established through the procedure described above; and such quota has been filled. When such action is necessary, the RA will recommend that the Secretary publish a notice in the Federal Register as soon as possible.

Table 1. Gulf group king mackerel management regulations and harvest levels. Weights are in millions of pounds.

Fishing Year	ABC RANGE[12] (lbs)	TAC (lbs)	Rec. Alloc./Quota [3] (lbs / numbers)	Rec. Bag Limit[4]	Commercial Allocation	East/West [5,6]	Annual Harvest Levels		
							Com	Rec	Total
1986/87	1.2-2.9	2.9	1.97	2/3 FL-TX	0.93 :	0.60/0.27 + PS=0.06	1.473	3.269	4.742
1987/88	0.6-2.7	2.2	1.50	2/3 FL-TX	0.70 :	0.48/0.22	0.868	2.145	3.013
1988/89	0.5-4.3	3.4	2.31	2/3 FL-TX	1.09 :	0.75/0.34	1.405	5.276	6.681
1989/90	2.7-5.8	4.25	2.89 / 298,000	2/3 FL-TX	1.36 :	0.94/0.42	1.954	3.360	5.314
1990/91	3.2-5.4	4.25	2.89 / 301,000	2/3 FL-TX	1.36 :	0.94/0.42	1.816	3.951	5.767
1991/92	4.0-7.0	5.75	3.91 / 574,000	2 FL; 2/3 AL-TX	1.84 :	1.27/0.57	2.117	4.773	6.890
1992/93	4.0-10.79	7.80	5.30 / 715,000[8]	2 FL-TX	2.50+0.259 :	1.73+0.259/0.77[7]	3.599	6.258	9.857
1993/94	1.9-8.1[9]	7.80	5.30 / 759,000	2 FL-TX	2.50 :	1.73/0.77	2.572	6.146	8.718
1994/95	1.9-8.1[9]	7.80	5.30 / 768,000	2 FL-TX	2.05+0.300 :	1.73+0.300/0.77[10]	2.942	7.863	10.806
1995/96	1.9-8.1[9]	7.80	5.30 / 629,000	2 FL-TX	2.50 :	1.73/0.77	2.645	6.265	8.910
1996/97	4.7-8.8	7.80	5.30 / 629,000	2 FL-TX	2.50 :	1.73/0.77	2.853	7.154	10.007
1997/98	6.0-13.7	10.6	7.21	2 FL-TX	3.39 :	2.34/1.05	3.160	7.453[11]	10.610
1998/99	7.1-10.8	10.6	7.21	2 FL-TX	3.39	2.34/1.05	3.600	6.225[11]	9.830

[1] Fishing year 1979/80 begins on 1 July 1979 and ends on 30 June 1980.
[2] Sums within rows may not appear to equal the total value shown due to rounding of numbers before printing.
[3] Recreational quota in numbers is the allocation divided by an estimate of annual average weight (not used prior to fishing year 1989).
[4] Bag Limit "2/3" means 2 for private boats; for charterboats: 2 with, or 3 without, captain and crew.
[5] E/W com. Allocations apply to all legal gears except purse seine in fishing year 1986 (only H&L and runaround gillnet beginning 1990/91).
[6] For quota monitoring, E/W com. allocations apply to East=(Florida) and West=(Alabama-Texas), not accounting for mixing.
[7] 0.250 million pounds added to com. allocation for FL east only, opened 2/18/93 - 3/26/93.
[8] Bag limit will not be reduced to zero when allocation reached, beginning in fishing year 1992/93.
[9] Panel recommended ABC range changed from 16%-84% to 16%-50% and Gulf Council selected TAC accepting greater than 50% risk level.
[10] 0.300 million pounds added to hook-and-line quota for Florida West Coast subzone.
[11] Recreational landings, in pounds were estimated by multiplying number of fish caught by 10.77 lbs/fish.
[12] The range has been defined in terms of acceptable risk of achieving the FMP's fishing mortality rate target; the Panel's best estimate of ABC has been intermediate to the end-points of this range.

Source: MSAP (1999)

Table 2. Transitional SPR Projections for Gulf group king mackerel under high, low, and median recruitment scenarios.

GULF KING MACKEREL				
	Unweighted Transitional SPR			
year	point	hi	low	median
1998	0.244982	0.283967	0.208231	0.242661
1999	0.246842	0.29231	0.205241	0.244819
2000	0.252058	0.301597	0.205629	0.249333
2001	0.256895	0.317035	0.204504	0.253687
2002	0.26223	0.32711	0.203776	0.260398
2003	0.268264	0.340132	0.204249	0.267104
2004	0.275637	0.354509	0.207415	0.275008
2005	0.282398	0.367194	0.212401	0.28288
2006	0.289938	0.37774	0.2173	0.290419
2007	0.297399	0.387569	0.223844	0.296064
2008	0.305936	0.393147	0.231268	0.304715
2009	0.314552	0.400133	0.24016	0.311289
2010	0.323117	0.405816	0.246881	0.321443
2011	0.331734	0.413295	0.257042	0.328777
2012	0.340104	0.417117	0.264835	0.337146
2013	0.34811	0.422906	0.273317	0.345802
2014	0.355541	0.424874	0.281567	0.35459
2015	0.362525	0.428574	0.290405	0.361754
2016	0.368971	0.430735	0.297753	0.367613
2017	0.375091	0.432791	0.304279	0.373588
2018	0.38074	0.434282	0.31034	0.378311
2019	0.385928	0.436076	0.317557	0.38454
2020	0.390673	0.437987	0.321623	0.388169

Source: NMFS unpublished data

Table 3. Catch and effort, by wave, 1994 through 1997.

Year	Wave 3	Wave 4	Wave 5	Wave 6	Total
Landings (lbs)					
1994	252,377	850,030	946,073	630,324	2,678,804
1995	262,451	387,251	237,742	351,845	1,239,289
1996	433,940	787,340	786,728	538,148	2,546,156
1997	284,071	846,991	963,170	649,558	2,743,790
Target Trips					
1994	86,428	134,860	171,874	113,664	506,826
1995	78,725	101,193	43,987	64,171	288,076
1996	54,563	90,127	44,441	33,744	222,875
1997	26,933	89,397	74,238	41,904	232,472
Catch Trips					
1994	25,227	69,712	89,766	45,050	229,755
1995	26,441	27,886	29,988	25,624	109,939
1996	28,827	66,959	56,497	28,069	180,352
1997	23,001	56,145	77,682	42,025	198,853

Source: Holiman (1999).

Table 4. Landings, by mode, by wave, 1994 through 1997.

Year	Wave 3	Wave 4	Wave 5	Wave 6	Total
Shore Mode					
1994	28,923	124,110	245,363		
1995	28,178	31,358	11,085		
1996	8,421	8,474	7,967		
1997	5,931	12,048	21,239		
Charter Mode					
1994	61,621	279,528	411,120	372,222	1,124,491
1995	82,895	233,723	101,989	322,842	741,449
1996	346,814	430,814	527,076	338,069	1,642,773
1997	89,045	124,293	676,700	576,368	1,466,406
Private Mode					
1994	161,830	446,381	289,581	258,095	1,155,887
1995	151,376	132,166	124,668	29,002	437,212
1996	81,702	348,042	251,677	200,074	881,495
1997	189,092	710,640	265,222	73,184	1,238,138

Source: Holiman (1999).

Year	Landings (lbs)			Target Trips			Catch Trips	
	Shore	Charter	Private	Shore	Charter	Private	Shore	Cl
1990	989,857	686,402	1,491,472	169,499	22,271	273,216	62,342	
1991	647,159	1,092,732	2,585,170	344,225	46,874	358,719	85,760	
1992	500,629	1,190,575	1,443,743	195,745	23,317	314,562	47,087	
1993	520,607	2,236,602	1,361,707	210,737	61,262	292,521	44,444	
1994	466,085	2,547,663	1,619,955	294,858	90,762	341,097	51,685	
1995	106,081	3,423,378	1,167,090	189,198	118,412	272,476	13,309	
1996	71,964	4,352,892	1,274,723	79,719	48,669	222,963	5,566	
1997	112,183	3,297,406	2,006,677	71,526	68,323	272,611	15,202	
1998	31,190	2,874,433	852,213					

Source: Holiman (1999).

Table 6. Gulf group Spanish mackerel management regulations. Pounds are in millions. Prior to fishing year 1990, management was based upon a July-June fishing year. The regulations shown for fishing year 1987 and later are relative to the July-June fishing year.

Fishing Year	ABC RANGE[8] (lbs)	TAC (lbs)	Rec. Alloc./Quota[4] (lbs / numbers)	Rec. Bag Limit	Com. Alloc. (lbs)	Annual Harvest Levels		
						Com	Rec	Total
1987/88	1.9 - 4.0	2.50	1.08	3	1.42	2.581	3.124	5.705
1988/89	1.9 - 7.1	5.00	2.15	4 FL, 10 AL-TX	2.85	3.902	2.177	6.079
1989/90	4.9 - 6.5	5.25	2.26 / 1,614,000	4 FL, 10 AL-TX	2.99	2.145	1.856	4.001
1990/91	3.9 - 7.4	5.25	2.26 / 1,569,000	3 TX, 4 FL[5], 10 AL-LA	2.99	2.074	2.138	4.213
1991/92	7.1 - 12.2	8.60	3.70 / 2,721,000	3 TX, 5 FL, 10 AL-LA	4.90	4.163	2.889	7.053
1992/93	5.1 - 9.8	8.60	3.70 / 3,274,000[6]	7 TX, 10 FL-LA	4.90	3.113	3.130	6.243
1993/94	4.7 - 8.7	8.60	3.70 / 3,274,000	7 TX, 10 FL-LA	4.90	2.614	2.696	5.309
1994/95	4.4 - 8.7	8.60	3.70 / 2,202,000	7 TX, 10 FL-LA	4.90	2.544	1.556	4.100
1995/96	4.0 - 10.7	8.60	3.70 / 2,782,000	7 TX, 10 FL-LA	4.90	1.075	1.575	2.650
1996/97	1.6 - 9.5	7.00	3.01 /	7 TX, 10 FL-LA	3.99	0.617	2.054	2.671
1997/98	5.5 - 13.9	7.00	3.01 /	7 TX, 10 FL-LA	3.99	0.331	1.905	2.236
1998/99	7.3-14.1	7.00	3.01 /	7 TX, 10 FL-LA	3.99	0.460	1.878[7]	2.338

[1] Fishing year 1979 begins on 1 April and ends on 31 March 1980.
[2] Sums within rows may not appear to equal the total value shown due to rounding of numbers before printing.
[3] Information on Mexico catch and size distributions for some years was not sufficient for inclusion.
[4] Recreational quota in numbers is the allocation divided by an estimate of annual average weight (not used prior to fishing year 1989).
[5] Rec. bag limit in Fl changed from 4 to 5 on 1/1/91, and changed from 5 to 10 on 1/1/93.
[6] Bag limit will not be reduced to zero when allocation reached, beginning fishing year 1992.
[7] Recreational landing, in pounds were estimated by multiplying number of fish caught by 1.63 lbs/fish.
[8] The range has been defined in terms of acceptable risk of achieving the FMP's fishing mortality rate target; the Panel's best estimate of ABC has been intermediate to the end-points of this range.

Source: MSAP Report

Figure 2. Transitional SPR projections for Gulf group king mackerel based on the average recruitment values from 1987-1996.

Source: NMFS unpublished data