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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 2000**

**GULF OF MEXICO FISHERY MANAGEMENT COUNCIL  
3018 U.S. HIGHWAY 301 NORTH, SUITE 1000  
TAMPA, FLORIDA 33619-2266  
813-228-2815**

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## ABBREVIATIONS USED IN THIS DOCUMENT

ABC	Acceptable Biological Catch
AP	Advisory Panel
B	Spawning Stock Biomass
B <sub>MSY</sub>	Biomass at MSY
BRD	Bycatch Reduction Device
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
F <sub>MSY</sub>	Fishing Mortality Rate at MSY
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
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	<i>Scomberomorus cavalla</i>
Spanish mackerel	<i>S. maculatus</i>
Cobia	<i>Rachycentron canadum</i>
Cero	<i>S. regalis</i>
Little tunny	<i>Euthynnus alleteratus</i>
Dolphin	<i>Coryphaena hippurus</i>
Bluefish (Gulf of Mexico only)	<i>Pomatomus saltatrix</i>

The Coastal Migratory Pelagics "Mackerel" fishery management plan (FMP) was approved in 1982 and implemented by regulations effective in February of 1983. It treated king and Spanish mackerel as unit stocks in Atlantic and Gulf of Mexico. The FMP established allocations for the 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 the following changes in the management regime:

- 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 of Mexico Fishery Management Council (Council or GMFMC) 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 group 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 (OY) 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, implemented in April 2000, made the following changes to the management regime:

- Reallocated 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 percent North and 53.85 percent South/West and retained the recreational and commercial allocations of TAC at 68 percent recreational and 32 percent commercial;
- Subdivided 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;

- Established regional allocations for the west coast of Florida based on the 2 subzones with 7.5 percent of the Eastern Zone allocation of TAC being allowed from Subzone 2 and the remaining 92.5 percent being allocated as follows:
  - 50 percent - Florida east coast
  - 50 percent - Florida west coast that is further subdivided:
    - 50 percent - Net Fishery
    - 50 percent - Hook-and-Line Fishery
- Established a trip limit of 3,000 pounds per vessel per trip for the Western Zone;
- Established 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 the National Marine Fisheries Service (NMFS) or trip tickets from the FDEP; allowed transfer of gill net endorsements to immediate family members (son, daughter, father, mother, or spouse) only; and prohibited 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
- Increased the minimum size limit for Gulf group king mackerel from 20 inches to 24 inches FL;
- Allowed the retention and sale of cut-off (damaged), legal-sized king and Spanish mackerel within established trip limits.

Amendment 10, approved June 1999, incorporated essential fish habitat (EFH) provisions for the SAFMC. Amendment 11, partially approved in December 1999, 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. Amendment 12 proposes to extend the commercial king mackerel permit moratorium from its current expiration date of October 15, 2000 to October 15, 2005, or until replaced with a license limitation, limited access, and/or individual fishing quota or individual transferable quota system, whichever occurs earlier.

#### 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 percent for purse-seines, 64.5 percent for all other commercial gear in the Eastern Zone (Florida) and 29 percent 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 percent and 31 percent, 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 percent) and recreational (43 percent) 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 percent 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 percent 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,

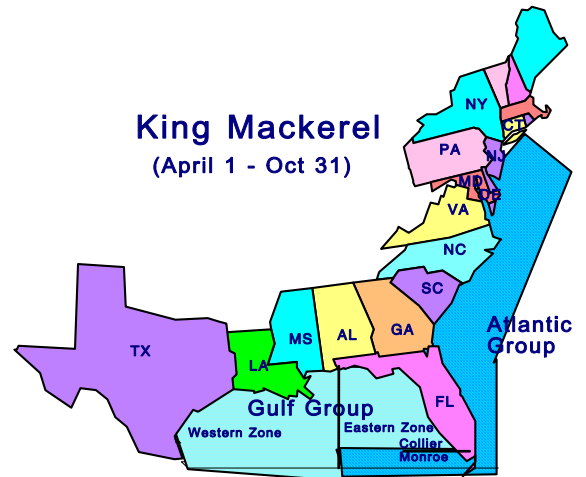
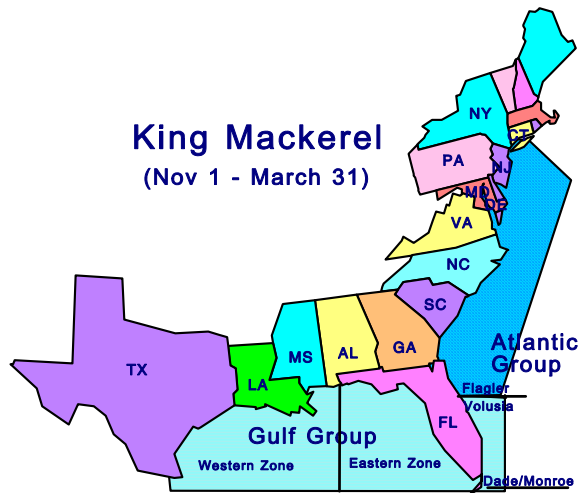
1995. Additionally, a control date for the commercial king mackerel fishery was published on October 16, 1995.

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 percent 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 percent 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, proposed to retain the TAC for Gulf group king mackerel at 10.6 MP, but reduced the bag limit for captain and crew of charter and head boats to zero. The minimum size limit for king mackerel was increased to 24 inches FL. The commercial king mackerel hook-and-line trip limit for the Western Zone (AL-TX) was set at 3,000 pounds. These regulatory actions were implemented on September 20, 1999.

The regulatory amendment for the 1999-2000 season proposed to retain TAC for Gulf group king mackerel at 10.6 MP. It also proposed to 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; however, the captain and crew bag limit was rejected by NMFS. The fishing season for the commercial gill net fishery for Gulf group king mackerel was changed to open 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 would be closed as long as the season remains open. Weekend and holiday closures would be from 6 a.m. Saturday to 6 a.m. Monday EST (or Tuesday if a Monday federal holiday is involved), and during this period boats with a net on board must be tied to the dock. The TAC for Gulf group Spanish was changed from 7.0 MP to 9.1 MP, and the bag limit for Gulf group Spanish was increased from 10 to 15 fish per person per day. These regulatory actions were implemented on June 12, 2000.



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.

### 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 the acceptable biological catch (ABC) ranges for Gulf migratory group king mackerel provided in the 2000 Mackerel Stock Assessment Panel (MSAP) Report. As a result, it recommends that TAC for Gulf group king mackerel be set at the mid-point of the ABC range at 10.2 MP. In specifying TAC, this regulatory amendment addresses the fact that in the last 3 years catches of Gulf group king mackerel have been constrained to levels well below the TAC of 10.6 MP. Furthermore, the static spawning potential ratio (SPR) has increased to 33 percent which is above the current overfishing threshold of 30 percent. This increase in SPR is primarily the result of reduced catches by the recreational sector. Thus it is recommended that the bag limit of 2 fish per person per day be applied to all recreational fishermen, including captain and crew of for-hire vessels.

The MSAP (2000) noted that transitional and static SPR have shown an increasing trend since about 1994 with present estimates at 22 percent and 33 percent, 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 percent to 33 percent. The current estimate of static SPR at 33 percent is above the Council's goal of 30 percent, thus overfishing is not occurring. Although the estimates of recruitment have dropped slightly over the last 2 years, biomass in terms of egg production (trillions of eggs) has continued to increase.

In recommending TAC for Gulf group king mackerel, the Council considered the comments of its MSAP, Socioeconomic Panel (SEP), Scientific and Statistical Committee (SSC), the Mackerel Advisory Panel (AP), public testimony, and legal requirements. This year's stock assessment calculated a range of ABC for Gulf group king mackerel, within which the Council sets TAC, of between 8.2 and 12.8 MP at  $F_{30 \text{ percent SPR}}$ , which is the current target level. This range was almost identical to the 1999 range of 8.0 to 12.5 MP. Although the mid-point estimate of the ABC range was only 10.2 MP, both the SEP and AP recommended retaining TAC at the current level of 10.6 MP to preclude negative social and economic impacts. Either the 10.2 or 10.6 million pound level has only been exceeded once (1994-95) since the start of management in 1986-87, and in this year a supplemental TAC allocation of 300,000 pounds was provided. The MSAP and SSC assumed that the Council would set TAC under a potentially to-be-proposed  $F_{40 \text{ percent SPR}}$  target, i.e., within a range of 5.5 to 8.8 MP with a mid-point of 7.0 MP; and based on that assumption, the SSC recommended that TAC be set at the upper end of this range at 8.8 MP, which is the average of the last 2 year's catches. The Council considered all of these comments, as well as other legal considerations, and recommended a TAC of 10.2 MP as the least disruptive level that provides at least a 50 percent probability of achieving the Council's current target.

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 percent and 19 percent, 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 in February 1998. 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, and the zero-fish bag limit became effective in September 1999.

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 recreational landings of Gulf group king mackerel for 1998-99 were only 5.2 MP which is about 2.0 MP under the allocation. Additionally, estimates of catches for the

1999-00 year are again only 5.2 MP. Again, because of continued stock improvement and reduced catches by the recreational sector, the Council proposed to reinstate the 2-fish bag limit for captain and crew of for-hire vessels in 1999; however, the NMFS rejected this proposal based on its determination that reinstating the for-hire bag limit would not be consistent with the goals and objectives of the FMP and citing specific reasons in 64 FR 71388, December 21, 1999.

This action proposes to reinstate the 2-fish bag limit for captain and crew of for-hire vessels because: data continue to show unquestionable improvement in the Gulf group king mackerel stock; the fact that recreational overruns have been eliminated; information that shows the stock is no longer undergoing overfishing (static SPR at 33 percent); and under potentially to-be-proposed stock assessment criteria, the stock may not be considered as overfished or undergoing overfishing.

In this action, the South Atlantic Fishery Management Council is proposing to revise the trip limit for Gulf migratory group king mackerel in the North Area of the Eastern Zone (Miami-Dade through Volusia Counties, Florida) to remain at 50 fish until February 1. If the quota is not 75 percent filled as of February 1, then the trip limit will increase to 75 fish; if the quota is 75 percent filled or greater on February 1, then the trip limit will remain at 50 fish.

Commercial harvesters in this region have asked for conservative measures regarding their trip limits so that they are assured a steady harvest of king mackerel throughout the season. Consequently, a 50-fish per day trip limit has been in effect for most of the management history of Gulf group king mackerel on the east coast of Florida. However, since fishermen in this area have only taken their quota twice in the past 7 to 10 years, a flexible increase in the trip limit, would allow fishermen a greater opportunity to meet their suballocation of TAC, yet still have a stable harvest throughout the year. This stability carries over to the markets and provides a more steady income for fishermen. This action would also be comparable to those actions that the South Atlantic Council has taken for Atlantic Migratory Group mackerels that provide for flexible management of the resource. Fishermen in this area have also commented that recent action by the Gulf Council would penalize them for not taking their allocation by reducing it and allocating it to another group. Having the flexibility to increase or not increase the trip limit at a known time (February 1) based on an established criterion (75 percent of the allocation) will also have positive effects in the fishery by minimizing regulatory delay and by decreasing conflict between different geographical sectors of the fishery who in the past may have felt that the TAC was filled before they had a fair chance to fish for their share.

### **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; however, catches in the last 2 years have dropped to around 5.2 MP (MSAP 2000). 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 was published through an interim final rule effective January 20, 1998.

### **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 MSAP 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 based on its determination 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 22 percent and 33 percent, respectively; and for Gulf group Spanish mackerel, they are 42 percent and 53 percent, respectively. Consequently, the Gulf group king mackerel fishery is considered to be "overfished," but not undergoing "overfishing" because the transitional SPR estimate is below 30 percent while the static SPR estimate is above

30 percent. Gulf group Spanish mackerel is not considered to be overfished or undergoing overfishing. 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. To implement these changes, the NMFS suggested using a default control rule that specifies a minimum stock size threshold (MSST) as a proxy for overfished and a maximum fishing mortality threshold (MFMT) as a proxy for overfishing. The Council has received updated status criteria to develop these new definitions; and with the partial approval of the Gulf Council's Generic SFA amendment (GMFMC 1998a) on June 19, 2000, the Council will be able to submit appropriate recommendations for changes to these definitions of overfishing and overfished in accordance with the generic amendment's proposed framework procedure or by resubmission of the Generic SFA Amendment. Based on current estimates of MFMT and MSST developed by NMFS and presented in MSAP (2000), there would be only a 33 percent chance that the Gulf group king mackerel fishery would be undergoing overfishing and only a 35 percent chance that it would be overfished.

#### **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 Gulf group king 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 2000-01.
2. Gulf group king mackerel bag limit for captains and crew of for-hire vessels.
3. Trip limit for Gulf group king mackerel on the east coast of Florida

## 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, the necessary information to conduct this type of analysis is not available. So the approach taken is to describe and/or quantify the changes in short-term net benefits. This task is complemented by a mainly qualitative discussion of the long-term impacts. In this document, the "Socioeconomic Impacts" section comprises the bulk of the RIR.

### Action 1: TAC level for Gulf group king mackerel.

**Proposed Alternative 1.A: Set TAC for Gulf group king mackerel at 10.2 MP, the mid-point of the ABC range under the  $F_{30 \text{ percent SPR}}$  target level.**

**Rejected Alternative 1.B: Set the TAC for Gulf group king mackerel at 8.8 MP, the upper end of the ABC range under a  $F_{40 \text{ percent SPR}}$  target level.**

**Rejected Alternative 1.C: Set the TAC for Gulf group king mackerel at 12.8 MP, the upper end of the ABC range under a  $F_{30 \text{ percent SPR}}$  target level.**

**Rejected Alternative 1.C: Status Quo - Retain the TAC at 10.6 MP**

**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 1999, the ABC range was more similar to the 1997 range although not as broad (8.0 to 12.5 MP).

In recommending TAC for Gulf group king mackerel, the Council considered the comments of its MSAP, SEP, SSC, Mackerel AP, and the public. The 2000 stock assessment calculated a range of ABC for Gulf group king mackerel, within which the Council sets TAC, of between 8.2 and 12.8 MP at the  $F_{30\text{ percent SPR}}$  target. This range was similar to the 1997 stock assessment recommendation of 6.0 to 13.7 MP, above the 1998 range of 7.1 to 10.8 MP, and almost identical to the 1999 range. Additionally, the mid-point estimate of the ABC range (10.2 MP) is similar to the current TAC of 10.6 MP. Transitional and static SPR estimates have shown an increasing trend since about 1994 with present estimates at 22 percent and 33 percent, 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 percent to 33 percent. The current estimate of static SPR at 33 percent is above the Council's goal of 30 percent, thus overfishing is not occurring. Although the estimates of recruitment have dropped slightly over the last 2 years, biomass in terms of egg production (trillions of eggs) has continued to increase.

In reviewing the 2000 stock assessment, the MSAP also looked at the status criteria for Gulf group king mackerel using a default control rule, as proposed by NMFS and partially included in the Council's Sustainable Fisheries Act Generic Amendment. This method may be used in the future to evaluate the status of stocks for all finfish species under management by the Council. As stated by MSAP (2000), "the evaluation of a stock under the (default) control rules is based on its status relative to  $B_{MSY}$  and the long-term fishing mortality rate associated with that spawning stock level,  $F_{MSY}$  or maximum fishing mortality threshold (MFMT). If the spawning stock size is greater than the minimum stock size threshold (MSST<sup>1</sup>), the stock is not overfished. Similarly, if the current fishing mortality rate (F) is less than MFMT or  $F_{MSY}$ , the fishery is not overfishing." The MSAP (2000) also stated that "the determination of whether the spawning stock size has fallen below MSST (whether or not the stock is overfished) will depend upon the acceptable level of risk chosen by the Council." Similarly, the determination of whether a stock is undergoing overfishing, i.e., the estimates of F are greater than the MFMT, also depends on the level of risk that managers are willing to accept. The evaluation of a stock's condition is simplified by using ratios instead of actual values.

In viewing Gulf group king mackerel using this method, the MSAP (2000) noted that the majority (67 percent) of the ratios of F to  $F_{MSY}$  were below 1.0. Consequently, there would be only a 33 percent chance that the Gulf group king mackerel fishery would be undergoing overfishing. Also, the majority of the estimates (65 percent) of spawning stock biomass (B) to  $B_{MSY}$  are above MSST. Consequently, there is only a 35 percent chance that the stock would be considered overfished.

Under a previous recovery scenario using the 30 percent transitional SPR as a recovery target (GMFMC 1999), the Gulf group king mackerel stock was expected to recover above this level by 2007, assuming a 10.6 MP TAC and only the average recruitment level for the 1987 to 1996 period. Since it appears that in the future the Council may use the default control rule criteria to develop status determinations based on to-be-developed, acceptable levels of risk, no estimation of

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<sup>1</sup>The MSST is specified as  $(1-M)*B_{MSY}$ , i.e. the spawning stock that can support MSY, but reduced by the natural mortality rate, M. Thus, in the case of Gulf group king mackerel, MSST is specified as 80 percent of the spawning stock that will support MSY.

a recovery period was attempted. As stated above, if the level of risk was 35 percent or greater, no recovery period would be needed.

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 set TAC at 10.2 MP, the mid-point of the ABC range at  $F_{30\text{ percent SPR}}$ . Although based on recent years catches, this level will probably not be taken, setting this TAC level should provide the least disruptive harvest level for the commercial sector of the fishery that is legally defensible in light of recent judicial rulings. A TAC of only 8.8 MP could result in a reduction in the commercial harvest of over 500,000 pounds or about 16.8 percent of the commercial allocation of TAC when compared with the status quo level of 10.6 MP. The recreational harvest should not be effected by any of the TAC alternatives because this catch is controlled primarily through bag and minimum size limits. Although TAC levels of 10.6 MP and 12.8 MP are within the range of ABC, they would provide less than a 50 percent probability of achieving the Council's target of  $F_{30\text{ percent SPR}}$ . It is also highly unlikely that these TAC levels could be realized under the present management regime.

The 10.2 MP TAC would also be considered conservative because the effects of regulations requiring bycatch reduction devices (BRDs) in shrimp trawls and the increase in the minimum size limit for Gulf group king mackerel 20 inches to 24 inches FL that were approved in 1998 should reduce mortality and help increase recruitment. The effects of these measures as well as consideration of release mortality have not been evaluated; however, they should result in a reduction in mortality.

Biological Impacts: The impacts of reducing TAC from the current status quo level of 10.6 MP to 10.2 MP should not have any measurable biological effects because annual fluctuations in actual catches have been greater than 400,000 in every year since the inception of management in 1986-87 (Table 1). The commercial fishery has operated at or slightly over its allocation of TAC since the inception of the 10.6 MP TAC while catches from the recreational fishery have been well below the allocation (Table 1). Because the commercial fishery is closed when its allocation of TAC is expected to be reached, the reduction in TAC from 10.6 MP to 10.2 MP should result in an actual reduction in harvest, provided that the recreational catch remains below its allocation since this sector's catch is not monitored for a quota closure.

As noted in GMFMC (1999) and shown in Table 1, the Council has consistently, throughout most of the management history of the Gulf group king mackerel fishery, set TAC near the upper (more risk) limit of the ABC range (Table 1). Over this same period, recruitment and spawning stock size have continued to increase. Landings have also been relatively stable at around 9.0 to 10.0 MP since the 1992-93 fishing year with a projected drop in 1999-00 to only 8.3 MP (Table 1). Both transitional and static SPR estimates have also continually increased, albeit gradually, and the stock may not be considered as overfished or undergoing overfishing. Based on these perceptions, one might conclude that the stock assessment projections are biased in a conservative direction. Table 2 and Figure 2 also 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 percent transitional SPR level by 2007. Although the rebuilding period was not addressed in this year's (2000) stock assessment, it probably would not have changed in any appreciable way because even though recruitment was down slightly,  $F$  was also down. Additionally, as noted above, accepting only a 35 percent probability of  $B/B_{MSY}$  and  $F/F_{MSY}$  estimates being less than 1.0 results in the conclusion that the stock is neither overfished nor undergoing overfishing. Thus, a rebuilding period under this assumption would be unnecessary. Although the proposed 10.2 MP TAC is only slightly lower than the current TAC of 10.6 MP, it should result in an accelerated improvement in the stock. A higher TAC of 12.8 MP would increase the risk of recovery to a 30 percent transitional SPR

within the statutory timeframe, and lessen the chances that future estimates of B and F will be above  $B_{MSY}$  and below  $F_{MSY}$ , respectively. A lower TAC of 8.8 MP would increase the probability of reaching these goals in a shorter period of time, but would have decidedly negative economic and social impacts as stated below.

Socioeconomic Impacts: For any given TAC level for Gulf king mackerel, the allocation of 68 percent recreational and 32 percent commercial filters the relative magnitude of effects of TAC changes on each sector. The actual effect of a TAC change, however, is determined at least by two factors: (1) the specific regulatory regime governing each sector, and (2) each sector's harvest performance.

King mackerel harvests of both sectors are currently subject to a minimum size limit of 24 inches FL.

In addition, the recreational sector is subject to a 2-fish per person bag limit while the commercial sector is subject to vessel trip limits that vary by geographical area and gear type. Perhaps the more important regulation that determines the impacts of a TAC choice relates to the manner each sector's allocation is treated. The commercial allocation (inclusive of all sub-allocations) is considered a quota while the recreational allocation is not, thus fishery closures when an allocation is reached apply only to the commercial sector. Given the described regulatory regime, any TAC changes would potentially affect mainly the commercial sector over the short run, with the magnitude of effects being partly determined by the expected harvest for this sector. However, if TAC is exceeded in any one year, some additional restrictions may be imposed on both the commercial and recreational sectors in the succeeding years.

Table 1 shows some of the management and harvest characteristics of the Gulf king mackerel fishery. For the period 1992-93-1996-97 when TAC was held at 7.8 MP, total landings averaged 9.63 MP annually, and every year landings exceeded TAC. For the two succeeding fishing years when TAC was raised and maintained at 10.6 MP, total landings averaged at 9.67 MP, which is about the same as that of the previous period but below the TAC. Total landings for the 1999-00 season were estimated at 8.35 MP (MSAP 2000). If this latter estimate turned out to match actual landings, the fishery would have experienced 3 successive years of harvesting below TAC. At the 7.8 MP TAC, the commercial sector exceeded its allocation by an annual average of 420,000 pounds while the recreational sector exceeded its allocation by an annual average of 1.37 MP. At the higher TAC of 10.6 MP for fishing years 1997-98 and 1998-99, the commercial sector continued to exceed its allocation by an average of 310,000 pounds while the recreational sector harvested below its allocation by an average of 1.24 MP. At the estimated 1999-00 landings, the commercial sector would be slightly below its allocation while the recreational sector would be substantially below its allocation.

Given the landings scenario portrayed above, it is likely that if the more recent landings history were to continue into the near future, any changes in TAC would have no effect on the recreational sector even if the recreational allocation is considered a quota. This also implies that even if the recreational allocation continues to be considered not a quota, additional restrictions on the recreational sector may not be needed, if the only reason for those restrictions is to limit this to its allocation. For the commercial sector, any TAC change is likely to change the sector's harvest. If the TAC is increased, an increase in commercial landings may be expected as did happen when the TAC was raised from 7.8 MP to 10.6 MP. A decrease in TAC could also translate into lower landings, especially if quota overruns are reduced to a minimum or totally prevented as what probably transpired in the 1999-00 season. If the commercial quota is not effectively monitored, it can happen that an overrun of 300,000 to 400,000 pounds may occur as did happen in the fishing years 1992-93 to 1998-99 whether the TAC is increased or decreased.

The socioeconomic implications of the various TAC choices herein considered, except the 12.8 MP TAC, have been delineated by the SEP (2000). The following discussions rely on the analysis done by the SEP.

The **Proposed Alternative** TAC of 10.2 MP is a 0.4 MP (or 4 percent) reduction from the status quo TAC of 10.6 MP. At the current 32 percent commercial allocation of TAC, this translates to a 128,000 pound reduction in the commercial quota. The commercial sector would be expected to generate ex-vessel revenues of \$4.101 million (data in 1998 dollars) and producer surplus of \$820,000, which is estimated as 20 percent of ex-vessel revenues. These dollar values are 3.6 percent less than for the status quo TAC. The consumer surplus is estimated at \$203,000, or 5.9 percent less. Under the current 68 percent recreational allocation of TAC, the recreational allocation would fall to 6.94 MP, a 272,000 pound reduction. The current preliminary projected harvest by the recreational sector for the 1999-00 fishing season is 5.21 MP. Although it is unknown whether recreational harvests will rebound or, if so, at what pace, the recreational allocation allowed by a 10.2 MP TAC exceeds that of current projected harvests. As such, no additional restrictions should be required in the short term to restrain the recreational sector to its allocation. Thus, current levels of effort and harvest can be accommodated and no short-term economic consequences should occur as a result of this TAC. Should additional conservation measures be enacted to restrain the recreational sector to its allocation, economic loss will occur relative to the status quo TAC. Such convergence of harvests and allocation may occur, however, at such time as stock recovery allows an increase in TAC to the long-run optimum yield, 10.6 MP, thereby eliminating the need for corrective conservation measures. At this time, there exist few specific data with which to address short- and long-term social consequences of changes in TAC. Other studies of resource-dependent industries led the SEP to believe that as harvest restrictions increase, commercial fishermen and other stakeholders (marina owners, the for-hire sector, etc.) will be penalized proportionately, at least in the short run and perhaps in the long run. More restrictive TACs also have the potential to seriously affect economic well-being, living conditions, and the immediate futures of people living in those communities that depend on fishing. However, without better data, the magnitude of these effects cannot be estimated.

A TAC of 8.8 MP (**Rejected Alternative 1.B**) is 1.8 MP (or 17 percent) below the status quo TAC. At this TAC level, the commercial quota would be reduced by 576,000 pounds. The commercial sector would be expected to generate ex-vessel revenues of \$3.566 million and producer surplus of \$713,000, which is estimated as 20 percent of ex-vessel revenue. The consumer surplus is estimated at \$161,000, or 25.4 percent less. The recreational allocation would fall to 5.98 MP, which is a 1.23 MP reduction from the status quo. The current preliminary projected harvest by the recreational sector for the 1999-00 fishing season is 5.21 MP. Although it is unknown whether recreational harvests will rebound or, if so, at what pace, the recreational allocation allowed by an 8.8 MP TAC exceeds that of current projected harvests. As such, no additional restrictions would be required in the short term to restrain the recreational sector to its allocation. Thus, current levels of effort and harvest can be accommodated and no short-term economic consequences should occur as a result of this TAC. Long-term consequences under a 8.8 MP TAC will occur if harvest rates rebound faster than the conservation effects of the larger minimum size limit and reduced captain/crew bag limit, and the TAC becomes binding on the recreational sector. It is unknown, however, at what pace this might occur, if at all, and how this pace might compare to the recovery path of the resource such that higher TACs up to the long-run optimum yield of 10.6 MP are allowable. It is therefore not possible to forecast what additional measures would be required or at what point they would need to be implemented. As with the Proposed Alternative, the social impacts of an 8.8 MP TAC are unknown, although there is a high likelihood that such TAC would be disruptive to the fishing practices currently undertaken by the commercial sector of the fishery.

A TAC of 12.8 MP (**Rejected Alternative 1.C**) is 2.2 MP (or 21 percent) above the status quo TAC. At this TAC level, the commercial quota would be increased by 704,000 pounds. Ex-vessel revenues for this sector would be about \$5.1 million, and producer surplus would be \$1.02 million. The recreational allocation would increase to 8.706 MP, which is well above the projected 1999-00 harvest of 5.21 MP. One means by which the recreational sector can take advantage of this increase in allocation would be to relax the regulatory regime on this sector. In particular, the for-hire vessels' captain and crew bag limit, which is currently at zero fish, may be restored without necessarily increasing the probability of an allocation overrun. Previous years' framework adjustment measure estimated that eliminating the 2-fish bag limit for captain and crew of for-hire vessels would reduce recreational landings by 12.2 percent. Holding other factors constant, restoring this bag limit would increase landings by about 14 percent, which increase would be readily accommodated by the allocation increase under a 12.8 MP TAC. It may be noted, however, that recreational harvests may again pick up and reach earlier peak levels so that the long-term consequences of restoring the captain and crew bag limit may only heighten the probability of allocation overruns. It may also be noted that this TAC level is above the estimated long-run median optimum yield. As with the other alternatives, the social impacts of this TAC level are unknown.

In principle, the status quo TAC of 10.6 MP (**Rejected Alternative 1.D**) has no short-term impacts on fishing participants. At any rate, the commercial sector would be expected to generate ex-vessel revenue of \$4.252 million, producer surplus of \$850,000, and consumer surplus of \$216,000. 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. The current preliminary projected harvest by the recreational sector for the 1999-00 fishing season is 5.21 MP, which is below the recreational allocation of 7.21 MP. Long-term consequences should not occur since this level of TAC has been identified as the long-run median optimum yield for the fishery (see Legault 2000, Table 12). The pace at which optimum yield harvests are allowed is not impacted if the current TAC is already at optimum yield. It is possible that increased recruitment into the fishery could drive a return to harvests in excess of the recreational allocation, thereby jeopardizing future paths of expected recreational benefits, but such occurrence would be driven by effort, bag and size limits, and not the level of TAC. Similar comments made earlier regarding the social impacts apply for this choice of TAC.

One other important consequence of a lower TAC (e.g., 8.8 MP) 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. It may be recalled that the 1998-99 season 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 (and the latest one), 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. A higher TAC (e.g., 12.8 MP) would have the opposite effects.

Among the various segments of the recreational sector, the for-hire industry would likely benefit more from an increase in TAC, and lose more from a reduction 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, say, 12.8 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. Under the 1999 and current criteria, Gulf group king mackerel are still considered as overfished but may not be undergoing overfishing (MSAP 2000). A higher TAC than of 12.8 MP, presents a low probability of the stock recovering to its target level. 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 and 2000) 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.**

**Proposed Alternative 2.A: 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.**

**Rejected Alternative 2.B: Maintain a zero-fish per person per day bag limit on Gulf group king mackerel for the captain and crew of for-hire vessels, but retain the 2-fish per person per day bag limit for all other recreational fishermen.**

Discussion and Rationale: Prior to the implementation of the 10.6 MP TAC, both the recreational and commercial suballocations of TAC were consistently exceeded; however, since the 1997-98 fishing year when this TAC was first instituted, catch has been constrained to TAC. 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, but dropped to an estimated 8.3 MP in 1999-00 (Table 1).

The majority of TAC (68 percent) has been allocated to the recreational fishery, and catches of Gulf group king mackerel by recreational fishermen consistently exceeded their share of TAC prior to the increase to 10.6 MP. The SEP (1998) noted that available data have shown that the for-hire sector has experienced the greatest increase in landings and effort and could be the major contributor to TAC overruns.

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 SPR of 23 percent and 19 percent, 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 percent and 20 percent, 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 in February 1998.

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 percent and 21 percent, 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. The reinstatement of the zero-fish bag limit became effective in September 1999.

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 recreational landings of Gulf group king mackerel for 1998-99 were only 5.2 MP which is about 2.0 MP under the allocation. Additionally, estimates of catches for the 1999-00 year are again only 5.2 MP. Again, because of continued stock improvement and reduced catches by the recreational sector, the Council proposed to reinstate the 2-fish bag limit for captain and crew of for-hire vessels in 1999; however, the NMFS rejected this proposal based on its determination that reinstating the for-hire bag limit would not be consistent with the goals and objectives of the FMP and citing specific reasons in 64 FR 71388, December 21, 1999.

As shown in Table 1, recreational landings have been very stable since the implementation of the 2-fish per person per day bag limit and the lifting of the closure (reversion of the bag limit to zero), beginning with the 1992-93 fishing year, at about 6.1 MP to 6.7 MP. In only one year (1994-95), were catches in excess of what would be allocated to the recreational sector under a 10.2 MP TAC (6.94 MP).

The GMFMC (1999) examined the effectiveness, or lack thereof, of the zero-fish bag limit using catch and effort data for the period June 2, 1997 to February 19, 1998, when the zero-fish bag limit was in effect, by comparing these data with those of the corresponding period in 1994, 1995, and 1996 (Table 3).

The GMFMC (1999) continued: "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.”

The available data show that the Gulf group king mackerel stock continues to improve and may not be considered as undergoing overfishing or being in an overfished state. 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.

Biological Impacts: The major biological consideration of whether to allow a 2-fish bag limit for captain and crew is the level of risk associated with potential increases in catch by the recreational sector, and the effects of such added mortality on the continued recovery of the Gulf group king mackerel stock. Based on the MSAP (2000), the current estimates of  $F$  relative to  $F_{30\text{ percentStaticSPR}}$  indicates that the stock is not undergoing overfishing. However, transitional SPR is only estimated at 22 percent meaning that the stock is still considered as being overfished under currently implemented definitions.

As previously stated, since the 1992-93 fishing year annual recreational landings have been relatively stable at about 6.2 to 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. Overruns of TAC were the rule, more so than the exception, primarily because TAC was only set at 7.8 MP, and the reversion of the bag limit to zero for all recreational fishermen was lifted beginning with the 1992-93 fishing year. With the increase in TAC to 10.6 MP beginning with the 1997-98 fishing year, the recreational catch appears to have been effectively confined to its allocation of TAC (Table 1). Also, as previously discussed, the Gulf group king mackerel stock is expected to recover above the 30 percent transitional SPR target level by 2007 under the 10.6 MP TAC and only average recruitment levels (GMFMC 1999). Additionally, measures that will probably reduce fishing mortality, including the increase in the minimum size limit to 24 inches FL and the requirement of BRDs in shrimp trawls, have only recently been implemented and their effects have not been evaluated to date.

Based on these facts that: (1) recreational landings have been very stable since the 1992-93 fishing year; (2) estimates of  $F$  have varied very little (MSAP 2000); and (3) management measures, including the bag and minimum size limits have been the same (2 fish and 20 inches FL, respectively) throughout most of this period<sup>2</sup>, it would appear that providing or not providing a 2-fish bag limit to the captain and crew of for-hire vessels would have little effect on the biological status of the stock.

Socioeconomic 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

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<sup>2</sup>There were no discernable differences in catches, other than a slight increase (Table 3) during periods when the captains and crew were not allowed a bag limit.

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 these 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 2000), presents catch and effort by fishing mode for 1990 through 1999. 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 1999 period, charterboat landings averaged 2.9 MP and accounted for 65 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 1999, charterboat landings increased by 140 percent while those of private/rental mode decreased by 17 percent. Shore mode landings dropped precipitously by 90 percent. It may be noted, however, that charterboat landings steadily fell from a high of 4.3 MP in 1996 to a low of 1.6 MP in 1999, or a 63 percent drop from 1996 to 1999.

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 1999, the private/rental mode annually averaged 281,000 target trips and 131,000 catch trips. The corresponding annual averages for the other fishing modes are: 57,000 target trips and 141,000 catch trips for the charter mode; and 169,000 target trips and 34,000 catch trips for the shore mode. However, the changes in target or catch trips depict a different situation. From 1990 to 1999, charter mode target and catch trips rose by 63 percent and 71 percent, respectively. The private/rental mode registered a 14 percent decline in target trips and a 19 percent decrease in catch trips. The shore mode registered a decline in both target trips (51 percent) and catch trips (78 percent). The MRFSS data, thus, indicate the fast growing importance of the for-hire segment of the recreational fishery. One other feature worth noting is that the private mode has consistently remained the dominant sector in target trips but has been replaced by the charter mode in catch trips in the later years (1994-1999).

**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) 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 1999, although landings have been declining since 1996. 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 and recently implemented may have contributed to some recent reduction in recreational landings. The magnitude of this effect has not been estimated.

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: Revised Trip limit for Gulf group king mackerel in the North Area of the Eastern Zone (Miami-Dade through Volusia Counties, Florida) on the east coast of Florida.**

**Proposed Alternative 3.A:** The South Atlantic Council is proposing to revise the trip limit for Gulf migratory group king mackerel in the northern area of the Eastern Zone (Miami-Dade through Volusia Counties, Florida) to remain at 50 fish until February 1. If the quota is not 75 percent filled as of February 1, then the trip limit will increase to 75 fish; if the quota is 75 percent filled or greater, then the trip limit will remain at 50.

**Rejected Alternative 3.B:** No action. Trip limit remains at 50 fish year-round.

Discussion and Rationale: Under a suballocation of 865,000 pounds, fishermen in this area did not take their suballocation of TAC from the 1993-94 through 1995-96 fishing seasons; however,

during the 1996-97 season, landings were reported at 945,000 pounds, exceeding the suballocation. For the 1997-98 season, the suballocation was increased to 1.17 MP, and landings were only 903,000 pounds. Thus, landings fell short of the suballocation by 267,000 pounds. The 1.17 million pound suballocation was taken in the 1998-99 season; however, in this year Gulf group king mackerel were very abundant in all areas. For example, the gill net fishery nearly doubled its allocation of 585,000 pounds in 3 days. In the 1999-00 season only about 638,000 pounds or 58 percent of the allocation were caught. In previous years under the 7.8 million pound TAC, it is possible that weather conditions may have played a part in not allowing fishermen in this area to take their suballocation, but with the increase in TAC to 10.6 MP, or the proposed 10.2 million pound TAC, it is unlikely that fishermen in this area would be able to catch their allocation of TAC under a 50 fish trip limit.

Commercial harvesters in this region have asked for conservative measures regarding their trip limits so that they are assured a steady harvest of king mackerel throughout the season. This stability carries over to the markets and also provides a more steady income for fishermen. However, since fishermen in this area have only taken their quota twice in the past 7 to 10 years, a flexible increase in the trip limit, would allow fishermen a greater opportunity to meet their suballocation of TAC, yet still have a stable harvest throughout the season.

Biological Impacts: There should be no biological impacts from creating or not creating a flexible procedure for potentially modifying the trip limit for Gulf group king mackerel on the east coast of Florida because the allowable catch is controlled by this area's suballocation of TAC. In other words, the fishery is closed at a time when the allocation is projected to be met. To the extent that retaining a 50-fish trip limit reduces harvest, a more rapid recovery of the Gulf group king mackerel stock would be expected. However, any savings as a result of not catching the allocation in this area would be small since the entire allocation represents only about 10 percent of TAC. Additionally, in setting TAC, the Gulf Council considered potential social and economic impacts when recommending that TAC be set at the 50<sup>th</sup> percentile of the acceptable biological catch (ABC) range. Thus, the Council has addressed the biological integrity of the stock while assuming that the entire TAC will be harvested.

Socioeconomic Impacts: Given a TAC of 10.2 MP, the North Area of the Eastern Zone would be allotted about 1.04 MP under the re-allocation scheme introduced by Amendment 9. Since the 1993-94 season when the Eastern Zone commercial quota was equally divided between the North Area (Florida East Coast) and South/West Area (Florida West Coast), the highest landings ever recorded for the North Area were 945,000 pounds in 1996-97. During this particular season, the trip limit was 50 fish and would drop to 25 fish when 75 percent of the North Area quota was reached. The actual trip limit did drop to 25 fish in March when the 75 percent threshold was reached. While these numbers appear to imply the potential for the fishery to reach its quota of 1.04 MP, the likelihood of its happening is relatively low, as exemplified not only by the rare occurrence of fishing years with large landings but also by the more recent low landings performance of the fishery. In fact, the 1999-00 landings are estimated to be only about 638,000 pounds, which is only 58 percent of last year's allocation or 61 percent of the 2000-01 allocation under a 10.2 MP TAC.

Considering the relatively low likelihood that the North Area fishery would catch its quota, the Proposed Alternative may be expected to increase the economic benefits to the fishery. If the potential increase in trip limit allows the fishery to increase its catch by as much as the difference between last year's catch of 638,000 pounds and the fishery's allocation of 1.04 MP under the proposed 10.2 MP TAC, commercial ex-vessel revenues would increase by about \$500,000 with producer surplus increasing by \$100,000 (20 percent of revenues). It is important to note,

however, that the probability of generating this much revenue appears to be low considering the past harvest performance of the fishery.

The Proposed Alternative would provide for flexible management of the resource that would allow commercial fishermen in the North Area a stable harvest that extends throughout the season. This action would be comparable to those actions the Council has taken for Atlantic Migratory Group mackerels, which provide for flexible management of the resource. Commercial harvesters in this region have asked for conservative measures regarding their trip limits so they are assured a steady harvest of king mackerel throughout the season. This stability carries over to the markets and also provides a more steady income for fishermen. This action would also have positive effects in the fishery by minimizing regulatory delay and by decreasing conflict between different geographical sectors of the fishery who in the past may have felt that the TAC was filled before they had a fair chance to fish for their share.

### Government Costs of Regulation

Federal government costs of this action are associated with meetings, travel, preparation of various documents, and reviewing all documents. The proposed change in the trip limit for the North Area of the Eastern Zone may necessitate additional enforcement activities, but these activities may be considered part of current enforcement activities with no extra costs incurred. No other additional costs have been identified.

Council costs of document preparation, meetings, and information dissemination .....	\$25,600
NMFS administrative costs of document preparation, meetings, and review .....	10,000
Law enforcement costs .....	none
Permit costs .....	none
<b>TOTAL <u>\$35,600</u></b>	

### Summary and Expected Net Impact of Proposed Action

The Proposed Alternative to reduce TAC from the current 10.6 MP level to 10.2 MP would not appreciably change the current short-run profit configuration of commercial vessels. At this TAC level, ex-vessel revenues are estimated at \$4.101 million, producer surplus at \$820,000, and consumer surplus at \$203,000; as opposed to \$4.25 million, \$850,000, and \$216,000, respectively for the 10.6 MP rejected TAC level. 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 increase in the minimum size limit to 24 inches FL would materialize.

A lower alternative TAC of 8.8 MP would reduce commercial ex-vessel revenues to \$3.566 million, producer surplus to \$713,000, and consumer surplus to \$161,000. Although the recreational allocation under this TAC level would fall to 5.98 MP, this level is still greater than the projected recreational catches of 5.21 MP. However, it is uncertain as to whether recreational catches could rebound to exceed this allocation. On the other hand, commercial catches would likely be reduced by approximately 576,000 pounds.

A higher alternative TAC of 12.8 MP would increase commercial ex-vessel revenues to \$5.1 million, producer surplus to \$1.01 million, and consumer surplus to \$293,000. This TAC could potentially increase commercial landings by 704,000 pounds; however, recreational landings would probably not be effected unless the management regime is modified or a significant increase in effort occurs. The Proposed Alternative TAC level, coupled with the expected reduction in recreational harvest due to the minimum size limit increase and the requirement of BRDs in shrimp trawls, would provide a higher chance than the status quo TAC that current rules governing the recreational sector would constrain the sector to its allocation, albeit small.

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 trip limit for commercial king mackerel vessels in the North Area of the Eastern Zone may be expected to provide a relatively higher income to fishermen without increasing the probability that the area's fishing season may be shortened.

Government costs for preparing and implementing these actions are estimated at \$35,600. No other administrative costs have been identified as attributable to this regulatory amendment.

#### **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 \$4.252 million, which is significantly less than \$100 million. The proposed TAC is expected to reduce ex-vessel revenues by \$151,000. No changes in the revenue structure of the for-hire vessels are expected from the slight reduction in 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 commercial trip limit for vessels in the North Area of the Eastern Zone would allow fishermen to potentially increase their revenues by as much as \$500,000 given the assumption that fishermen in the area would reach their quota. Prices of fish to consumers are not expected to increase significantly as a result of this amendment, since there is expected to be only a slight reduction in the overall commercial and recreational harvest of king mackerel. One may note, in fact, that the flexible trip limit in the North Area may allow fishermen to increase the supply of fish in the market that may totally offset the potential reduction brought about by the reduced TAC. Overall cost increases to the king mackerel vessels, including for-hire vessels, are not expected to occur. Costs

to the local and federal governments are estimated at about \$35,600, 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 trip limit for the North Area may partly bring in line the type of management adopted by both Councils in the North Area. 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 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 mackerel fishery, 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 10.2 MP is expected to reduce commercial ex-vessel revenues by about

\$151,000. But this potential loss in revenue may be offset by the proposed trip limit in the North Area of the Eastern Zone. There is a fair amount of uncertainty as to whether the maximum \$500,000 potential increase in ex-vessel revenues in the North Area would be realized. 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 of their gross revenue.

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 to the point that they no longer become profitable operations. 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 (GMFMC 1998b) 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 Irrecoverable 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) reduce the total allowable catch (TAC) for Gulf group king mackerel from the current level of 10.6 MP to 10.2 MP; (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; and (3) revise the trip limit for Gulf group king mackerel in the North Area of the Eastern Zone (Florida east coast) so as to allow for an increase in the trip limit from 50 fish to 75 fish after February 1 if 75 percent of the quota is not filled by that time 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 regulatory 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 New Orleans, Louisiana on May 17, 2000.

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

South Atlantic Fishery Management Council

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  
Suite 1000  
Tampa, Florida 33619-2266  
813-228-2815

List of Preparers:

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

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## APPENDIX A

Section 12.6.1 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 and other stocks when data allows 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 and/or  $B_{MSY}$  (or appropriate proxies) for each identified stock. If more than one possible stock division exists, MSY and/or  $B_{MSY}$  for each possible combination should be estimated.
3. Condition of the stock(s) or groups of fish within each stock which could be managed separately. For each stock, this should include but not be limited to:
  - a. Fishing mortality rate relative to  $F_{MSY}$  and  $F_{0.1}$  as well as  $F_{30\text{ percentSPR}}$ , and  $F_{40\text{ percentSPR}}$ .
  - 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 biomass is reduced below the MSST.
- b. The South Atlantic Council's target level or 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 (biomass is below MSST), a rebuilding program that makes consistent progress towards restoring stock condition must be implemented and continued until the stock is restored to MSY. The rebuilding program must be designed to achieve recovery within an acceptable time frame consistent with the National Standard Guidelines, and as specified by the Councils. The Councils will continue to rebuild the stock above MSY until the stock is restored to the management target (OY) if different from MSY.
- d. When a stock or migratory group is not overfished, the act of overfishing is defined as a static SPR that exceeds the threshold of 30 percent (i.e.,  $F_{30\text{ percent}}$  or MFMT). 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  $B_{MSY}$  and the MSST.
- f. For species when there is insufficient information to determine whether the stock or migratory group is overfished, 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, which is the MFMT. 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 non-quota 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. The Panels may also recommend more appropriate levels or statements for the MSY (or proxy), OY, MFMT, and MSST for any stock, including their rationale for the proposed change.
- 1. 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 non-quota 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. 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:
- a. MSYs or  $B_{MSY}$  (or proxies),
  - b. overfishing levels (MFMT) and overfished levels (MSST),
  - c. TACs and OY statements,



- d. quotas (including zero quotas),
- e. trip limits,
- f. bag limits (including zero bag limits),
- g. minimum sizes,
- h. reallocation of Atlantic group Spanish mackerel,
- i. gear restriction (ranging from modifying current regulations to a complete prohibition),
- j. permit requirements, or
- k. 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.

For stocks, such as cobia, where scientific information indicates it is a common stock that migrates through the Gulf and South Atlantic jurisdictions, both Councils must concur on the recommendations. For other stocks, such as bluefish, cero, and little tunny, there is no scientific information that shows they are common stocks, and each Council will separately make management recommendations for these stocks in their jurisdictions.

- E. The RA will review the Councils' recommendation, supporting rationale, public comments and other relevant information, and if the RA concurs with the recommendation, the RA will draft regulations in accordance with the recommendation. The RA 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, the RA 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 overfishing level (MFMT) for king and Spanish mackerels and other stocks. Specification of  $B_{MSY}$  and the MSST for the stocks. Respecification of levels or statements of OY and MSY (proxy).

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 for more than one year.
  - b. No TAC may exceed the upper range of ABC if it results in overfishing.
  - 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 Atlantic 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 re-openings (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. Source: MSAP (2000)

Fishing <sup>1</sup> Year	ABC RANGE <sup>12</sup> (lbs)	TAC (lbs)	Rec. Alloc./Quota <sup>3</sup> (lbs / numbers)	Rec. Bag Limit <sup>4</sup>	Commercial Allocation	East/West <sup>5,6</sup>	Annual Harvest Levels <sup>2</sup>		
							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 <sup>8</sup>	2 FL-TX	2.50+0.259 :	1.73+0.259/0.77 <sup>7</sup>	3.599	6.258	9.857
1993/94	1.9-8.1 <sup>9</sup>	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 <sup>9</sup>	7.80	5.30 / 768,000	2 FL-TX	2.05+0.300 :	1.73+0.300/0.77 <sup>10</sup>	2.901	7.948	10.849
1995/96	1.9-8.1 <sup>9</sup>	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	2.864	6.733	9.797
1997/98	6.0-13.7	10.6	7.21	2 FL-TX	3.39 :	2.34/1.05	3.482	6.698 <sup>11</sup>	10.180
1998/99	7.1-10.8	10.6	7.21	2 FL-TX	3.39	2.34/1.05	3.923	5.240 <sup>11</sup>	9.163
1999/00	8.0-12.5	10.6	7.21	2 FL-TX	3.39	2.34/1.05	3.139	5.211	8.350

<sup>1</sup> Fishing year 1979/80 begins on 1 July 1979 and ends on 30 June 1980.

<sup>2</sup> Sums within rows may not appear to equal the total value shown due to rounding of numbers before printing.

<sup>3</sup> Recreational quota in numbers is the allocation divided by an estimate of annual average weight (not used prior to fishing year 1989).

<sup>4</sup> Bag Limit "2/3" means 2 for private boats; for charterboats: 2 with, or 3 without, captain and crew.

<sup>5</sup> 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).

<sup>6</sup> For quota monitoring, E/W com. allocations apply to East=(Florida) and West=(Alabama-Texas), not accounting for mixing.

<sup>7</sup> 0.250 MP added to com. allocation for FL east only, opened 2/18/93 - 3/26/93.

<sup>8</sup> Bag limit will not be reduced to zero when allocation reached, beginning in fishing year 1992/93.

<sup>9</sup> Panel recommended ABC range changed from 16 percent-84 percent to 16 percent-50 percent and Gulf Council selected TAC accepting greater than 50 percent risk level.

<sup>10</sup> 0.300 MP added to hook-and-line quota for Florida West Coast subzone.

<sup>11</sup> Recreational landings, in pounds were estimated by multiplying number of fish caught by 10.77 lbs/fish.

<sup>12</sup> 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.

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

<b>GULF KING MACKEREL</b>				
<b>Unweighted Transitional SPR</b>				
<b>year</b>	<b>point</b>	<b>hi</b>	<b>low</b>	<b>median</b>
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 and GMFMC 1999

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

<b>Year</b>	<b>Wave 3</b>	<b>Wave 4</b>	<b>Wave 5</b>	<b>Wave 6</b>	<b>Total</b>
<b>Landings (lbs)</b>					
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
<b>Target Trips</b>					
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
<b>Catch Trips</b>					
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) and GMFMC 1999.

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

<b>Year</b>	<b>Wave 3</b>	<b>Wave 4</b>	<b>Wave 5</b>	<b>Wave 6</b>	<b>Total</b>
<b>Shore Mode</b>					
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		
<b>Charter Mode</b>					
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
<b>Private Mode</b>					
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) and GMFMC 1999.





Table 5. Catch and effort, by fishing mode, 1990-1999.

Year	Landings (lbs)			Target Trips			Catch Trips	
	Shore	Charter	Private	Shore	Charter	Private	Shore	Charter
1990	989,857	686,402	1,491,472	169,499	22,271	273,216	62,342	1,000
1991	647,159	1,092,732	2,585,170	344,225	46,874	358,719	85,760	1,000
1992	500,629	1,190,575	1,443,743	195,745	23,317	314,562	47,087	1,000
1993	520,607	2,236,602	1,361,707	210,737	61,262	292,521	44,444	1,000
1994	466,085	2,547,663	1,619,955	294,858	90,762	341,097	51,685	1,000
1995	106,081	3,423,378	1,167,090	189,198	118,412	272,476	13,309	1,000
1996	71,964	4,352,892	1,274,723	79,719	48,669	222,963	5,566	2,000
1997	112,183	3,297,406	2,006,677	71,526	68,323	272,611	15,202	1,000
1998	32,864	2,999,458	900,452	54,740	53,546	230,860	4,515	1,000
1999	102,433	1,648,155	1,131,221	82,837	36,295	233,730	13,929	1,000

Source: Holiman (2000).

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

Source: NMFS unpublished data