

11/6/98

**AMENDMENT 9
TO
THE FISHERY MANAGEMENT PLAN
FOR
COASTAL MIGRATORY PELAGIC RESOURCES (MACKERELS)
IN
THE GULF OF MEXICO
AND
SOUTH ATLANTIC
INCLUDING ENVIRONMENTAL ASSESSMENT
REGULATORY IMPACT REVIEW
AND
INITIAL REGULATORY FLEXIBILITY ANALYSIS**

NOVEMBER 1998

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1.0 PURPOSE AND NEED FOR ACTION

1.1 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 Fishery Management Plan for Coastal Migratory Pelagic Resources of the Gulf of Mexico and South Atlantic (FMP) and Environmental Assessment (EA), approved in 1982 and implemented by regulations effective in February of 1983, treated king and Spanish mackerel each as one U.S. stock. Allocations were established for recreational and commercial fisheries, and the commercial allocation was divided between net and hook-and-line fishermen.

Amendment 1 and its Environmental Impact Statement (EIS), 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 were eliminated. The Gulf commercial allocation for king mackerel was divided into eastern and western zones for the purpose of regional allocation.

Amendment 2 with EA, implemented in July of 1987, revised Spanish mackerel MSY downward, recognized two migratory groups, and set commercial quotas and bag limits. Charterboat permits were required, and it was clarified that TAC for overfished stocks must be set below the upper range of acceptable biological catch (ABC). The use of purse seines on overfished stocks was prohibited.

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

Amendment 4 with EA, implemented in 1989, reallocated Spanish mackerel equally between recreational and commercial fishermen on the Atlantic group with an increase in TAC.

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

- Extended the management area for Atlantic groups of mackerels through the Mid-Atlantic Fishery Management Council's (MAFMC) area of jurisdiction;
- Revised problems in the fishery and plan objectives;
- Revised the fishing year for Gulf group Spanish mackerel from July-June to April-March;
- Revised the definition of "overfishing";
- Added cobia to the annual stock assessment procedure;
- Provided that the South Atlantic Fishery Management Council (SAFMC) will be responsible for pre-season adjustments of TACs and bag limits for the Atlantic migratory groups of mackerels while the Gulf Council will be responsible for Gulf migratory groups;
- Continued to manage the two recognized Gulf migratory groups of king mackerel as one until management measures appropriate to the eastern and western groups can be determined;
- Redefined recreational bag limits as daily limits;
- Deleted a provision that specified that bag limit catches 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 for all fishermen;
- Established a minimum size of 12-inch (30.5 cm.) fork length (FL) or 14-inch (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, including size limits, vessel trip limits, closed seasons or areas, and gear restrictions;
- Allowed Gulf group 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 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 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 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 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).

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) (Figure 1).

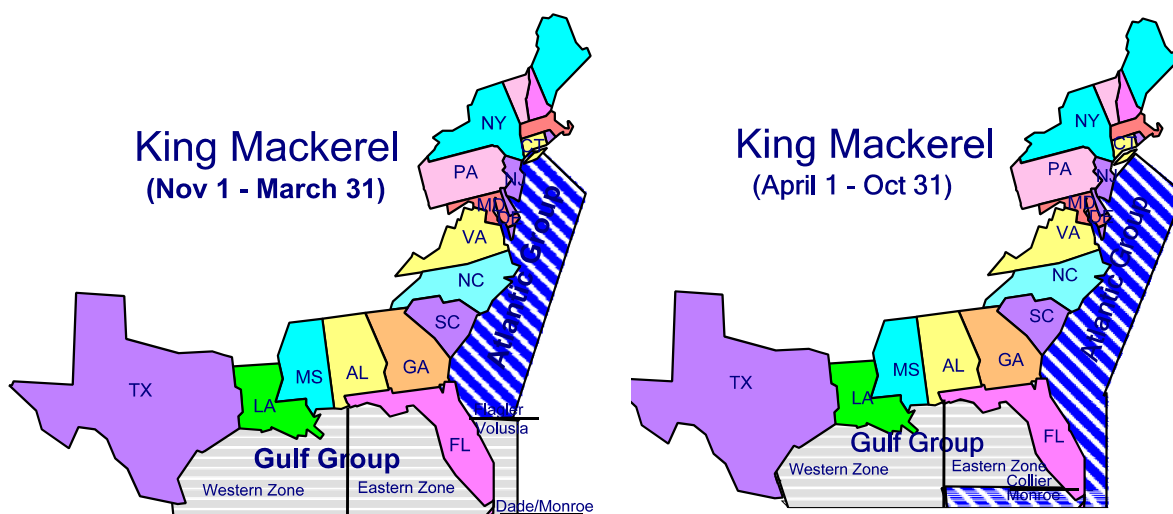


Figure 1. Seasonal boundaries and divisions of the Gulf and Atlantic migratory groups of king mackerel.

For commercial 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 distributing a limited resource among users, the FMP has set ratios based on historic unregulated catches. The Gulf migratory group is allocated with 68 percent for recreational fishermen and 32 percent for commercial fishermen. The commercial allocation is further subdivided 69 percent for the Eastern Zone and 31 percent for the Western Zone.

The Atlantic migratory group of king mackerel is allocated with 62.9 percent to recreational fishermen and 37.1 percent to commercial fishermen.

1.2 Problems in the Fishery as addressed previously in the Amended FMP

1. The stocks of Spanish mackerel and Gulf group king mackerel are below the level of producing MSY, and spawning stocks have been reduced such that recruitment has been affected. The harvest levels of Atlantic king mackerel are close to their upper limit. Uncontrolled fishing would further reduce biomass. (Note: The Gulf group Spanish mackerel stock has recently [1997-98 fishing year] recovered above the OY level.)
2. a. Available recreational catch statistics were not designed to track catch for quota purposes.
b. Additional biological and statistical data on both the recreational and commercial fisheries are needed and economic information that assesses the impact of regulations and allocations is not available.
3. Intense conflicts and competition exist between recreational and commercial users of the mackerel stocks and between commercial users employing different gears.
4. The existence of separate state and federal jurisdiction and lack of coordination between these two make biological management difficult; since, in some instances, the resource may be fished beyond the allocation in state waters. (Note: In recent years, most states have adopted compatible regulations for bag limits, size limits, quota closures, etc. with federal regulations.)
5. The condition of the cobia stock is not known and increased landings over the last ten years have prompted concern about overfishing.
6. Lack of information on multiple stocks or migratory groups of king mackerel that may mix seasonally confounds and complicates management.
7. Large catches of mackerel over a short period cause quotas and TAC to be exceeded before closures can be implemented; therefore, some users have obtained a share in excess of their allocation.
8. Closures of a fishery and reversion of bag limits to zero due to the filling of a quota have deprived geographic areas of access to a fishery.

9. Fish caught under the bag limit and sold contribute to the filling of both the recreational and commercial quotas.
10. Part-time commercial fishermen compete with full-time commercial fishermen for the available quota.
11. Localized reduction in abundance of fish due to high fishing pressure.
12. Disruption of markets.

1.3 Management Objectives

The current FMP as amended lists eight plan objectives:

1. The primary objective of this FMP is 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.

1.4 Current Status of the Fishery

Gulf migratory groups of king and Spanish mackerels 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 the 1995 stock assessment panel recommended that they no longer be considered as overfished. This conclusion was reinforced by Mace et al. (1996).

Additionally, in 1998 the transitional spawning potential ratio (SPR) for Gulf group king mackerel was estimated at 23 percent, and for Spanish mackerel, it was 35 percent. Atlantic migratory groups of king and Spanish mackerels are not defined as being overfished. As a result of changes to the definitions of “overfished” in the Sustainable Fisheries Act (SFA), the National Marine Fisheries Service (NMFS) rejected a portion of Amendment 8 that would have changed the “overfished” definition to a 20 percent SPR. Consequently, the Gulf group king mackerel fishery is still considered as “overfished” because transitional SPR is estimated at below 30 percent.

The fishery for cobia, restrained by a universal bag limit of 2 fish per person per daily trip, remains stable and is not considered as being overfished or undergoing overfishing.

Dolphin occur throughout the world's temperate oceans, and there is no evidence of overfishing. There have, however, been some concerns expressed regarding localized reduction in availability due to high fishing pressure in some areas of the Atlantic and increased targeting by longline gear. There are currently no federal regulations on this species.

1.5 Need for Action

The alternatives proposed in this amendment are presented for the purpose of addressing problems with equitable allocation of the available king and Spanish mackerel resources among the various commercial user groups, as well as the recreational and for-hire sectors of the fishery. These alternatives also attempt to address problems with quota overruns, derby fishing, short seasons, and data collection. Finally, measures to expedite the recovery of Gulf group king mackerel are considered.

2.0 MANAGEMENT ALTERNATIVES

2.1 Fishing Year

2.1.1 Rejected Alternative - Change the fishing year for Gulf group king mackerel from a start date of July 1 of each year to January 1 (or April 1) of each year for:

**Option a. both the commercial and recreational allocations, including for-hire
Option b. the commercial allocation only**

2.1.2 Rejected Alternative - Change the fishing year for Gulf group king mackerel from a start date of July 1 of each year to November 1 of each year for Options a or b above.

2.1.3 Rejected Alternative - Establish a fishing year of January 1 through December 31 for the purpose of collecting and managing data and establish regional seasons in accordance with Section 2.4

2.1.4 Rejected Alternative - Change the commercial fishing year for Gulf group king mackerel from a start date of July 1 of each year to June 1 of each year

2.1.5 Proposed Alternative - Status Quo - no change - Recreational fishing year begins January 1, and commercial fishing year begins July 1 of each year.

Discussion: Although the commercial fishery has been under a July 1 fishing season, most framework measures in recent years have not become effective until around the first of the year, and most regulations on the recreational fishery have been effective on January 1. This procedure has mainly resulted from the fact that stock assessments have typically been reviewed in March, and regulatory amendments finalized in May or July for implementation in January. A change to January 1 (Rejected Alternative 2.1.1) would allow the start of the commercial season to coincide with the implementation of framework measures such as those setting TAC and trip limits. It would also be consistent with the implementation of measures affecting the recreational fishery, e.g., bag limits and size limits. On the other hand, changing the start of the season to January 1 could affect the historical percentage split in commercial landings between the Florida Keys and the Panhandle on the Florida west coast (the two areas of highest commercial production). The January 1 date is generally in the middle of the season for the Florida Keys; consequently, this segment of the fishery could potentially take the entire allocation of TAC before the fish are available in the Panhandle area. In recent years and with lower TACs, the Gulf group king mackerel fishery has closed before the end of the fishing year. Because of the available effort in the Florida Keys, the change to a January 1 start date could result in even earlier closures and potentially a derby fishery, eliminating much of the fall and early winter fishery.

An April 1 start (Rejected Alternative 2.1.1) would coincide with a shift in the migratory seasonal boundaries for Gulf and Atlantic group king mackerel. Catches for Monroe County would be counted against the Atlantic migratory group from April through October. Since Monroe County landings historically constitute about 80 percent of the Gulf group king mackerel landings, a change to an April 1 start could cause a shift in historical splits of TAC unless this action was combined with separations of TAC by area in accordance with alternatives outlined in Section 2.4. Any shift in catches would likely be small because catch in Monroe and Collier counties, as a percentage of their total catch, during this period is small.

A November 1 start (Rejected Alternative 2.1.2) would be consistent with the shift in the migratory seasonal boundaries for Gulf and Atlantic group king mackerel; thus fishing would start on the Gulf migratory group when it is fully distributed throughout its range. Additionally, the November 1 date would generally follow the spawning season; thus there is a potential for increased spawning success due to a lack of disruption from fishing. Whether this change would actually increase spawning potential is unknown.

The November 1 start date could also effect the distribution of TAC by region on the west coast of Florida. In recent years (1990 through 1996), the Panhandle area has taken a larger percentage of the TAC than in previous years (1980 through 1989) (Tables 1 and 2). Since the bulk of the fishery has historically occurred in Monroe County and since the November time-frame generally corresponds with the start of the fishery in this area, a change to the November

1 start date could increase the share of TAC taken in the Florida Keys and possibly eliminate or drastically reduce the fishery in the Panhandle area.

Rejected Alternative 2.1.3 would provide for a calendar year season for the purpose of record-keeping only. Regional seasons would be established for each subzone on the Florida west coast and potentially for the Western Zone. Since king mackerel are available in the Panhandle area on the west coast of Florida primarily in the summer months, a cap of approximately 30 percent of the Florida west coast quota for this area (see Section 2.5) would preclude the need for a separate season. The Western Zone currently has a separate quota allocation of TAC; and testimony from industry representatives indicates that the present July 1 opening generally corresponds with the availability of more desirable sized king mackerel in this area, as opposed to a winter opening when fish are larger and less valuable.

A change in the start date to June 1 (Rejected Alternative 2.1.4) would probably have little effect on the current fishery, provided that the subzones and allocations discussed in Section 2.4 and 2.5 are implemented. Although there are basically no data on commercial catch in June (the fishery generally closes in January or February), fish are available; and recreational catches are about the same in June as in May or July (see table below under Economic Impacts). Without some cap on the harvest of king mackerel in the Panhandle Area, an additional month of fishing could enable this area to harvest the majority of the Florida west coast commercial hook-and-line allocation, based on the most recent years' landings. On the other hand, opening the season on June 1 would correspond with the reopening of the commercial fishery for greater amberjack. Consequently, commercial fishermen would have more opportunities to catch other species. It is unlikely, however, that a commensurate opening and reopening would have any effect on reducing the harvest level of king mackerel below that outlined in the Proposed Alternative under Section 2.5.

The table below shows the average monthly commercial landings of king mackerel in the two subzones, with Subzone 1 comprising the counties of Collier and Monroe and Subzone 2, the rest of the counties in the west coast of Florida.

Month	1985-1989 Average Landings (1,000 lbs)		1990-1996 Average Landings (1,000 lbs)	
	Subzone 1	Subzone 2	Subzone 1	Subzone 2
January	150	0	461	1
February	277	5	192	1
March	120	2	27	1
April	0	14	7	2
May	0	11	0	1
June	0	1	0	1
July	0	3	0	17
August	0	2	0	11
September	0	4	1	17
October	0	8	1	35
November	4	8	16	42
December	124	1	243	33
TOTAL	675	60	949	160

Economic Impacts: The table below compares the average landings of the commercial and recreational sectors in two-month periods for the years 1990-1996. Data sources are the MRFSS (Holiman, 1997) for the recreational sector and the general canvass landings file for the commercial sector (J. Bennett, unpublished data, 1997).

Average Landings in Thousand Pounds, 1990-1996						
Sector	Jan-Feb	Mar-Apr	May-June	Jul-Aug	Sept-Oct	Nov-Dec
Commercial	843	109	2	606	280	715
Recreational	802	788	612	767	925	353

Throughout this period, the fishing season for the recreational sector started January 1, while that for the commercial sector started July 1. Recreational landings are fairly spread throughout the year, with generally lower landings in the November-December period. Commercial landings, on the other hand, show peaks in the January-February, July-August, and November-December

periods. The July-August peak is associated with high fishing activities in the western Gulf, while the other peaks are associated with fishing activities in the Florida Keys. With the exception of the November-December period when recreational landings are low and commercial landings are high, recreational activities appear to remain at high levels regardless of the level of activities for the commercial sector. These data imply that any changes in the recreational fishing season may be expected to have minimal adverse effects on seasonal (two-month period) recreational activities. A change, however, in the commercial fishing season may affect the seasonal and geographical distribution of recreational landings. If, due to a change in the fishing season peaks in commercial landings change, recreational fishing effort may be shifted to other seasons, most likely at the expense of one geographical area over another. For example, if the commercial fishing season starts on January 1, and the quota is reached before the end of the season; recreational activities could pick up in the November-December period partly due to less competition from the commercial sector. Charterboats and crew would particularly benefit from this condition, since they could sell recreationally caught king mackerel at a relatively higher price due to the low commercial supply during this period. Since the recreational sector has been exceeding its allocation every year, an increase in the November-December recreational catch could only worsen this situation. Thus, the described benefit may be regarded as short-term in nature.

The impacts on the commercial sector of a change in fishing season are mainly distributional in nature. Changing the start of the commercial fishing season from July 1 to either November 1, January 1 or June 1 may increase the share of the quota in one geographic area at the expense of another. In the Eastern Zone, a November or January opening would allow the Florida Keys fishery to harvest most of the quota before areas in the upper west coast of Florida have a chance of catching the migrating king mackerel. The fishing fleet in the Florida Keys has the capacity to harvest the entire quota as evidenced by quota closures and overages. As evidence, there are 633 and 26 commercial mackerel permits issued to vessels with home ports in the Florida Keys and Collier County, respectively, as opposed to 497 in the upper west coast of Florida. Although vessels in the Florida Keys have traditionally caught most of the king mackerel quota, the small share taken by some vessels in other areas could comprise a substantial portion of vessel income. If the bias in providing access to the migrating fish holds in favor of vessels in the Florida Keys, as would happen with either a November or January opening, the revenue loss to some vessels in the Panhandle area may not be totally recouped by revenue gains of vessels in the Florida Keys. Part of the reason for this is that more fish would be landed over a short period of time in a small area, and this would depress prices. Public testimonies have indicated that, on average, king mackerel prices in the Panhandle are higher than those in the Florida Keys. This dominance of the quota by vessels in the Florida Keys would be more likely to occur with a November than a January opening date, primarily because the November opening would provide more fishing days to the Florida Keys before the fish migrate northward. A reversal of fortune is bound to happen with a June opening, especially because in more recent years larger vessels have become more active in the Panhandle king mackerel fishery. The table above showing monthly landings of king mackerel in the two subzones clearly indicates that landings in Subzone 2 (north of the Collier/Lee county line) have substantially increased in the 1990-1996 period relative to the 1985-1989 period, in terms both of poundage and percent share of landings.

A June opening would likely provide the Panhandle vessels more opportunity to further increase their landings.

In the Western Zone, a fishing season change could disrupt the business plans of many fishing operations. The current opening date of July 1 has already introduced some bias in accessing the fishery in favor of Texas fishermen or fishermen fishing in and around Statistical Grid 18. This would be reinforced by a June 1 opening. A January or November opening date would reverse the situation. Along this line, it may be noted that in earlier years the Louisiana king mackerel fishery was mainly a winter fishery, while the Texas fishery was and still is a summer fishery. A change in the fishing year to a fall or winter opening could lead to harvest of the full quota by the Louisiana vessels and some Texas vessels that are mobile enough to fish in Louisiana waters. With a January opening, the king mackerel fishery would open at about the same time as the red snapper fishery, and could adversely affect the operations of fishermen engaged in both fisheries. For the 1996-97 season, vessels with red snapper endorsements landed about 58 percent of the total commercial king mackerel quota in the Western Zone. Even more telling is the fact that, for the same period, vessels with reef fish permits landed about 73 percent of the mentioned quota. The January opening date for the mackerel fishery would coincide with the first sub-season for red snapper, while the November 1 opening date would correspond with the tail-end of the second red snapper sub-season. This alternative could help alleviate the derby in both fisheries only if no additional vessels enter both fisheries, which is very unlikely to occur. Any reduction in effort in the king mackerel fishery by red snapper fishermen could be replaced by other mackerel permitted vessels. If red snapper licensees choose instead to employ their vessels in the mackerel fishery, they can lease out or sell their red snapper licenses to other permitted vessels. In either situation, fishing effort in both fisheries would tend to remain practically the same. The present moratoria on both the commercial reef and king mackerel permits would undoubtedly place a limit on any increases in fishing effort, but presently the number of permits for both fisheries combined is high enough that seasonal changes would not be totally effective in restricting effort increases.

2.2 Sale of king and Spanish mackerel

2.2.1 Rejected Alternative - Prohibit the sale of Gulf group king mackerel by:

2.2.2 Proposed Alternative - Prohibit the sale of Gulf group king and Spanish mackerel by: [Gulf Council]

Proposed Option a. all persons fishing under the recreational allocation (bag limits), including charter and head boat operators [Gulf Council]

Option b. all persons fishing under the recreational allocation (bag limits), except charter and head boat operators

Option c. all persons fishing under the recreational allocation (bag limits), except charter and head boat operators that also possess a commercial king and/or Spanish mackerel permit when landing king or Spanish mackerel, respectively

2.2.3 Proposed Alternative - Status Quo - no change [South Atlantic Council]

Note: It is the Gulf Council’s intention that all fish caught by recreational fishermen be counted only against the recreational allocation, regardless of their disposition.

Discussion: Sale of recreationally caught king and Spanish mackerel is probably causing some fish to be counted against both the commercial hook-and-line and recreational allocations of TAC, particularly with regard to catches from for-hire vessels. This double counting may also be inflating the actual catch, contributing to TAC overruns, and decreasing the amount of fish available to commercial fishermen under their quota. The amount of fish being sold by recreational and for-hire fishermen while the commercial fishery is open is unknown; however, catch data indicate that landings and sales continue following the closure of the commercial fishery, particularly in the Florida Keys. Landings data for the 1995-96 fishing year showed hook-and-line sales of recreational, bag-limit catches after the close of the commercial season of 112,474 pounds for the west coast of Florida (FDEP, unpublished data) representing approximately 26 percent of the total commercial hook-and-line allocation for 1995-96. For 1996-97, this catch was 117,953 pounds representing 27 percent of the commercial hook-and-line allocation. Additionally, sales during the season by the same vessels with sales after the season amounted to an additional approximately 100,000 pounds; however, it is unknown to what extent these catches/trips were recreational/charter or commercial because some charter/head boats also hold commercial king and Spanish mackerel permits (J. O’Hop, personal communication).

The majority of commercial sales by charter vessels occurs in the Florida Keys where approximately 81 charter vessels in Monroe County alone hold both charter and commercial king mackerel permits. The following table shows the number of vessels with both charter and commercial permits, as opposed to those with either a charter or commercial permit, for the two subzone options considered in Section 2.4.1.

Options	Subzones	Commercial Only	Charter and Commercial	Charter Only	Total
Option a - Dixie/Levy Split	Subzone 1	798	113	231	1142
	Subzone 2	189	77	102	368
Total		987	190	333	1510
Preferred Option b Monroe/Collier split	Subzone 1	582	85	147	814
	Subzone 2	405	105	186	696
Total		987	190	333	1510

Rejected Alternative 2.2.1 would limit the sale prohibition to Gulf group king mackerel; whereas the Gulf Council’s Proposed Alternative 2.2.2 would apply to both Gulf group king and Spanish Mackerel. Additionally, the Gulf Council’s Preferred Option “a” would apply the no sale

provision to all persons fishing under the bag limit, as opposed to exceptions for charter and head boats and those with commercial permits (Options b and c, respectively). The Gulf Council's position was that king and Spanish mackerel that are caught under a bag limit be counted only against the recreational allocation of TAC. The South Atlantic Council disagreed with the Gulf Council's position and adopted as its Proposed Alternative - Status Quo. Consequently, both Council's are not in agreement with regard to recommended changes.

Economic Impacts: The current federal rule allows the sale of recreationally caught king and Spanish mackerel only if allowed by the states where the fish are landed. In the particular case of Florida, where most of the sale of recreationally caught mackerel especially by charterboats occurs, a saltwater products license with a restricted species endorsement is required for the sale of mackerel. Charter and head boats possessing such licenses and endorsements may sell their recreationally caught mackerel regardless of whether the fish are caught in state or federal waters. When the federal commercial season for mackerel is closed, mackerel caught in the EEZ by recreational anglers, including charterboats, may not be sold; however, the sale of mackerel recreationally caught in state waters continues to be governed by that particular state's rules.

The negative effects of prohibiting the sale of recreationally caught mackerel by all recreational vessels would mainly be borne by crews of charter and head boats. In some areas, crew members depend on the sale of recreationally caught fish, particularly king mackerel, for a good part of their income. Testimonies made to the Council claimed that in Key West, Florida as much as 75 percent of king mackerel caught on charterboats have been left with the crew. Sales of these fish have generally comprised 15 to 25 percent of the gross income of charterboats in the area. In most charter operations, crew members get half of the fish sales which makes up 20 to 30 percent of their gross income. Similar information for head boats is not available. In their survey of charter and head boats in Florida, Holland and Milon (1989) reported that on the west coast a typical charterboat in 1987 generated \$62,000 of gross revenues and paid wages of \$25,000. A typical headboat in the west coast of Florida in 1987 generated a gross income of \$112,000 and paid wages of \$30,000. Prohibiting the sale of recreationally caught king mackerel could result in a marked reduction in charterboat income and crew wages.

Most likely affected by the Gulf Council's Proposed Alternative 2.2.2, Option "a" would be the 117,953 pounds caught and sold by charter boats during the period the commercial king mackerel fishery in the EEZ was closed. At a price of \$1.25 per pound, the revenues forgone by charterboat crews would be \$147,441, or about \$1,820 per boat (using 81 boats in Monroe county with both charter and commercial permits). If the additional 100,000 pounds caught by these boats during the open season were made on charter trips, an additional \$125,000 would be forgone by charterboat crews, or \$1,543 per boat. While the forgone income appears relatively small in absolute value, it could actually comprise as much as 30 percent of crew income.

One way of mitigating the described income loss would be for charterboat owners to increase the price of charter fishing trips. Noting, of course, the relatively competitive nature of the market for charter fishing trips, price increases could only be accommodated within a very

narrow range. Moreover, the use of such a technique is more likely to be successful only on a short-term basis, given the relatively high turnover rate in the charter industry.

The benefits of prohibiting sale of recreationally caught fish could go to hook-and-line commercial fishermen who may experience increased revenues either from landing fish forgone by recreational vessels or from an overall increase in price due to reductions in the availability of fish. This latter reduction could be substantial if the reported sales during the open season by for-hire vessels (about 100,000 pounds) were taken when these vessels were fishing recreationally. In this sense, however, the effects of the sale prohibition may be deemed distributional in nature.

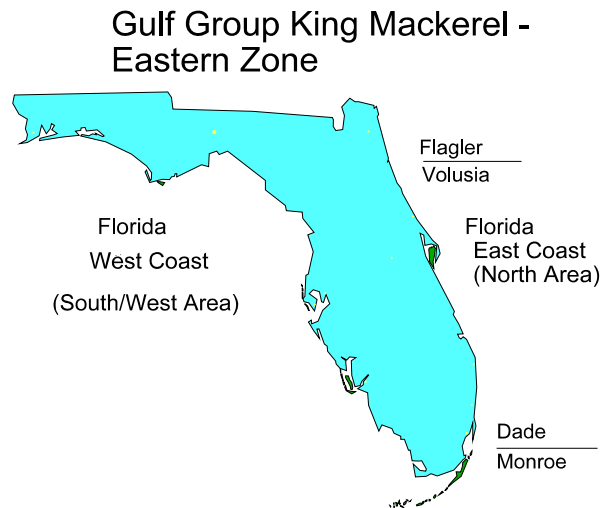
2.3 Reallocations of TAC for the commercial and recreational sectors for Gulf group king mackerel

Commercial Reallocations by Area:

- 2.3.1 Rejected Alternative - Reallocate the percentage of the commercial allocation of TAC for the North and South/West Areas (Florida east coast and Florida west Coast, respectively) of the Eastern Zone to 45% North and 55% South/West**
- 2.3.2 Rejected Alternative - Status Quo - no change - The commercial allocation remains at 50% Florida east coast and 50% Florida west coast**
- 2.3.3 Proposed Alternative -Reallocate the percentage of the commercial allocation of TAC for the Florida east coast (North Area) and Florida west coast (South/West Area) of the Eastern Zone to 46.15% North and 53.85% South/West**

Discussion: As discussed in Amendment 7 to the Coastal Migratory Pelagics FMP, the historical split in commercial catches between the North Area (Florida east coast) and South/West Area (Florida west coast) of the Eastern Zone has been between 44-47% North and 53-56% South/West (Figure 2).

Figure 2. Subdivisions of the Gulf group king mackerel stock in the Eastern Zone.



Through quota closures and reduced trip limits, the net fishery in the Florida east coast was effectively eliminated. Additionally, fishermen in this area did not fill their suballocation from 1993-94 through 1995-96 (landings were approximately 587,000 pounds, 669,000, and 757,000 pounds for the 3 years, respectively; and the suballocation was 865,000 pounds). In 1996-97, however, estimates indicated that the commercial catches for the Florida east coast exceeded the suballocation of 865,000 pounds at 945,000 pounds. For the 1997-98 fishing year, the Gulf Council increased the TAC to 10.6 million pounds, and preliminary landings were estimated at about 903,000 pounds. This catch level is approximately 267,000 pounds below the present allocation. Although these catches have shown a steady increase in recent years, good weather was considered as a major factor contributing to the Florida east coast reaching its allocation of TAC in 1996-97 (M. Godcharles, personal communication). Bad weather attributed to “El Niño” could also have negatively effected catches in 1997-98.

As discussed in Sections 2.4 and 2.5, the king mackerel fishery in the Panhandle Area of Florida has significantly increased its catch in the last few years. Under the existing allocation of TAC, these increased catches have caused an equally significant decrease in catch from the more traditional fishing area (the Florida Keys). As discussed in Section 2.5, the Proposed Alternative 2.3.3 would provide an allocation of TAC to the Panhandle equal to a 30% split of the present hook-and-line allocation; however, this allocation would be proportioned from the total allocation for the Eastern Zone, and not from just the Florida west coast allocation. The result would change the split of the Eastern Zone portion of TAC by about 3.85%. This allocation procedure is preferred because each of the more traditional fishing areas and gear types would forgo some portion of their present allocation to provide for an allocation for the more recently developed fishery in the Panhandle Area.

A change from the 50-50 split (Rejected Alternative 2.3.2) to a somewhat reduced percentage for the Florida east coast (but less than the 5 percent proposed in Rejected Alternative 2.3.1) would more accurately reflect recent historical catches; however, if catch and effort remain at approximately the 1996-97/1997-98 level or if the South Atlantic Council increases the trip limit from the current 50-fish level, this area could potentially take a 50 percent portion of TAC. It is, however, unknown whether or not with a 10.6 million pound TAC, the Florida east coast would be able to catch its approximately 1.17 million pound share under the current split. If not, it is likely that the Florida west coast would be able to harvest at least a 55 percent share under the 10.6 million pound TAC scenario since the season in this area has historically closed near the middle of the fishing year (recently in January or February).

Economic Impacts: Assuming both the Florida west coast and Florida east coast catch their respective allocations of 1.17 million pounds under the current TAC of 10.6 million pounds, a reallocation of 5 percentage points from the Florida east coast to the Florida west coast would reduce the former area's landings by 117,000 pounds and increase the latter area's landings by an equivalent amount. Using the king mackerel price-per-pound estimate of \$1.25 and a price flexibility estimate from Easley et al.(1993), which indicates that a 10 percent decrease in landings results in a 1.14 percent increase in ex-vessel price, the loss to the Florida east coast in terms of forgone ex-vessel revenues would amount to \$147,000. While this is a paltry amount relative to total ex-vessel revenues for Florida east coast vessels, it could be significant to some of the area's smaller hook-and-line vessels. The loss, however, to the Florida east coast vessels would result in additional revenues to Florida west coast vessels. A choice of a lower percentage reallocation would result in proportionally lower effects.

A redistribution in income may then be expected if there is effected a change in allocation of the Eastern Zone quota between the Florida east coast and Florida west coast. It needs reiterating here that this expectation hinges on the crucial assumption that each area catches its full allocation before the 50/50 allocation is altered. The likelihood that this assumption would occur and the potential consequences if it does not are explored below.

The Eastern Zone commercial quota has been equally divided between the Florida east coast and Florida west coast since the 1993-94 fishing season. In turn, the Florida west coast allocation has been equally divided between hook-and-line and net vessels, and both types of vessels in this area have caught their respective allocations every year. In fact, the hook-and-line vessels have exceeded their allocation by an average of 58 percent for the last two years, partly because of Council actions to provide additional quota for this group of vessels. While the net fishery has been kept close to its allocation, its effective fishing season has remained relatively short (about one month). Both the hook-and-line and net vessels have consistently caught their respective allocations even after the TAC was increased to 10.6 million pounds. Any further increase, even up to 5 percent, of the Eastern Zone commercial quota could easily be accommodated by the respective group's capacity to catch. A very likely conclusion then is that any of the alternatives to reallocate the Eastern Zone commercial quota would result in Florida west coast vessels being able to fully take their allocations.

The case for the Florida east coast is less certain. For two consecutive seasons, 1993-94 and 1994-95, the vessel daily trip limit rule for the Florida east coast had been 50 fish until 50 percent of the area's quota was filled, then 25 fish until the area's quota was fully taken.

Landings for the 1993-94 and 1994-95 seasons, amounted to 600,000 and 700,000 pounds, respectively which were below the area's then quota of 865,000 pounds.

To enable fishermen to fully catch the area's quota, the vessel trip limit rule was slightly revised to 50 fish until 75 percent of the area's quota was reached, then 25 fish until the area's quota was fully taken. If 75 percent of the area's quota were not taken by March 1, the 50 fish trip limit would remain until the full quota was taken or March 31, whichever came first. Under this revised rule, landings for the 1995-96 season of 757,000 pounds still fell short of the 865,000 pound quota.

Again due to the quota underrun, the trip limit rule was revised upward (denominated this time in poundage) to 750 pounds until 75 percent of the area's quota was reached by February 15, then 500 pounds until the area's quota was fully taken or March 31, whichever came first. If 75 percent of the quota were not taken by February 15, the 750-pound trip limit would remain until the full quota was taken or March 31, whichever came first. This revision, however, was not implemented until June 2, 1997; consequently, the lower trip limit was still in effect for the 1996-97 fishing season. Reportedly, due to favorable weather conditions, landings for that season were relatively higher, and the lower trip limit of 25 fish was instituted for the entire month of March 1997. Overall landings amounted to about 945,000 pounds, which were 9 percent in excess of the area's quota. Most likely, landings would have far exceeded the quota had the higher trip limits been implemented for that fishing year.

In May 1997, the Council proposed to revise downward the recently implemented trip limit and to re-denominate the trip limit in terms of numbers of fish. This recently approved trip limit is 50 fish throughout the period November 1-March 31, unless the area's quota was taken sooner. It may be recalled that this revision was made in conjunction with the proposal to raise TAC to 10.6 million pounds, effectively raising the Florida east coast allocation by 305,000 pounds. This area's harvest for the 1997-98 fishing year is estimated at 903,000 pounds. This is about 40,000 pounds lower than the previous year's harvest and 267,000 pounds below the area's 1.17 million pound allocation.

From the foregoing information on landings, trip limit changes, and a higher quota, the proposed reallocation of the quota in favor of the Florida west coast would result in more than a mere redistribution of income. It would bring about higher revenues to Florida west coast fishermen without compensating for potential loss to Florida east coast fishermen. Overall industry revenues would then increase. Considering that fishing costs to vessels in both areas would remain about the same, industry profitability may also be expected to increase. This conclusion, however, has to be tempered by the forgone earnings of vessels in the Florida east coast due to maintaining the 50-fish trip limit.

Reallocations by User Group:

2.3.4 Rejected Alternative - Increase the recreational allocation from the current 68 % of TAC to 70 %; however, all catches/landings by the for-hire sector shall be counted against the recreational allocation only

2.3.5 Proposed Alternative - Status Quo - no change - Allocation remains at 68% recreational and 32% commercial

Discussion: When the present 68 %-recreational and 32 %-commercial allocations of TAC were adopted, the actual catch distribution for each sector was 70% recreational and 30% commercial. The rationale for the 68/32 split included utilizing the historical catches and transferring 2 percent from the recreational sector to the commercial sector to account for commercial sales of recreationally caught fish (GMFMC, Amendment 1). The average distribution of catch for the period 1990 through 1996 is also 70 percent recreational and 30 percent commercial (with the inclusion of TAC overruns by both sectors) (MSAP 1996). However, the amount caught under the bag limit and sold and the amount that may have been double-counted are unknown. If fish caught under the bag limit were precluded from sale, a more accurate estimate of the actual recreational catch could be determined. Since the commercial fishery has in recent years been limited by both trip limits and seasonal closures, a true comparison of the historical 70/30 split and the more recent (1990-1996) 70/30 split is not possible. Additionally, as discussed in Section 2.2, the 2 percent transfer may not be adequate under present fishing conditions since recreational sales after the commercial season has closed amount to about 1.5 percent of TAC for the west coast of Florida alone.

The Gulf Council's previous Preferred Alternative 2.3.4 was tied to Proposed Alternative 2.2.2. The South Atlantic Council adopted a status quo position (Proposed Alternative 2.2.3) for prohibition of sale. Because the Magnuson-Stevens Act defines commercial fishing as "fishing in which the fish harvested...are intended to enter commerce or enter commerce through sale, barter of trade," bag-limit caught fish that are sold would have to be counted against the commercial allocation. Since at least a portion of the bag-limit caught fish would be counted against the commercial allocation, a reduction from the current 32 percent split to a 30 percent split would result in a further reduction in the commercial allocation.

Economic Impacts: Being the status quo, the Proposed Alternative is expected to have no impacts on fishing participants. However, an analysis of the Rejected Alternative can give us insight into the economic consequences (in terms of forgone costs and benefits) of the maintaining the status quo. In the absence of appropriate valuation for both the commercial and recreational fisheries, the change in net benefits to the entire fishery due to a change in the TAC allocation between the two sectors cannot be ascertained. Only certain distributional effects of the Rejected Alternative may be pointed out at this stage.

While the percentage involved here appears small, the poundage equivalent based on a TAC of 10.6 million would amount to about 200,000 pounds, which is about 34 percent of the current allocation to the hook-and-line or gill net components of the commercial fishery for the Florida west coast of the Eastern Zone. The reallocation under consideration can potentially impact some vessels in a significant way. While the direction of effects seems to be negative for the commercial sector and likely to be negatively significant for some commercial vessels, the actual

effects may turn out to be beneficial to the commercial sector especially over the long run, as discussed below.

Under the Proposed Alternative (i.e., status quo), recreationally caught fish applied to the commercial allocation could exceed 2 percent of TAC. This is brought about by the increasing sales of recreationally caught fish by for-hire vessels. The Socioeconomic Panel (SEP, 1997) has noted the substantial increase in charterboat landings of king mackerel and charterboat trips targeting king mackerel. Charterboat landings of king mackerel increased from about 1.1 million pounds in 1991 to about 4.3 million pounds in 1996. Charterboat trips targeting king mackerel grew from 445,000 in 1991 to 945,000 in 1995. In addition, such increases remained steady, without fluctuations, throughout the period considered. Under this scenario and especially when viewed over the long run, an increasing percentage of TAC caught by the recreational sector would be applied on the commercial allocation.

Under the Rejected Alternative, the amount of fish forgone by the commercial sector by the reallocation would be limited to at most 2 percent of TAC. In this way, the reallocation would actually benefit the commercial sector, particularly if increases in harvests by the for-hire sector continue unabated. One very crucial assumption made here is that fish sold by for-hire vessels are actually counted against the recreational allocation. If such fish continue to be counted against the commercial quota, the commercial sector would lose with the reallocation.

Unless some limiting factor exists to limit the harvest of the for-hire sector, the Rejected Alternative would also mean that anglers fishing through the private/rental mode would experience a dwindling share over time. Such limiting factor could be imposed by regulations, such for example as a separate quota allocation for the for-hire industry or controlled access program, or by the nature of the for-hire business itself, such as decreasing profitability. In the absence of such limiting factor, the economic issue at hand becomes that of redistributing benefits from the private/rental mode anglers to for-hire vessels and anglers. Relevant economic information does not allow determination of the net effect from such transfer of benefits.

2.4 Subdivision of the commercial hook-and-line king mackerel allocation of TAC for the Gulf group, Eastern Zone, South/West Area (Florida west coast) into subzones by area

2.4.1 Proposed Alternative - Subdivide the commercial hook-and-line king mackerel allocation for the Gulf group, Eastern Zone, Florida west coast by establishing two(2) subzones (Figure 3):

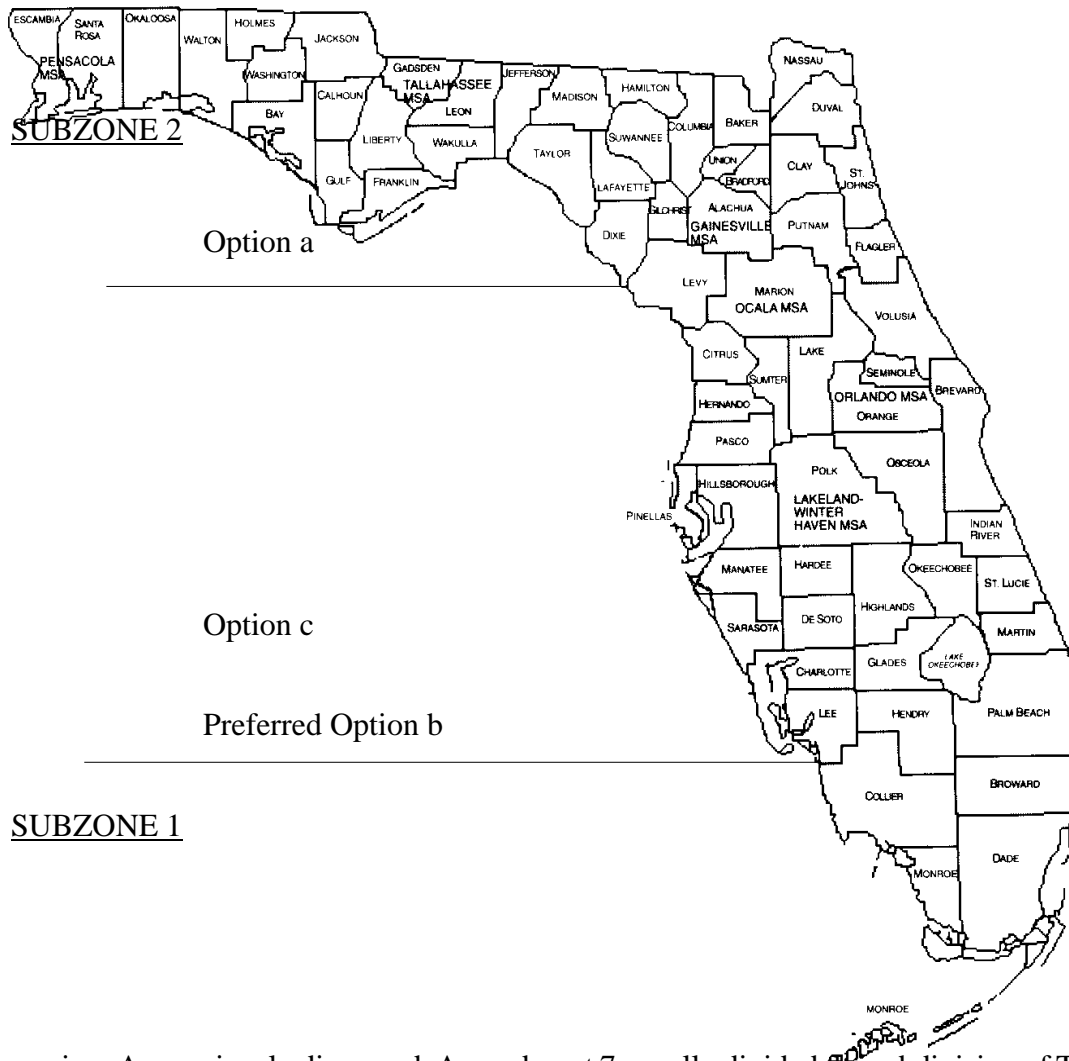
Option a. Subzone 1 - Dade/Monroe to Dixie/Levy County line and Subzone 2 - Dixie/Levy County line to AL/FL state line

**Proposed Option b. Subzone 1 - Dade/Monroe to Collier/Lee County line
Subzone 2 - Collier/Lee County line to AL/FL state line**

**Option c. Subzone 1 - Dade/Monroe to Charlotte/Sarasota County line
Subzone 2 - Charlotte/Sarasota County line to AL/FL state line**

2.4.2 Rejected Alternative - Status quo - Do not establish additional subzones for allocations of TAC on the west coast of Florida

Figure 3. Subdivisions of the Florida west coast of the Eastern Zone into 2 subzones



Discussion: As previously discussed, Amendment 7 equally divided the subdivision of TAC for the Eastern Zone at the Dade/Monroe County line. This action provided a 50 percent share for the east coast of Florida and a 50 percent share for the west coast of Florida. Amendment 7 also divided Florida’s west coast share of TAC equally among gill net fishermen and hook-and-line fishermen. One purpose of these actions was to maintain a historical share for each coast and prevent one area from harvesting most, if not all, of the quota before the fish were available in the other area (a condition that occurred in the 1992-93 fishing year). The major concern was with the capacity of the fishing fleet on the west coast in the Florida Keys (mainly Monroe County). In recent years, a similar problem has arisen on the west coast of Florida between the fleets in the Florida Keys and the Panhandle Area of Florida.

The average annual landings by county for the counties in the Big Bend area of Florida from Hernando County through Wakulla County have historically been less than 500 pounds (Table 1, Figure 3). Conversely, virtually all counties in the Panhandle Area (Franklin through Escambia Counties) and in south Florida (Pasco through Monroe Counties) had average annual landings in excess of 2,000 pounds.

Because historically about 97 to 98 percent of the Florida west coast catches of king mackerel have come from the Florida Keys and the Panhandle Area a subdivision of the Florida west coast allocation of TAC into 2 suballocations could help insure historical participation in the king mackerel fishery. It could also help prevent one area from taking the entire TAC allocation before fish are available in the other area, as discussed below for the 1994-95 fishing year. Two separate suballocations of the hook-and-line portion of TAC could be established for the more traditional fishing areas of Monroe/Collier Counties and the Panhandle Area, respectively, based on historical landings, and in various combinations with the landings from the other counties, as indicated in Options a, b, and c.

An area subdivision in the Dixie/Levy county area (Rejected Option a) should not result in a significant amount of crossover (fishermen fishing on both suballocations) because of the geographical distance between major landing sites and low trip limits (1,250 pounds). A subdivision as indicated in Proposed Option b would probably accomplish the same purpose as discussed under Option a; however, there would be an increased opportunity for crossover fishing by fishermen between Pasco through Lee Counties and Collier/Monroe County fishermen, which have typically caught in excess of 80 percent of all west coast landings. Testimony from users, also supported the Proposed Option b. They indicated that their major competition came from the Panhandle; thus the Collier/Lee county split would put greater distance between the primary fishing areas and likely reduce crossover fishing.

Rejected Option c was initially considered because it would provide a slightly increased buffer zone between the major fishing effort in Collier and Monroe counties and correspond more closely with enforcement boundaries of the Florida Marine Patrol. The effects of this option as compared with the Proposed Option b would not be significant, and actual enforcement of the subquotas would not be enhanced by one option over the other.

Economic Impacts: In and by itself, the subdivision of the west coast of Florida into 2 subzones would have no impacts on fishing participants. Neither would the location of such division have an effect on the nature of fishing activities in various areas. To the extent, however, that such subdivision is intended for further allocation of the commercial hook-and-line quota among various areas, the consideration of economic impacts assumes some significance. Discussion of economic impacts is postponed to Section 2.5, wherein options for specific percentage allocations of the commercial hook-and-line quota are presented.

2.5 Establish regional allocations of the commercial hook-and-line TAC for king mackerel in the South/West Area of the Eastern Zone (Florida west coast) based on the historical catches from the subzones identified in Section 2.4.1

- 2.5.1 Rejected Alternative - Establish regional allocations based on the historical catches from subzones indicated in 2.4.1 using the average of the 1992-93 through 1996-97 fishing years (Table 4) with Dixie/Levy split (Option a): 77% for Subzone 1 and 23% for Subzone 2 or Collier/Lee split (Option b): 75% for Subzone 1 and 25% Subzone 2**
- 2.5.2 Rejected Alternative - Establish regional allocations based on the historical catches from subzones indicated in 2.4.1 using the average of the 1992-93 through 1996-97 fishing years (Table 4), excepting the 1994-95 fishing year with Dixie/Levy split (Option a): 81% for Subzone 1 and 19% for Subzone 2 or Collier/Lee split (Option b) : 80% for Subzone 1 and 20% for Subzone 2**
- 2.5.3 Rejected Alternative - Establish regional allocations based on the historical catches from subzones indicated in 2.4.1 using the average of the 1992-93 through 1996-97 fishing years (Table 4), excepting the 1994-95 and 1996-97 fishing years with Dixie/Levy split (Option a): 86% for Subzone 1 and 14% for Subzone 2 or Collier/Lee split (Option b): 85% for Subzone 1 and 15% for Subzone 2**
- 2.5.4 Rejected Alternative - Establish regional allocations based on the historical catches from subzones indicated in 2.4.1 using the average of the 1980 through 1992 years with the Dixie/Levy split (Option a): 90% for Subzone 1 and 10% for Subzone 2 or Collier/Lee split (Option b): 89% for Subzone 1 and 11% for Subzone 2**
- 2.5.5 Proposed Alternative - Establish regional allocations for the west coast of Florida based on subzones indicated in 2.4.1, Proposed Option b with 7.5 percent of the Eastern Zone allocation of TAC being allowed from Subzone 2. The remainder of the Eastern Zone allocation of TAC will be divided as follows:**
- 50 percent - Florida east coast**
 - 50 percent - Florida west coast**
 - 50 percent - Net Fishery**
 - 50 percent Hook-and-Line Fishery (Subzone 1)**

Discussion: From 1990 through 1996, approximately 80 percent of the Florida west coast's average annual commercial landings came from Monroe County, 6 percent from Collier County, and about 12 percent from the Panhandle Area (Table 1). Table 2 shows that for the 1980s the percent of landings for Monroe County were larger at an average of 89 percent; whereas, landings for the Panhandle Area were only about 3 percent. Combined landings for all other Gulf counties were only about 2 to 3 percent for both periods. These data were based on

calendar-year averages and included both hook-and-line and gill-net catches. Catches for Monroe County for April through October were also included in Tables 1 and 2; however, these catches would currently be considered as landings of Atlantic migratory group king mackerel. Additionally, catches for this area and time were low, generally less than 20,000 pounds.

A portion of these data was modified to include only hook-and-line catches for the options discussed in Section 2.4.1. Tables 3a and 3b show a similar average percentage split at between 89 and 90 percent for Subzone 1, and 10 to 11 percent for Subzone 2. When data were further adjusted to include only Gulf migratory group fish for the fishing years 1992-93 through 1996-97, the percentage splits for the areas discussed above as options in Section 2.4.1 were somewhat different (Table 4). (Note: gill-net catches were subtracted from the Monroe/Collier Area only). These years were chosen because they were the most recent, and TAC and other management measures were consistent throughout the period. In 3 of the 5 fishing years, the Monroe/Collier Area garnered between 79 and 88 percent of the TAC. The 1994-95 fishing year was purported to be an anomalous year in that the fish remained in the Panhandle Area for an extended period of time and did not migrate south in the usual manner. Consequently, the Panhandle Area was able to catch a larger share of TAC; and even after an additional emergency allocation of 300,000 pounds, the Monroe/Collier Area was only able to harvest about 58 percent of the TAC. A similar phenomenon occurred in the 1996-97 fishing year, and preliminary data indicated that it also occurred in the 1997-98 fishing year. The cause of this significant shift in the percentage of TAC being taken in these respective areas is unknown; however, it could be related to increased effort, better weather conditions, and availability of fish in the Panhandle Area.

Table 5 shows possible percentage divisions of this area's TAC allocation based on the 2-Subzone options identified in Section 2.4.1. These potential percentages are based on commercial hook-and-line landings for the fishing years 1992-93 through 1996-97, and they vary depending on where the boundary between the subzones is chosen.

As previously discussed, data are not available to fairly compare commercial hook-and-line catches by area during earlier years, i.e. as shown in Table 2. Because of the 2 rather anomalous years (1994-95 and 1996-97), a straight average of the 5-year landings yields percentages that are somewhat different from what would be perceived as historical by the earlier data. Removing the 1994-95 year creates percentages that are more in line with those shown in Tables 1 and 2; however, removing both the 1994-95 and 1996-97 years produces averages that are the most consistent comparisons.

If the shift in percentages of landings has been caused by increased participation (effort) and availability of fish in the Panhandle Area, historical catches, other than those in the most recent years, may not be applicable because a shift in the fishery may have already occurred. Consequently, establishing suballocations based on older historical data (Rejected Alternatives 2.5.1 through 2.5.4) could be more disruptive to the existing fishery than a more present-time allocation. The Proposed Alternative 2.5.5 for this section is coupled to Proposed Alternative 2.3.3 to establish an allocation for the more recently developed fishery in the Panhandle Area in a way such that all other areas that share in the suballocation of the Eastern Zone allocation

of TAC share a smaller burden of reduction in their respective shares of TAC than would occur under the present breakdown of the Eastern Zone allocation of TAC. The reduction in the quota for the Florida east coast under Proposed Alternative 2.3.3 is a consequence of this Proposed Alternative 2.5.5. The following is a comparison of the TAC allocations under the current breakdown with the Proposed Alternatives for revising the Eastern Zone TAC allocations using a TAC of 10.6 million pounds (MP) as an example (Values not followed by MP represent pounds unless otherwise indicated):

Recreational allocation (Gulf) - 68% - 7.21 MP
 Commercial allocation (Gulf) - 32% - 3.39 MP

Eastern Zone (69%) - 2.34 MP
 Western Zone (31%) - 1.05 MP

**Current Eastern Zone Split with
 Additional Suballocations for
 Subzones 1 and 2**

50% Florida East Coast - 1.17 MP
 50% Florida West Coast - 1.17 MP

50% Net Quota - 585,000
 50% Hook-and-line - 585,000
 70% Subzone 1 - 409,500
 30% Subzone 2 - 175,500

**Eastern Zone Split under the
 Proposed Alternative**

Subzone 2 - Panhandle - 175,500
 7.5% of 2.34 MP Eastern Zone allocation (which
 is equal to 30% of present hook-and-line
 allocation [585,000])

2.1645 MP - (92.5% of 2.34 MP allocation)
 50% Florida East Coast - 1.08 MP
 50% Florida West Coast - 1.08 MP
 50% Net Quota - 541,125
 50% Hook-and-line - 541,125 (Subzone 1)

As shown, an additional subdivision of the Florida west coast allocation of TAC to provide a 30 percent allocation to Subzone 2 would significantly change the available portion for Subzone 1 as compared with the Proposed Alternatives. The Proposed Alternatives would appear to provide a method of distributing TAC that is least disruptive to harvest levels in recent years and expected future catches provided that TAC remains relatively stable.

On the other hand, if the higher percentage landings in the Panhandle Area are anomalous, establishing a permanent split of the allocation between zones (with a higher than average share for the Panhandle Area) could result in a portion of TAC not being taken, unless any surplus is applied to the suballocation for Subzone 1 or carried over to subsequent fishing years.

Economic Impacts: The more recent occurrence whereby the Panhandle Area, that traditionally had low landings, harvested more than its historical share has disrupted the hook-and-line fishing operations in the Florida Keys. In the past, some relief was provided by the Council to the adversely affected fishermen by allowing the fishery to exceed its allocation. The various

options in this section directly address this type of problem. One major effect intended by the various options is to allow hook-and-line vessels in various geographical areas on the west coast of Florida to land king mackerel according to their respective historical shares. Tables 1, 2, and 3 show historical landings by various counties on the west coast of Florida, from which various geographical divisions can be developed; however, Table 4 provides a more specific breakdown for the hook-and-line fishery by fishing periods. Highten

The potential effects of the various options in assuring that historical shares by various geographical areas are maintained have been detailed in conjunction with the discussion of each set of options. It may only be noted at this point that while the major implications pertain mainly to equitable access to the fishery resource by hook-and-line vessels in various areas, there are some efficiency costs that need to be recognized. First, there is some possibility that with a finer geographical division of TAC, some allocations may not be taken, especially if TAC is increased over time. While an underrun of the quota allocation in a given area does not necessarily imply that king mackerel is valued less in that area than in others, a higher short-term profit level for the industry may not be attained as access to some fishing grounds by efficient vessels is prevented. To the extent that possible quota underruns contribute to the rapid recovery of the stock to well above its overfishing threshold, the long-term profitability of the industry may be enhanced but only if some form of controlled access management strategy is adopted. Second, although further geographical zoning could limit the efficiency of larger and more mobile vessels, it could also result in some small-time fishing operations becoming more economically viable. Third, some geographical areas may exceed their allocations and even capture the entire quota for the hook-and-line fishery, but the fishery in other areas would have to be left open so long as their respective allocations are not yet reached. This condition could eventually have long-term repercussions in the determination of TAC and the commercial quota for the king mackerel fishery. Some discussions of these three items relative to the various options considered will be made below.

The geographical subdivisions in Section 2.4 become meaningful only when coupled with quota allocations in Section 2.5. There are 1,177 hook-and-line vessels with home ports in the Florida west coast that would be affected by the various alternatives. Of these, there are 987 with commercial permits only and 190 with both commercial and charter permits. In addition to these vessels, there are 333 vessels with charter permits only.

Monroe County has accounted for most of commercial king mackerel landings by hook-and-line vessels. Allocations under Proposed Option b of Proposed Alternative 2.4.1 would limit the number of vessels partaking of the larger part of the quota allocation. This option would tend to preserve the landing of king mackerel not only with respect to landing share by a geographical area but also by vessels in that particular area. Allocations under Option a of Proposed Alternative 2.4.1 could potentially change the landing share of vessels in the area that historically landed most of king mackerel harvests. This particular option would add 244 vessels to Subzone 1, and thus would prompt a distribution of the area's quota among more vessels. The distribution of permitted vessels under Option c falls between the first two options.

As summarized in Table 5, there are differences in quota allocations between Subzone 1 and Subzone 2 when landing periods are varied, regardless of which subzoning option is taken. Choice of different landing periods results in allocation variation within a subzone of at most 10 percentage points. Under Option a of Section 2.4.1, Subzone 1 could receive a quota share ranging from 77 percent under Alternative 2.5.1 to 90 percent under Alternative 2.5.4. This range changes to 75-89 percent under Preferred Option b, or 79 to 92 under Option c. Allocations under Alternatives 2.5.2 and 2.5.3 would fall in the middle of the mentioned range for either of the three options. Option c presents a relatively different situation wherein the share for Subzone 2 could go up beyond its historical share, although we may hasten to add that for three fishing years (i.e., 1994-95, 1996-97, and 1997-98), vessels in Subzone 2 landed 30 to 40 percent of the hook-and-line quota in the Florida west coast..

There are potentially many criteria for judging an allocation as fair and equitable. If fairness and equity of access to the king mackerel resource is based solely on historical landings, the option that provides the greatest percentage of share (per landings record) to Subzone 1 may be ranked the highest. The option that approximates this is Alternative 2.5.4 in combination with Option c of Alternative 2.4.1. This would allocate 92 percent of the hook-and-line quota for the Florida west coast to Subzone 1, with about 697 vessels, or 59 percent of mackerel permitted vessels in the west coast of Florida, participating in the fishery. The obvious implication of adopting such an allocation scheme is that only 8 percent of the quota would be shared by about 41 percent of mackerel permitted vessels in the west coast of Florida that are based in Subzone 2. This low percent share could severely limit many fishing operations in Subzone 2, considering that in 3 of the 4 most recent years, vessels in this area landed 30 to 40 percent of the quota.

In contrast with the other alternatives which provide a fixed percentage allocation based solely on the commercial hook-and-line quota for the Florida west coast, the Preferred Alternative would allocate to Subzone 2 a fixed percentage (7.5%) based on the total commercial allocation for the Eastern Zone. The remaining 92.5 percent of the quota is then subdivided according to existing allocations; that is, 50/50 between the Florida east and west coasts, with the Florida west coast quota further subdivided 50/50 between the net fishery and hook-and-line fishery (in Subzone 1). This alternative basically affects all fishing areas in the Eastern Zone. While Subzone 2 would receive an equivalent of 30 percent of the original hook-and-line quota for the Florida west coast, Subzone 1 would still get 92.5 percent of the original hook-and-line quota. Both the net fishery in the Florida west coast and the Florida east coast would give up about 7.5 percent each of their original allocation. To some extent then, this alternative would accommodate the increasing catches in Subzone 2 but not totally at the expense of Subzone 1 hook-and-line fishermen.

It is appropriate at this stage to consider the three issues raised earlier regarding the potential of the further suballocation of quota to entail additional efficiency costs to the entire fishery. The first relates to the possibility that regional subquotas may not be taken. Given historical catch records, it appears that none of the alternatives would likely restrict harvest to the extent that some portion of a subzone's quota may not be taken. However, the quota is divided according to the various alternatives; each subzone is capable of harvesting its entire quota by just relying on past landings performance of each subzone. The second issue concerns the possibility that some larger, more mobile vessels may be restricted in their operations while smaller vessels may

be favored as the larger vessels trim down their operations. This possibility is more likely under an alternative that limits the percentage share of a subzone to a relatively low level. Alternatives 2.5.3 and 2.5.4 readily fit into this scenario. But in this regard, there is insufficient information to determine whether the efficiency gain of smaller vessels could outweigh the efficiency loss of larger, more mobile vessels and whether the measures considered would allow the eventual achievement of a more efficient mix of small and large vessels in the fishery.

The last issue pertains to the possibility that a subzone may overrun its quota and the entire hook-and-line quota, and yet the fishery in another subzone remains open because its quota is not yet reached. This eventuality has low probability under any of the considered alternatives given the status quo fishing year. One reason for this is that under the July 1 opening, king mackerel become available first in Subzone 2. Due to the relatively low quota allocated to this subzone, the probability may be high for this area to exceed its quota but not to take the entire hook-and-line quota. Before the fishery harvests substantially above its allocation, closure would be instituted.

One other issue that may be raised here pertains to the enforcement of further Balkanization of the hook-and-line fishery. Introducing more subzones with attendant quota allocations would give rise to more fishery closures. Monitoring and enforcement costs are bound to increase under this situation. A general idea of the enforcement cost required to bring enforcement activities to an adequate level is presented in the section on private and public costs.

2.6 Subdivision of the commercial king mackerel allocation of TAC for the Gulf group, Western Zone

2.6.1 Rejected Alternative - Subdivide the TAC for the Western Zone into two (2) seasons with 50 % (or other) being available at the start of the fishing year on July 1 (or other start date) until the subquota is filled, and 50 % (or other) being available beginning November 1 (or other second season date) until the subquota is filled or the season ends on June 30 of the following year

Option a. In combination with a trip limit between 500 and 3,000 pounds, allow only 2 (or 3) trips per month for each season

Option b. In combination with a trip limit between 500 and 3,000 pounds, allow catch and landings only during the first 15 days (or last 15 days) of each month during each of the open seasons

Option c. Do not establish limits on the number of trips or pounds per trip in combination with a split season

Discussion: Since the 1985-86 fishing year, the commercial allocation of TAC for the Western Zone has been taken in an increasingly shorter period of time, declining from approximately 8 months in 1985-86 to only 8 weeks in 1996-97 and only 32 days in 1997-98 (Table 6). During the same period, the TAC has more than doubled. (Note: The TAC in 1997-98 was increased from 7.8 MP to 10.6 MP in February 1998, and the season reopened.) This derby fishing

reduces profits and forces fishermen to seek other employment, possibly in other fisheries that may also be under a strict management program, e.g., red snapper. Separating TAC into 2 seasons, as suggested under Rejected Alternative 2.6.1, could help reduce the effects of the derby fishery, extend the season, and may increase profits, but only if this action were combined with other management strategies such as trip limits or partial-month fishing. Allowing harvest only during the first 15 days of the month during an open season would be consistent with actions taken by the Gulf Council for red snapper in Amendment 15 to the Reef Fish FMP. Under amendment 15, the second red snapper season opens for the first 15 days of each month beginning on September 1. If the red snapper season were continuing in November and the Council adopted the same first-15-day option, many vessels would have to choose to fish either red snapper or king mackerel, or both. With a July 1 and November 1 split season, this problem would probably not be encountered because the red snapper TAC would likely be taken before November 1. Because king mackerel are most abundant in this area from about May/June to December with only a rather small, seemingly nonmigratory component remaining through the winter and spring, separate seasons would probably be most effective with a summer and fall split of TAC. Confining the seasons to a May to January period could also reduce vessel safety hazards because TAC would likely be taken before the typical bad weather months (January, February, and March) in this area. A split season might also assist managers and researchers in stock identification between migratory fish that may move into the northern Gulf from Mexico and supposedly those that immigrate from the southeast or are resident populations.

2.6.2 Rejected Alternative - Subdivide the TAC for the Western Zone by area, e.g., Texas/Louisiana line (94° West Longitude)

Discussion: Until about 1991, virtually all of the Western Zone catches of king mackerel were from statistical grids off Louisiana. In recent years, however, an increasing percentage of the catches has come from Texas (Table 7). The reasons for this shift are not known. The majority of Texas' catches have come from Statistical Grid 18 which extends from near the Louisiana/Texas state line to about Galveston Bay (Figure 4). This area is geographically very close to the primary fishing and landing areas off Louisiana. As such, the fishery in the Western Zone is very dissimilar to that on the west coast of Florida as discussed in Section 2.4.1. Establishing an area subdivision in conjunction with percentage allocations of the Western Zone TAC at the Louisiana/Texas state line could help preserve the more recent subdivisions of landings; however, enforcement and monitoring would probably be difficult, even if participants were prohibited from fishing in more than one area. Establishing a zonal separation somewhere in the mid-Texas coast would be more enforceable; however, the total landings for Texas have ranged from about 9 to 15 percent and only averaged about 10 percent of the total Western Zone TAC for 1991 through 1996. Landings for the south Texas area (Statistical Grids 20 and 21, Figure 4) are much smaller. Consequently, an area subdivision that could be enforced and monitored would likely have little effect on reducing derby fishing or preserving historical participation by area in the Western Zone.

2.6.3 Rejected Alternative - Subdivide the TAC for the Western Zone by area and season

Discussion: The combination of seasonal and areal distributions of TAC could help reduce the impacts of derby fishing and reduce costs by allowing fishermen to harvest fish when they are more available in their area. Louisiana fishermen have noted that the fishery in the central coast of Louisiana is best for availability of the more marketable size king mackerel in the fall/early winter period; whereas, the fish are more plentiful off Texas in the summer and early fall. Louisiana fishermen have also stated that the July 1 start date forces them to travel farther to the west to catch fish and results in larger trips with poorer quality catches. A differential season start date (e.g., July 1 - Texas and September 1 - Alabama, Mississippi, and Louisiana) coupled with an area division at the Louisiana/Texas state line and a separate allocation of TAC of between 10 and 20 percent for Texas and 80 to 90 percent for Alabama, Mississippi, and Louisiana, could reduce the negative effects of derby fishing thereby increasing profits and adding stability for participants. As with area closures in Section 2.6.2, the combination of seasons and areas would be difficult to enforce and monitor, and fishermen may fish in both areas at different times, negating the possible positive effects discussed above.

2.6.4 Proposed Alternative - Status Quo - no change - Do not subdivide TAC in the Western Zone

Discussion: The problems and benefits of subdividing TAC by area, season, or both in the Western Zone could be similar to those discussed in Section 2.4; however, because there is less geographic separation of the fishing areas in the Western Zone, it is questionable as to whether these measures would be effective. From a biological perspective, both areas have been managed by an allocation of TAC, and both areas have caught their respective allocations prior to the close of the season in recent years. The major difference in the application of these measures to these respective regions is that for the west coast of Florida, they are primarily proposed to preserve historical landings percentages by geographic area in Florida. In the Western Zone, these measures are mainly intended to lengthen the season that has become increasingly shorter. The latter is more difficult to achieve by merely subdividing TAC.

Economic Impacts: The various measures in this section address the continuing and worsening derby that is occurring in the Western Zone king mackerel fishery and Texas' growing share of the zone's commercial allocation. Alternatives 2.6.1 and 2.6.3 are designed to lengthen the season.

In the case of the July opening with 50 percent of the allocation, it is very likely that this suballocation would be taken in half the number of days it usually takes to reach the entire quota. This prediction would likely occur even with the addition of the proposed increase in TAC and the corresponding proportional increase in the commercial quota for the Western Zone. Fishing effort, as has been experienced in the last several years, is very much present during this period. With the more valuable red snapper fishery being closed during this period and a relatively established market for king mackerel during this period, opening the fishery with only half the quota would only heighten the derby mentality.

A similar situation may be expected with the second sub-season being opened in November. While in the last seven years or so the commercial king mackerel fishery in the Western Zone has been closed before November, that was not the case in the past. Table 8 shows the monthly commercial landings of king mackerel in the Western Zone. For the period 1985-89, November and December accounted for almost a third of the entire landings in this area, indicating the potential for the mackerel fleet to harvest the remaining part of the quota allocated to the proposed second sub-season. In addition, mackerel permitted vessels participating in the red snapper fishery would be able to target king mackerel because the second red snapper sub-season would likely be closed before November, which has happened in recent years. There is also a good possibility that king mackerel price may be lower as the Florida Keys start to land king mackerel in November. Nevertheless, such a price effect may be deemed not significant enough to discourage most vessels in the Western Zone from harvesting king mackerel. Such a price effect, however, could partly serve as a disincentive to pour in more effort into the king mackerel fishery so that a slightly longer sub-season may ensue. This situation partly achieves the objective of lengthening the mackerel season in the Western Zone, but prices may not be high enough to effect an increase in overall revenues.

While a split season coupled with trip limits in terms of poundage and number of trips per month may be expected to lengthen the overall season for king mackerel, the actual effect would be largely determined by the poundage of the trip limits and the number of trips allowed per month. Table 9 shows the average landings per trip, by state and year. They appear to have slightly increased over the years. Generally, the average landings per trip falls within the 2,000- to 3,000-pound range in Texas and Louisiana. On this basis alone, the proposed trip limits in combination with the split season may not substantially lengthen the season, at least over time. In the short-run, more efficient vessels would be constrained by the trip limits while the less efficient ones may not alter their target behavior. Over time, however, this latter group of vessels would adapt to the incentive provided by the higher (relative to their past landings) trip limit so that eventually these vessels would increase their share of total landings. A situation like this occurred in the red snapper fishery when endorsed vessels that used to land less than 2,000 pounds per trip started to fill their trip limits when the endorsement system was implemented. These vessels have substantially increased their share of the red snapper quota over time. In a situation like this, the objective of lengthening the season may not be achieved.

What probably would be the constraining factor is the number of trips allowed per month, particularly when combined with a split season and trip limits. The impact of this restriction on vessel efficiency is not clear cut. It could negatively affect vessel performance if vessels have been making more than the proposed number of trips. On the other hand, with known trip limits and a set number of trips, fishermen are presented with the opportunity to plan their fishing trips so that they can generate more profits than they could normally get in the absence of a limit on the number of trips they could take. The net effect is relatively unknown.

2.7 Establish trip limits for commercial vessels fishing for Gulf group king mackerel in the Western Zone (AL/TX)

2.7.1 Proposed Alternative - Establish a trip limit of 3,000 pounds per vessel per trip for the Western Zone

2.7.2 Rejected Alternative - Status Quo - no change

Discussion: Trip limits may have little effect on reducing the derby fishery unless other management measures are taken. In recent years, vessels with red snapper endorsements have taken in excess of 50 percent of the king mackerel catch by all permittees and as much as 79 percent in the Western Zone (NMFS, Reef Fish Logbook Data). These vessels may be targeting king mackerel because the derby in the red snapper fishery has forced the closure of that fishery prior to the July 1 start of the king mackerel fishery, and they are able to fish in both fisheries; or they are targeting king mackerel to establish a historical dependence on this species should the Council in the future adopt retroactive dependency requirements, as was done with the red snapper endorsement system. In either case, reducing the trip limit from current catch levels could have a negative impact on vessel safety if fishermen attempt to continue their present participation by making more trips, regardless of weather conditions.

On the other hand, establishing trip limits could help reduce the impacts of derby fishing. In order to have a meaningful effect on extending the season, they would probably have to be significantly lower than historical catches per trip, at least initially. In recent years, the average catch per trip for Louisiana and Texas has been about 2,500 pounds (Table 9); however, catches in Louisiana primarily fall into 2 categories: trips of more than 2 days and 2-day or shorter trips. The 2-day or less trips rarely caught in excess of 500 pounds; while the more than 2-day trips were variable between about 500 pounds and over 9,000 pounds, averaging around 3,000 to 4,000 pounds (LDWF, unpublished data). Establishing a trip limit similar to that of the west coast of Florida (1,250 pounds) could reduce the derby effect by decreasing the length of most trips, the distance traveled to fish, and the amount of catch within a given period of time. Although the impacts of reducing the derby fishery are unknown, it is highly likely that the proposed 3,000-pound trip limit will increase the quality of fish, and it is probable that the season would be extended, at least somewhat.

Economic Impacts: Trip limits can potentially reduce the overall daily landings of king mackerel, especially if they are more restrictive than current harvest levels; however, if the number of participating vessels is not controlled, trip limits would not achieve their intended objectives. In this particular case, more costs would be introduced into the fishery. On the other hand, if the more efficient vessels are constrained to harvests far less than demanded by scale economies, at least some portion of these vessels would be expected to exit the fishery, lessening the negative effects of the derby fishery. Some efficiency in the industry may be lost.

Table 9, which includes data from logbook records submitted by vessels with reef fish permits, shows the average catch of king mackerel per trip by vessels in various states in the Gulf. On average for all reporting vessels, catch per trip does not exceed 3,000 pounds. While a trip limit

of 3,000 pounds under Proposed Alternative 2.7.1 would allow many vessels to harvest their usual amount of king mackerel, there are apparently some that would be severely impacted by the trip limit. Some vessels in Louisiana making trips of more than 2 days catch as much as 9,000 pounds. On average, however, these vessels catch from about 3,000 to 4,000 pounds per trip (Table 9).

A choice of trip limits other than 3,000 pounds involves a trade-off between industry costs and revenues. A lower trip limit, e.g., 500 pounds, would tend to bring about a longer season with relatively higher prices than a 3,000-pound trip limit; but it would penalize larger vessels, resulting in industry-wide increases in cost per trip. It may be noted that of the total king mackerel landings in the Western Gulf, 70 percent has been made by vessels with commercial reef fish permits and about 50 percent has been made by those permitted vessels with red snapper endorsements (Class 1 licenses under Amendment 15). These latter vessels are generally larger and can make trips that last more than 2 days. This serves as a good indication that many vessels would incur higher costs per trip by adopting a 500-pound king mackerel trip limit. This increase in industry cost is not likely to be compensated for by an increase in revenue, thus resulting in lower profits. As the profitability of larger vessels falls, a different fishery configuration in which smaller vessels dominate is bound to evolve. It is not determinable with given information whether the replacement of larger vessels by smaller vessels would bring about an increase in industry profitability.

A higher trip limit between 3,000 pounds and 4,000 pounds is likely to bring about the same effects as a 3,000-pound trip limit considering the fact that the average landing per vessel per trip is around these numbers. A substantially higher trip limit, e.g., 9,000 pounds, would likely maintain the status quo wherein the fishing season gets shorter, as illustrated in Table 6. As experience with shorter seasons has shown, ex-vessel prices have stayed at very low levels especially during July, which is the start of the season (see Table 8 of Vondruska, 1998). At a given cost per trip, such depressed prices are expected to lower vessel profits. While it is true that a 3,000-pound trip limit would tend to raise the cost per pound of fish harvested, such an increase in cost is likely to be compensated for by an increase in revenues due to relatively higher prices. There is then a good chance that profitability at the 3,000-pound trip limit would be higher than at substantially higher trip limits.

2.8 Restrictions on the use of net gear to harvest king mackerel in the Florida west coast of the Eastern Zone (South/West Area)

2.8.1 Rejected Alternative - Establish a phase-out period of 5 (or 10) years for net gear used to harvest king mackerel in the Florida west coast of the Eastern Zone (South/West Area)

2.8.2 Proposed Alternative - Establish a moratorium on the issuance of commercial king mackerel gill-net endorsements. Reissue commercial king mackerel 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):

Proposed Option a - had landings of king mackerel using a gill net in one of the two fishing years 1995-96 or 1996-97 as verified by NMFS or trip tickets from the FDEP

Rejected Option b - had landings of king mackerel using a gill net in one (or two) of the three fishing years 1995-96, 1996-97, and 1997-98 as verified by NMFS or trip tickets from the FDEP

A vessel that received a permit through transfer from another vessel that met the qualifications in (1) and (2) above between the close of the season in fishing year 1995-96 and the effective date of regulations implementing this amendment would also qualify for a commercial king mackerel gill net endorsement.

2.8.3 Transferability of gill net endorsements

Rejected Option a Following implementation of this amendment, commercial king mackerel gill net endorsements may only be transferred by the owner to another vessel that he owns, and not to a vessel with another owner

Proposed Option b Commercial king mackerel gill net endorsements may be transferred to immediate family members (son, daughter, father, mother, or spouse) only

Rejected Option c Status Quo - permits and endorsements are freely transferable

2.8.4 Proposed Alternative - Prohibit the use of gill nets or any other net gear for the harvest of Gulf group king mackerel, except:

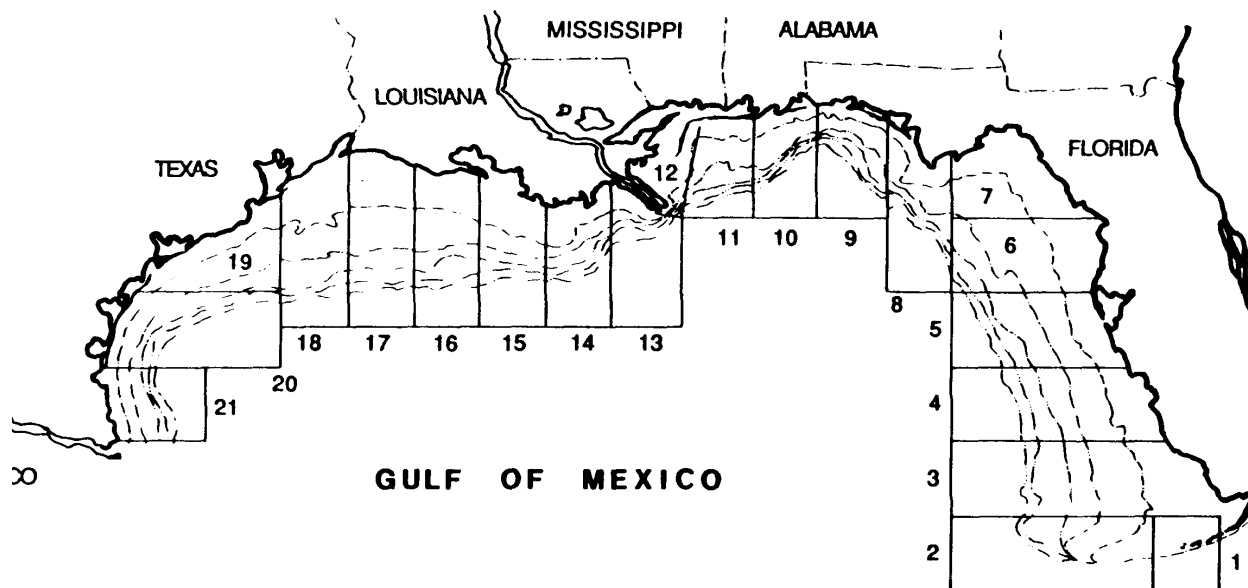
Rejected Option a: in NMFS Statistical Grids 1, 2, and 3 (Figure 4)

Proposed Option b: south of an east/west line at the Collier/Lee county line

Rejected Option c: In the Gulf EEZ north of 25° North Latitude

2.8.5 Alternative - Status Quo - no change

Figure 4. Statistical grids for the U.S. Gulf of Mexico.



Discussion: Gill nets have historically been used in the directed fishery for Gulf group king mackerel in Monroe County on the Florida west coast and on the east coast of Florida. Conflicts between gill net fishermen and hook-and-line fishermen have been ongoing. In recent years, the South Atlantic Council reduced trip limits for gill net vessels to levels too low for profitable operations. Additionally, the state of Florida has banned the use of gill nets and other entangling nets in state waters. A phase-out of gill nets used in the directed fishery would be consistent with the actions taken by the South Atlantic Council and the state of Florida, and a 5 or 10 year period should allow fishermen to recover their investments. They could also be allowed to continue in the fishery using hook-and-line gear.

On the other hand, the gill-net fishery, as opposed to the hook-and-line fishery has the greater historical participation and perhaps a greater dependence on king mackerel. Furthermore, this segment of the fishery has the fewest number of participants (only about 16 vessels in 1996); and it is conducted only during a short period, usually December and January. Gill net landings, trips, and landings per trip are shown in Table 10. Rather than phasing-out participants in the gill-net fishery, existing vessels could be grandfathered into the fishery by establishing a moratorium on the issuance of additional gill net endorsements. In addition to prohibiting new licenses, transfer of existing endorsements to use gill nets to harvest king mackerel could also be prohibited. Over time, the number of participants would probably decline as gill net fishermen exit the fishery, and endorsements are not renewed. On the other hand, transfer could be allowed only within the immediate family of the current endorsee which would preserve family fishing traditions, or transfer could be open. These alternatives would preserve the existing and historical participation in the gill net fishery while precluding it from growing as the stock rebuilds. With only a small number of vessels in the fishery, it is relatively easy to monitor.

Since the commercial gill net fishery for king mackerel is almost exclusively conducted in the Florida Keys region off Monroe and Collier counties, prohibition of gill net fishing outside of the traditional fishing area (Monroe and Collier County) would also help prevent further expansion of this fishery that could cause increased problems with enforcement, monitoring programs, and other participants in the fishery. This prohibition alone, without further restrictions on the issuance of new endorsements or transfer of existing endorsements could, however, result in increased concentration of fishing pressure in a relatively small area. Localized overfishing would likely be the result.

Economic Impacts: If gill nets are eventually prohibited in the king mackerel fishery, hook-and-line vessels will probably be able to take that share of TAC over some period of time. There could be possible quota underruns in the short term, particularly because the Gulf king mackerel season in the Florida Keys is not long; but in the long term and even if their numbers do not increase due to the moratorium on king mackerel permits, hook-and-line vessels would adjust their fishing capacity and harvest the entire quota. Over time then, a simple reallocation of landings and ex-vessel revenues would take place. There could be some untoward repercussions on some dealers/processors that mainly cater to large catches by net vessels, but then again adjustments would be made over time.

What might not be amenable to adjustments over time in the event nets are banned in the fishery is the loss in investments to the net vessels and the possible loss in efficiency for the entire fishery. While net vessels may not totally cease operation as they can still pursue their operations in other fisheries, including Spanish mackerel, they would stand to lose the use of their net gear and associated equipment. They would also lose the most profitable use of their vessels at certain times of the year. Although the revenues from mackerel landings forgone by net vessels would eventually be recouped by hook-and-line vessels, some industry profitability would be lost in the process. The extent of such loss is not known. One may surmise that the loss would be relatively small considering that only a few vessels (12 to 20) are engaged in the net fishery; however, these few vessels also harvest half of the commercial quota for the west coast of Florida. Consequently, their contribution to industry profitability may not be considered insignificant.

In light of this discussion, the moratorium and/or the non- or limited- transferability of permits options may be adjudged better than the phase-out option. Either of these options would probably be more effective in limiting or reducing net fishing effort than the prohibition of net fishing in areas other than statistical grids 1 through 3. The concentration of the net fishery in these three areas is most likely determined by the relative cost of fishing. Restricting net vessels to fish in these areas may not affect the profitability structure of the vessels. It does, however, limit the potential to explore other areas where it may be less costly to fish. In addition, the number of net vessels may not be constrained so that additions to the existing fleet may only diminish the profitability of the net fishery.

2.9 Size Limits

2.9.1 Proposed Alternative - Increase the minimum size limit for Gulf group king mackerel from 20 inches to 24 inches FL

2.9.2 Rejected Alternative - Increase the minimum size limit for Gulf group king mackerel from 20 inches FL to up to 26 inches FL via the framework seasonal adjustment

2.9.3 Rejected Alternative - Status quo - the minimum size limit remains at 20 inches FL

Discussion: In 1996, the Council considered increasing the minimum size limit for recreational and for-hire fishing in order to reduce TAC overruns. About a 12 percent reduction in catch was needed in order to maintain the existing 2-fish bag limit at the expected level of effort. Holiman (1996) estimated that adjusting the minimum size alone would require a uniform increase to approximately 28 inches FL.

The biological effects of increasing the minimum size on the king mackerel stock in the Gulf are unknown; however, an increase to 24 inches FL or 26 inches FL would likely allow additional fish to spawn. Finucane et al. (1986) estimated the smallest size at maturity at between 18 and 20 inches FL; however, only 50 percent of females were mature at about 22 to 24 inches FL. One hundred percent maturity for females was not reached until between 33 and 35 inches FL. Although Finucane et al. (1986) indicated that their data corresponded with other authors, most of the other studies that they cited reported slightly larger size limits at maturity.

The no change option would probably result in continued overruns of the recreational allocation of TAC unless other management measures are enacted. Additionally, it could have a negative effect on recruitment since few fish at the current minimum size have reached sexual maturity. To assess this potential, the size distribution of recreational and commercial catches would have to be determined along with estimates of release mortality. These data and analyses are currently not available.

Economic Impacts: As discussed above, the biological impacts of the Proposed Alternative are unknown, although there is some possibility of allowing additional fish to spawn. Fifty percent of the female king mackerel population has been reported to mature between 22 and 24 inches

FL, but the potential benefit from a higher size limit has to be tempered by the potential increase in release mortality.

The amount of commercial harvest reduction due to an increase in the minimum size limit is also unknown. While it can be contended that fishing costs could possibly increase under the Proposed Alternative due to additional sorting of fish, public testimonies to the Council appear to indicate that a 24-inch FL minimum size limit has minimal negative effects on the commercial harvest.

On the recreational sector, the higher minimum size limit could affect an unknown number of angler trips. Holiman (1996) developed length frequency information of recreationally landed king mackerel in the Gulf using 1994-95 pooled Marine Recreational Fisheries Statistics Survey (MRFSS) intercept data. This information revealed that an increase in the minimum size limit from 20 to 24 inches FL would affect approximately 9.7 percent of charterboat landings and 10.8 percent of private mode landings, or about 10 percent on combined charter and private boat harvests. To some extent, this potential reduction would place some control on recreational landings, especially the charter mode whose landings have steadily increased through the years. This potential reduction would be equivalent to two-thirds of the 16 percent recreational harvest overruns in the 1997-98 season. One very important note to bring out here is the fact that this calculation of the effects of a minimum size limit increase uses MRFSS data only. Headboat and Texas data on angler catch frequency information could change the magnitude of effects. Additionally, translating this potential reduction in harvests into reduction in angler economic benefits cannot be done due to the absence of some vital information discussed earlier in connection with the determination of the impacts of TAC selection.

While both the commercial and recreational sectors have consistently exceeded their respective allocations of king mackerel, overages in the recreational sector are higher than those of the commercial sector. Last year's increase in TAC (to 10.6 million pounds) was contended to accommodate both sectors' overages. Noting, however, the no-closure rule for the recreational sector and closure rule for the commercial sector, the likelihood still exists for the recreational sector to exceed its allocation. An overage occurred last year under the increased TAC of 10.6 million pounds when the recreational sector exceeded its allocation by about 16 percent; however, under the higher TAC, it was substantially less than the 35 percent overrun in 1996-97 (MSAP 1998). Reducing the current recreational bag limit of 2 fish per person per day could have marked reductions in angler consumer surplus and for-hire vessel profits. A size limit increase may be a less costly approach to reducing catch.

The various alternatives have the potential to reduce recreational catch of king mackerel in varying degrees depending on the minimum size limit chosen. Such reductions would readily translate to reductions in angler surplus and for-hire vessel profits. Unless a very high size limit is chosen, reductions from size limit changes may be deemed less than those brought about by bag limits, lower allocations, or closures. All these measures to control recreational harvest may be partly offset by an increase in benefits from catch and release practices. In his study of the recreational mackerel fishery, Milon (1991) found that released catch generally yielded higher

trip success elasticity (1.3) than kept catch (0.8). This may partly indicate that if an increase in the size limit promotes an increase in the practice of catch and release, there may ensue some increases in trips taken by anglers, assuming of course that bag limits are not set at a very low level. Such increases in trips, if taken on for-hire vessels, could potentially lead to higher revenues and possibly profits for this segment of the recreational fishery.

2.10 Establish a purse-seine allocation for Gulf group Spanish mackerel

2.10.1 Rejected Alternative - Reestablish an annual purse seine allocation for Gulf group Spanish mackerel of 300,000 pounds.

Discussion: With the implementation of Amendment 2 in 1987, the Council eliminated the 300,000 pound allocation of TAC for the purse seine fishery in the Gulf; however, the Council continued to allow a bycatch of 10 percent by weight or number (whichever is less). This action was taken because of the stressed condition of the stock and the Council's objective to rebuild the stock to the level of MSY. In taking this action, the Council noted that the purse seine fishery was not a large historical segment, and the Council felt that it was imprudent and unfair to allow a new entrant when other historical users were being forced to reduce catches to allow for recovery of the stock. However, in Amendment 2 the Council stated, "When a stock or migratory groups of overfished mackerel recovers to the level that it can produce MSY and when traditional commercial fishermen are not taking their allocation, the Councils will re-evaluate the use of purse seines at that time." At the time this action was taken, the purse seine fishery in the Gulf was taking only about 3 percent of its TAC, an annual average of 10,400 pounds for 1984 and 1985, mostly as bycatch. In addition, with the implementation of the ban on entangling nets in Florida waters in 1995, landings from the historical gill net segment of the fishery have declined dramatically. The MSAP Report (1997) estimated the ABC range of between 5.5 and 13.9 million pounds with the 50th percentile mark of 9.0 million pounds. The MSAP Report (1997) also reported that the total commercial catch for 1994-95 was only about 2.5 million pounds. These landings dropped to only 1.07 million pounds in 1995-96 and 0.6 million pounds in 1996-97 (MSAP Report 1998). The MSAP Report (1998) estimated the ABC range at 7.3 to 14.1 million pounds with the median at 10.3 million pounds.

With the approval of Amendment 8, the Council revised its goal with regard to rebuilding the Spanish mackerel stocks to an OY of 30 percent static SPR. The 1997 and 1998 stock assessments of Gulf group Spanish mackerel concluded that the stock was not overfished and was not undergoing overfishing. Transitional SPR increased from 31 percent in 1997-98 to a projected level of 35 percent for the 1998-99 fishing year. Based on the most recent fishing mortality rates, static SPR was estimated at 47 percent, which is above the 30 percent criterion for overfishing.

2.10.2 Rejected Alternative - Establish an annual allocation of TAC for the purse seine fishery of up to 50 percent of the commercial allocation.

Discussion: Currently, TAC for Gulf group Spanish mackerel is set at 7.0 million pounds; 57 percent (3.99 million pounds) of which is allocated to the commercial fishery and 43 percent (3.01 million pounds) to the recreational fishery. Based on this alternative, the current TAC, and the current level of fishing (about 1.0 million pounds), the purse-seine fishery could be allowed to harvest up to approximately 2.9 million pounds without an overrun. An allocation of TAC would probably not result in overfishing of the stock provided that total landings did not exceed the 50th percentile mark of ABC which was estimated at 9.0 million pounds in 1997 and 10.3 million pounds in 1998. Allowance of a purse seine allocation at or above the previously approved level of 300,000 pounds would probably not result in overfishing unless the other factions of the commercial fishery significantly increased their harvest, or there was an increase in recreational fishing pressure.

2.10.3 Rejected Alternative - Establish allocations in accordance with Section 2.10.1 or 2.10.2 above for:

Option a. the area of the EEZ from Cape San Blas, Florida through Texas

Option b. the entire Gulf EEZ

Discussion: As previously noted the current commercial catches, which are almost exclusively gill net catches, are very low, primarily due to the ban on entangling nets in Florida's state waters. Although catches have been made in the EEZ they are small, and it is unlikely that any significant gill net fishery could develop in areas west of Cape San Blas, Florida. Increased catches in south Florida where the historical gill net fishery has been conducted are possible, but the trend in this area has been a sharp decline rather than an increase; while at the same time there have been increasing reports of larger Spanish mackerel being caught which is indicative of healthier stocks. This conclusion is also supported by the most recent stock assessments. Consequently, it is unlikely that the historical gill net fishery would be negatively impacted by a purse seine allocation, at least in the short term, and particularly if purse seines are only allowed in areas of the EEZ west of Cape San Blas, Florida.

2.10.4 Rejected Alternative - If a commercial allocation of Gulf group Spanish mackerel is established for the purse-seine fishery, establish trip limits of:

Option a. 10,000 pounds

Option b. 25,000 pounds

Option c. 50,000 pounds

Discussion: If a commercial catch of Gulf group Spanish mackerel is allowed by purse seines, the inclusion of trip limits could be used to preclude a rapid expansion of this fishery. As noted, the current commercial fishery is rather inactive; however, purse seines are efficient gear that have the capability, under certain conditions, of taking large amounts of fish in a comparative

short period of time as opposed to gill nets or hook-and-line gear. As such, trip limits could be used as a buffer against a surge in landings that might impact traditional users and potentially jeopardize the recent recovery of Gulf group Spanish mackerel stocks.

2.10.5 Proposed Alternative - Status Quo - no change

Discussion: Continuing the prohibition of catch by purse seines would provide the greatest measure of protection for the Gulf group Spanish mackerel stocks and existing users. As previously noted these stocks have only recently recovered above the overfished level. Although the current level of effort is very low and the stock biomass is rapidly increasing, the transitional SPR values for the stock have only climbed above the overfished threshold of 30 percent in the last two years. Since recruitment is generally stable (MSAP Report 1998), biomass levels are mainly being effected by the reduction in fishing mortality. A rapid increase in fishing mortality as a result of reintroducing purse seines could have a direct and rather sudden effect on biomass and the status of the stock; however, such a rapid increase in landings by the purse seine fishery would be unlikely unless the fishery were relatively uncontrolled.

Economic Impacts: Purse seine fishing for mackerels in the EEZ was introduced in 1983 mainly for study purposes. Amendment 1 allocated to purse seine vessels specific quotas of 284,000 pounds of Gulf group king mackerel, 400,000 pounds of Atlantic group king mackerel, 300,000 pounds of Gulf group Spanish mackerel, and 300,000 pounds of Atlantic group Spanish mackerel. Such allocations, however, were temporary and mainly used for study purposes. Amendment 2 discontinued the allocation to purse seine vessels for the following reasons: (1) purse seine boats are not historic participants in the mackerel fishery; (2) it is imprudent and unfair to introduce a new user group into a stressed fishery while existing, historic users are forced to limit catches because of reduced allocation; (3) the Councils are allocating the resource fairly based on traditional use to the greatest number of fishermen; (4) the use of purse seine for mackerel is inconsistent with the management procedures in all adjacent state waters; and, (5) the marginal value of a fish allocated to the traditional commercial fisheries is higher than that of a fish allocated to the purse seine fisheries, given quota underruns in the purse seine sector and potential closures in other sectors.

These reasons are still valid with respect to the Gulf group king mackerel fishery, but appear to be relatively weak when applied to the Gulf group Spanish mackerel fishery, with the obvious exception of the ones relating to the non-historic nature of purse seines and inconsistency with state regulations.

For a variety of reasons, both the commercial and recreational sectors have not reached their respective allocations of Gulf group Spanish mackerel for a number of years. Low commercial landings have partly been attributed to low ex-vessel price for Spanish mackerel, weather conditions, less schooling of fish, presence of sharks in the fishing areas, and most recently the Florida net ban. No reasons have been forwarded for low recreational catches; however, some have partly attributed this to the resurgence of king mackerel stocks. Through the 1990's, Gulf group Spanish mackerel have been declared by the Mackerel Stock Assessment Panel (MSAP)

as not overfished. These conditions appear to imply that some benefits in the Gulf Spanish mackerel fishery may have been forgone. Various options considered in this section to re-introduce purse seine into the fishery may be viewed as offering some potential to realize these forgone benefits.

A study on purse seine vessels was conducted from March 1983 through March 1986, with observers placed on 53 vessel trips in the Gulf and 252 vessel trips in the Atlantic (Fable and Nakamura, 1986). Of the observed trips in the Gulf, only 7 trips (4 in Louisiana and 3 in the Florida Keys) recorded catches of Spanish mackerel and none for king mackerel. Catches of Spanish mackerel in these 7 trips ranged from 1,319 pounds in Louisiana to 10,893 pounds in the Florida Keys, and averaged at 6,622 pounds per trip. Trips in the Florida Keys caught relatively negligible amounts of other species while those in Louisiana caught substantial amounts of red drum, black drum, and little tunny. For the whole study, the highest catch of 66,600 pounds of Atlantic group Spanish mackerel was observed on a trip off of Fort Pierce, Florida. While purse seine vessels, especially the larger ones, reportedly have the capacity to catch a large number of fish, the mentioned study appears to imply that Gulf group Spanish mackerel catches by purse seine vessels are not likely to be relatively large, although there is a good likelihood that catches of other species could be substantial.

If Spanish mackerel catches increase as a result of the re-introduction of purse seine, prices may be expected to decrease although by a lesser percentage than that for catches since demand for Spanish mackerel may be regarded as inflexible. These catches may be expected to depress prices of Spanish mackerel and other species. With depressed prices, some of the smaller vessels now landing Spanish mackerels may be forced out of the fishery. To the extent, however, that purse seine vessels may be perceived as more efficient than other vessels, their re-introduction into the Spanish mackerel fishery may improve the efficiency of the fishery. This gain in efficiency, however, may be achieved at the expense of other vessels.

2.11 Retention and Sale of Cut-Off (damaged) Fish

2.11.1 Proposed Alternative - Allow the retention and sale of cut-off (damaged) legal-sized king and Spanish mackerel within established trip limits

2.11.2 Alternative - Status Quo - king and Spanish mackerel must be maintained with head and fins intact, except that five (5) cut off king mackerel may be retained, but not sold

Note: In approving the Proposed Alternative, the Council is not negating the current federal rule allowing retention of 5 cut-off fish that cannot be sold, since the Council did not specifically reject Alternative 2.11.2

Discussion: Oftentimes, king and Spanish mackerel are “cut-off,” or have their tails bitten off, by sharks or barracudas before they can be landed. These fish have a reduced market value; however, they can be used as food. In considering Amendment 8, the Gulf and South Atlantic Councils approved of possession of up to 5 cut-off king mackerel with the provision that these fish could not be sold. One consideration in making this decision was enforceability of

minimum size limits through regulations that required fish to be landed with heads and fins intact. Although these fish have a reduced value, they do have value and could be sold. Consequently, the Councils reconsidered sale of cut-off fish provided that the number of cut-off fish or the poundage does not exceed the established trip limit for the area of capture, and each retained carcass must meet the established minimum size limit for whole fish, except for the 5-fish allowance that cannot be sold. This provision would allow fishermen to recover some of the value of the fish when there is a high incidence of cut-off fish and prevent waste. On the other hand, since the trip limits for the east and west coasts of Florida, where there is the highest incidence of “cutting-off,” are relatively low (50 fish and 1,250 pounds, respectively), it may not be cost effective to retain these fish.

Economic Impacts: Cut-off fish necessarily add to total mortality, and would be wasted and not included in determining total mortality for assessment purposes if not brought aboard the vessel for sale or personal consumption. Alternative 2.11.2 (status quo) allows a commercial vessel to exceed the trip limit with possession of 5 cut-off fish which cannot be sold while Proposed Alternative 2.11.1, taken by itself, does not allow a vessel to exceed its trip limit even with the possession of cut-off fish which can be sold. Of important significance here is that the Council, in adopting Proposed Alternative 2.11.1, did not specifically reject Alternative 2.11.2. The implication of that action is that vessels can still exceed the trip limit by no greater than 5 cut-off fish, but the excess cannot be sold.

Considering that cut-off fish commands lower ex-vessel price and that most vessels are likely to meet their trip limits, there exists a good likelihood that cut-off fish would be discarded, except those in excess of the trip limits but no more than 5 fish. In addition, the proviso that retention of cut-off fish must abide by the size limit rule, except for the 5-fish allowance that cannot be sold, makes possession of cut-off fish even less desirable. What Proposed Alternative 2.11.1 does is to allow the possibility that cut-off fish be counted towards the trip limits and not be entirely wasted. In effect then, the adoption of Proposed Alternative 2.11.1 would allow for the possibility that cut-off fish may exceed 5-fish and be sold provided that any cut-off fish of up to 5 fish in excess of the trip limit may not be sold. This action, in conjunction with the status quo, would allow cut-off fish not to be wasted and be included as a source of mortality in stock assessment.

The major downside of the Council’s action in this regard is that the enforcement problem accompanying the status quo would remain and may even be exacerbated by Proposed Alternative 2.11.1.

3.0 REGULATORY IMPACT REVIEW

3.1 Introduction

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: (1) it provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action, (2) it provides a review of the problems and policy objectives prompting the

regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem, and (3) it ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost effective way.

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

This RIR analyzes the probable impacts on fishery participants of the proposed plan amendment to the Fishery Management Plan for Coastal Migratory Pelagic Resources in the Gulf of Mexico and South Atlantic.

3.2 Problems and Objectives

The general problems and objectives are found in the FMP, as amended, and Sections 1.2 and 1.3 of this document. Section 1.5 specifies the purpose and need for the present plan amendment. The current plan amendment addresses the following issues: (1) change in fishing year for Gulf group of king mackerel, (2) sale of king and Spanish mackerel, (3) Gulf group king mackerel reallocation of TAC between areas and between the commercial and recreational sectors, (4) further subdivisions of the Florida west coast of the Eastern Zone, (5) quota allocations of the commercial Gulf group king mackerel hook-and-line fishery of the Florida west coast of the Eastern Zone by subzones, (6) subdivision of the commercial king mackerel allocation in the Western Zone, (7) vessel trip limits for the commercial sector in the Western Zone, (8) restrictions on the use of net gear to harvest king mackerel in the Florida west coast of the Eastern Zone, (9) king mackerel minimum size limit, (10) purse seine allocation for Gulf group Spanish mackerel, and (11) retention and sale of cut-off fish.

3.3 Methodology and Framework for Analysis

This RIR assesses management measures from the standpoint of determining the resulting changes in costs and benefits to society. To the extent practicable, the net effects are stated in terms of producer surplus to the harvest sector, net profits to the intermediate sector, and consumer surplus to the final users of the resource.

In addition to changes in the surpluses mentioned above, there are public and private costs associated with the process of changing and enforcing regulations on the reef fish fishery. A simple estimation of these costs is made in this document.

Ideally, all these changes in costs and benefits need to be accounted for in assessing the net economic benefit from management of coastal pelagic resources. The RIR attempts to determine these changes to the extent possible.

3.4 Impacts of Management Measures

The discussions under the “Economic Impacts” sub-heading in Section 2 comprise the bulk of the impact analysis for RIR purposes, and are included herein by reference.

3.5 Public and Private Costs of Regulations

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

Council costs of document preparation, meetings, public hearings, and information dissemination	\$40,000
NMFS administrative costs of document preparation, meetings and review	25,000
Law enforcement costs	345,000
Public burden associated with licenses	none
NMFS costs associated with licenses	none
 TOTAL	 \$410,000

With the exception of enforcement costs, these costs pertain mainly to the initial implementation of Amendment 9. The estimated enforcement costs are relatively high, but not all are attributable to the measures proposed in this amendment. NMFS enforcement personnel estimated these costs as one that is required to raise the current level of enforcement in the mackerel fishery and other fisheries, including the measures proposed in this amendment. Part of the estimated cost calls for hiring of three additional enforcement personnel strategically placed around the Gulf. There is projected to be no additional burden associated with permitting requirements since current reporting and permit requirements would be maintained.

3.6 Summary of Economic Impacts

This section presents a summary of economic impacts, with particular emphasis on the effects of the proposed alternatives.

The Proposed Alternative 2.1.5, status quo, would not have any additional economic impacts on the commercial or recreational fisheries.

Prohibiting the sale of recreationally caught king mackerel, as embodied in Proposed Alternative 2.2.2 (Option a), would reduce the income of the crew of for-hire vessels. This loss could range from approximately \$125,000 to \$250,000, assuming for the upper limit that sales of fish by

charterboats made during the open commercial fishing season were from fish caught in charter trips. This range of reduction further assumes that Florida also disallows the sale of king mackerel caught in charter trips in state waters. If effective, the sale prohibition could benefit the commercial hook-and-line fishermen in western Florida in terms of having access to a larger share of the quota and those in eastern Florida in terms of less competition for marketing of fish landed.

Proposed Alternative 2.3.3 would slightly change the allocation of the Eastern Zone commercial quota between the Florida east coast and Florida west coast. Given the landings performance of vessels in both areas, the proposed reallocation in favor of the Florida west coast would bring about an increase in overall industry profitability. This increase, however, needs to be tempered by the potential of forgone benefits to vessels in the Florida east coast by not increasing their trip limits.

Being the status quo, Proposed Alternative 2.3.5 has no impacts on fishing participants. A different allocation, as contained in Rejected Alternative 2.3.4 presents distributional effects that are not readily apparent considering the direction of change in the allocation. Under the assumption that catches by the for-hire vessels are counted against the recreational allocation, the a change in the commercial/recreational allocation under Rejected Alternative 2.3.4 would effectively benefit the commercial sector given the increasing harvests of the for-hire sector. On the other hand, if the catches by the for-hire sector that are sold remain to be counted against the commercial quota, the commercial sector would stand to lose in the allocation. In the absence of appropriate economic valuations, the economic effects of any change in allocations cannot be estimated.

Proposed Alternative 2.4.1 (Option b) in conjunction with Proposed Alternative 2.5.5 are likely to complicate the management of the king mackerel fishery, especially from an enforcement and monitoring aspects. However, these alternatives could potentially address the social conflict arising from the de facto reallocation of the hook-and-line quota in the Florida west coast in favor of Panhandle vessels.

Proposed Alternative 2.6.4, which maintains the status quo with respect to possible partitioning of the Western Zone's commercial king mackerel quota, has no impacts on fishery participants. The effects of the proposed trip limit under Proposed Alternative 2.7.1 cannot be determined, both in terms of direction and magnitude. While this alternative would potentially mitigate the derby nature of the fishery, it would also introduce inefficiencies on larger vessels; and at the same time, it would not necessarily lengthen the fishing season if no additional vessel entry restrictions are imposed.

Proposed Alternative 2.8.2 (Option a), which would impose a moratorium on the issuance of commercial king mackerel gill-net endorsements, would probably not have an immediate impact on the 12 or so active vessels in the fishery. These vessels are currently filling the net fishery quota in a relatively short time. What the moratorium does, however, is to limit the potential number of participants in the net fishery. This effect would be strengthened by Proposed

Alternative 2.8.3 (Option b). Given a fixed quota for the net fishery, Proposed Alternative 2.8.4 (Option b) would tend to eliminate potential increases in profitability due to possible reduction in fishing cost by fishing in other areas.

Proposed Alternative 2.9.1, which would increase the minimum size limit from 20 to 24 inches FL, has generally unknown impacts on producer and consumer surplus for both the commercial and recreational sectors. While a higher minimum size limit would tend to increase fishing costs, public testimonies appear to reveal that the commercial sector would be minimally affected. The recreational sector would potentially experience harvest reduction of approximately 10 percent. Noting, however, that without a closure for the recreational sector, such a reduction is unlikely to occur.

In principle, Proposed Alternative 2.10.5 has no impacts on fishery participants, since it would maintain the status quo of prohibiting the re-entry of purse seine vessels in the Gulf group Spanish mackerel fishery. However, considering the large under-harvest of the commercial quota for Gulf group Spanish mackerel, the potential for generating additional net profits would be impeded by this alternative to continue the prohibition of the use of purse seines in the Gulf group Spanish mackerel fishery.

Proposed Alternative 2.11.1, without rejecting Alternative 2.11.2 (status quo) would minimize the practice of discarding cut-off fish in the event that trip limits are not exceeded by more than 5 cut-off fish. However, the enforcement problem accompanying the status quo remains and could possibly be exacerbated by the proposed action.

Enforcement costs are estimated at \$345,000, but this cost is not totally attributable to the current amendment. This cost level would allow hiring of three additional positions strategically placed around the Gulf to enforce mackerel and other fishery regulations, including the proposed measures under this amendment.

3.7 Determination of Significant Regulatory Action

Pursuant to Executive Order 12866, a regulation is considered a "significant regulatory action" if it is likely to result in a rule that may: (1) have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of the recipients thereof; or (4) raise novel, legal, or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

The entire commercial Gulf group king mackerel fishery is valued at approximately \$4.2 million, which is significantly less than \$100 million. There is no adequate valuation of the recreational fishery. Considering the size of the fishery, the fact that the various measures considered are likely to affect only certain segments of the mackerel fishery, and the findings that the measures considered in this amendment do not significantly affect the total revenues generated by the mackerel commercial sector and for-hire sector other than in a more distributive manner, a \$100 million annual impact due to this amendment is not likely to happen. Prices of mackerel to consumers are not expected to substantially increase as a result of this amendment, since virtually the same amount of landings, constrained by the quota, may be expected from the commercial fishery. Even in the extreme case of the net fishery being forced out of the fishery through attrition, this segment's current allocation is very likely to be taken by other segments of the commercial fishery. The ban on sale of fish caught in charter trips could initially raise the price, but the market could be readily filled by the commercial sector, especially by vessels on the Florida east coast. The trip limit in the Western Zone could also initially raise the price, but then again vessels in the area could readily pick up whatever slack is created by this trip limit. Overall cost increases to the commercial and for-hire mackerel industries are expected to be insignificant, even with an increase in the minimum size limit. Estimated costs to the federal government are placed at \$345,000, but not all of them are the result of implementing this amendment. Of the measures considered, only the ban on sale of fish caught in for-hire trips and the trip limit in the Western Zone may be expected to have some adverse effects on employment, competition, and investment. These impacts cannot be quantified; but to the extent that most of these impacts are confined mainly to certain segments of the mackerel fishery, they may be considered relatively small from the standpoint of the entire industry or geographical area.

The proposed regulation does not, in general, interfere or create inconsistency with an action of another agency, including state fishing agencies. It may be noted, however, that the proposed increase in the minimum size limit for king mackerel and the ban on sale of fish caught in charter trips may be inconsistent with some states' rules. If approved, the various states will be informed of this condition so that they can adjust their regulations accordingly. The proposed regulation does not 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.

3.8 Initial Regulatory Flexibility Analysis

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

All of the commercial mackerel harvesting entities affected by the rule will qualify as small business entities because their gross revenues are less than \$3 million annually. In addition, for-hire vessels in the Gulf affected by the proposed rule generally earn less than \$5 million in annual revenues and are thus considered to be small business entities. Hence, it is clear that the criterion of a substantial number of the small business entities comprising the commercial mackerel harvesting industry and the for-hire sector being affected by the proposed rule will be met in general. Some qualification to this general effect will be discussed below. The outcome of "significant impact" is less clear but can be triggered by any of the five conditions or criteria discussed below.

The regulations are likely to result in a change in annual gross revenues by more than 5 percent. Of the 11 sets of measures, only the ones pertaining to the minimum size limits on king mackerel, the trip limit in the Western Zone, and prohibition on sale of king mackerel by for-hire vessels are likely to reduce gross revenues of commercial and for-hire vessels. Of these, the prohibition on sale of king mackerel by for-hire vessels would have a marked reduction in vessel revenues that could amount to more than 5 percent. The trip limit in the Western Zone could also impinge on the income of some vessels in the area, but the magnitude of such effects cannot be quantified.

Annual compliance costs (annualized capital, operating, reporting, etc.) increase total costs of production for small entities by more than 5 percent. In general, there is no additional public burden required to comply with the provisions of this amendment. The only potential burden can arise from the proposed moratorium on the issuance of commercial king mackerel gill net endorsements, but the burden requirement under this proposal is considered part of the current practice of renewing permits and endorsements.

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 adversely impacted by the rule are small entities and hence there is no differential impact.

Capital costs of compliance represent a significant portion of capital available to small entities, considering internal cash flow and external financing capabilities. General information available as to the ability of small business fishing firms to finance items such as a switch to new gear indicate that this would be a problem for at least some of the firms. The evidence is that the banking community is becoming increasingly reluctant to finance changes of this type, especially if the firm has a history of cash flow problems. For-hire vessels that are now heavily

dependent on sale of recreationally caught king mackerel are the ones that are likely to be affected in this fashion.

The requirements of the regulation are likely to result in a number of the small entities affected being forced to cease business operations. This number is not precisely defined by SBA but a "rule of thumb" to trigger this criterion would be two percent of the small entities affected. The moratorium on the issuance of commercial king mackerel gill net endorsements would eventually drive some net vessels out of the king mackerel fishery, but this cessation of fishing may be attributed more to the performance of subject vessels than to the moratorium itself. It is expected that not all the 12 to 20 net vessels may cease king mackerel fishing. The proposed change in size limits on Gulf group king mackerel would also reduce the financial viability of some commercial and for-hire vessels, but those affected are not expected to cease operation entirely. The proposed ban on sale of king mackerel by the for-hire vessels would result in relatively significant reduction in vessel and crew income, but it is not expected to force any for-hire vessel operations out of business. The trip limit in the Western Zone could also result in some vessels generating lower income, but it is very unlikely that any of these vessels would cease operation because of the trip limit.

Primarily because of ban on sale of king mackerel by for-hire vessels and the potential cumulative effects of the other restrictive measures, the conclusion is that small businesses will be significantly affected by the proposed rule. Hence, the determination is made that the proposed rule will have a significant economic impact on a substantial number of small business entities and an IRFA is required.

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

Description of the reasons why action by the agency is being considered: The need and purpose of this action are set forth in Section 1.5 of this document.

Statement of the objectives of, and legal basis for, the proposed rule: The specific objectives of this action and the general objectives of the Coastal Migratory Pelagics FMP are enumerated in Section 1.3 of this document. The Magnuson-Stevens Fishery Conservation and Management Act, as amended, provides the general legal basis for the rule.

Description and estimate of the number of small entities to which the proposed rule will apply: The proposed rule will apply in varying proportions to all of the 1,510 mackerel/coastal pelagics permitted vessels (as of August 28, 1997). Based solely on information provided by individuals in their permit applications (Vondruska, 1997), permittees with home ports on the west coast of Florida operate fishing vessels with an average length of 31 feet and generate \$16,000 in gross fishing income. Permittees with home ports in Alabama, Mississippi, Louisiana, and Texas, respectively, operate vessels with an average length of 29 feet, 49 feet, 41 feet, and 41 feet and generate gross fishing income of \$6,000, \$18,000, \$27,000 and \$23,000. There are about 838 charter vessels and 92 party boats operating in the Gulf. Of these, about 190 for-hire vessels may be affected by the proposed ban on sale of recreationally caught king mackerel. Holland and Milon (1989) reported that in 1987 charterboats on the west coast of Florida had an average income of \$62,000 and paid wages of \$25,000, while headboats had an average income of \$112,000 and paid wages of \$30,000.

Description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records: The reporting, recordkeeping and other compliance requirements of the proposed rule do not materially differ from the current practice. The public burden specifically associated with the moratorium on the issuance of commercial king mackerel gill net endorsements does not materially differ from the current requirement.

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

Description of significant alternatives to the proposed rule and discussion of how the alternatives attempt to minimize economic impacts on small entities: The various alternatives to the fishing year considered in this amendment have varying effects on the distribution of catches, and whatever alternative is chosen would benefit fishing vessels in certain areas at the likely expense of others. The various alternatives to the proposed action, which is the status quo, would provide a greater chance of exacerbating the de facto change in allocation of the hook-and-line quota on the Florida west coast of the Eastern Zone.

Regarding the measures on sale of recreationally caught mackerel, the proposed action has the most adverse impacts on for-hire vessels. But these other alternatives would not address the issue of adverse impacts of sales by for-hire vessels on the commercial hook-and-line vessels, especially when those sales are viewed against the backdrop of ever increasing catches by the for-hire sector.

Of the set of alternatives addressing the commercial reallocation by area, the proposed action may be expected to increase gross revenues of vessels on the west coast of Florida without significantly impinging on the revenues of vessels on the east coast of Florida. There is a good likelihood that overall industry revenue, and possibly profits, would increase. Rejected Alternative 2.3.1 could also achieve the same effects as the proposed alternative, but the difference in effects is deemed small. On the other hand, maintaining the status quo would imply forgoing the potential increase in overall industry revenues and profits that is likely to occur under the proposed action. Regarding the commercial/recreational allocation of TAC, maintaining the status quo as the proposed action tends to minimize disruptions, particularly in the commercial sector. Any of the alternatives regarding geographic subdivisions (Section 2.4) entails no impacts on fishing participants, unless accompanied by additional measures, such as the ones provided for under Section 2.5. Of the set of alternatives under this latter section, the proposed action provides for the least disruptive allocation to Subzone 2. Considering, however, the reallocation of some quota to the Florida west coast from the Florida east coast, the total amount allocated to Subzone 2 would approximate historical catches in the area. In addition, the allocation to Subzone 1 would also approximate the area's historical landings. The other alternatives considered provide for allocations to Subzone 1 that are about the same as or below this area's historical catches.

The proposed action to maintain the status quo versus additional allocations of the commercial quota in the Western Zone appears to result in the least economically disruptive impacts on this area's fishing vessels when contrasted with the alternatives to adopt a geographical subdivision of the quota, by area, season, or both. Subdivision of this area's commercial quota would tend to change the allocation of landings by areas.

The only alternative to the proposed trip limit in the Western Zone is the status quo, i.e., no trip limit. The trip limit is primarily designed to address the derby in the fishery, but the extent of its effect cannot be determined. It would tend to introduce more inefficiency into the fishery, although it may possibly improve the ex-vessel price situation as landings of large amount of fish, reportedly of poorer quality, are minimized.

The proposed moratorium on issuance of gill net endorsements would impose less economic impacts on the participants than the alternative to phase-out the gill net fishery. Regarding the transferability of net endorsements, the option to impose the least restriction, i.e., free transferability, is adjudged to be one that would impose the least adverse impacts on net vessels. Considering, however, the fact that net vessels have fished their quota in a relatively short time the proposed action which would allow transfer only among family members would offer the potential to reduce the overcapacity in the fishery. The proposed action regarding the prohibition of the use of gill nets in certain areas would have similar short-term impacts as the status quo.

The proposed minimum size limit change from 20 to 24 inches FL would tend to affect the recreational fishery more than the commercial fishery. These effects would be less than those under the alternative to impose a higher minimum size limit, but logically more than those of the status quo. To some extent, however, this proposed action may lessen the need to impose more restrictions on the recreational sector in order to limit the harvest of this sector to its allocation.

Other alternatives regarding the re-entry of purse seine vessels into the Spanish mackerel fishery may allow better economic prospects to some vessels than the proposed action to maintain the status quo. These other alternatives, however, may pose allocation problems once the traditional Spanish mackerel fishery participants start to increase their landings.

The only alternative to the proposed action regarding the retention of cut-off fish is the status quo, which would allow the retention of 5 cut-off fish that cannot be sold. It may only be noted that since the Council did not specifically reject the status quo, the proposed action would allow for the retention and sale of cut-off fish in addition to the 5-fish possession limit that cannot be sold.

4.0 ENVIRONMENTAL CONSEQUENCES

This section reviews and discusses the biological, physical, and human environment of the coastal pelagic resources of Gulf of Mexico and South Atlantic.

4.1 Biological Environment

Amendment 1 (with Environmental Impact Statement [EIS]) and Amendment 3 (with Environmental Assessment [EA]) provide a review of the biology and habitat of the coastal migratory pelagic fishery resources, and they are incorporated here by reference. No new information that would appreciably change these discussions is available. The biological effects, if any, of this proposed action are discussed immediately following each proposed alternative in Section 2.

The following is a summary of the potential effects of each section on the biological environment.

Section 2.1, Fishing Year - The Councils have established annual TACs, and in most areas and regions these TACs have been caught. Consequently, no biological effects are anticipated from these alternatives because they merely address shifting of harvest time to coincide with availability of the resource in different areas.

Section 2.2, Sale of King and Spanish Mackerel - The alternatives in this section address prohibition of sale of recreationally caught fish. No biological effects are anticipated; however, some reduction in recreational catch could occur if a portion of the participants elect not to harvest fish if they are not allowed to sell them. In such case, there may be some positive benefits to the stock size, but, if any, they would probably be minimal.

Section 2.3, Reallocation of TAC by Area and User Group - These alternatives are not expected to have any biological effects because they would only redistribute existing harvest levels.

Section 2.4, Subdivision of the Commercial Hook-and-Line King Mackerel Allocation of TAC for the Gulf Group, Eastern Zone, South/West Area (Florida west coast) into Subzones by Area - No biological effects are expected from any of the alternatives presented in this section because they only subdivide an existing fishing area for the purpose of quota allocations.

Section 2.5, Establish Regional Allocations of the Commercial Hook-and-Line TAC for King Mackerel in the South/West Area of the Eastern Zone (Florida west coast) Based on the Historical Catches from the Subzones Identified in Section 2.4.1 - No biological effects are expected from any of the alternatives presented in this section because they only redistribute the established TAC.

Section 2.6, Subdivision of the Commercial King Mackerel Allocation of TAC for the Gulf Group, Western Zone - No effects on the biological environment are anticipated (see above).

Section 2.7, Establish Trip Limits for Commercial Vessels Fishing for Gulf Group King Mackerel in the Western Zone (AL/TX) - Trip limits are considered in these alternatives as a means of extending the seasonal harvest. They would only effect the biological environment if they resulted in a reduction in catch, and such a reduction is unlikely because the annual TAC for this area has in recent years been taken in less than 2 months.

Section 2.8, Restrictions on the Use of Net Gear to Harvest King Mackerel in the Florida west coast of the Eastern Zone (South/West Area) - Alternatives presented in this section could have an effect of increasing the stock size of king mackerel, particularly if gill nets are phased-out of the fishery. This effect would only occur if the hook-and-line fishery was unable to harvest the 50 percent share of TAC for this area that is currently allotted to the gill net fishery or if the Council reduced TAC by this amount or some portion thereof. In either case, the impact to the biological environment would be minimal since the gill net portion of TAC only amounts to approximately 5.5 percent and the likelihood that the hook-and-line fishery would be able to harvest any added allotment.

Section 2.9, Size Limits - Alternatives present in this section would likely have the greatest effect on the biological environment of mackerels in the Gulf of all the alternatives presented in this amendment. Increasing the minimum size limit for king mackerel from the current 20 inches FL to 24 inches FL could increase the number of fish that reach spawning age, assuming that there will be an insignificant amount of release mortality. Increased spawning potential would translate into a faster recovery of the Gulf group king mackerel stock which is currently considered as overfished.

Section 2.10, Establish a Purse-Seine Allocation for Gulf group Spanish Mackerel - Reestablishing an allocation of the Spanish mackerel resource to the purse-seine fishery would not have any significant effect on the biological environment, unless it resulted in a total harvest above the current estimate for the 50th percentile mark of ABC (9 million pounds). The Gulf group Spanish mackerel stock is currently above the Councils' established goal of 30 percent SPR, and continued harvest at or below the midpoint of ABC should not reduce this status.

Section 2.11, Retention and Sale of Cut-Off (Damaged) Fish - Allowing retention and sale of cut-off fish could reduce fishing mortality on king mackerel. This reduction would occur primarily because Gulf group king mackerel are restricted by relatively low trip limits (50 fish on the Florida east coast and 1,250 pounds on the Florida west coast) that can easily be taken. If these cut-off fish are landed in lieu of being discarded, a reduction in the overall mortality would occur.

4.2 Physical Environment

The alternatives proposed in this amendment will not have a negative impact on the physical environment. None of the alternatives presented in this amendment would have any impact on the physical environment of mackerels or that of other organisms associated with them. The relationship between mackerel stocks and their habitats, including the physical requirements, are contained in the Coastal Migratory Pelagics FMP, as amended, and subsequent studies have not

provided new or different information that could be used to further define relationships or alter the aforementioned conclusions.

- 4.2.1 Effect on Wetlands:** The proposed actions will have no effect on flood plains, wetlands, or rivers.
- 4.2.2 Mitigating Measures:** No mitigating measures related to the proposed actions are necessary because there are no harmful impacts to the environment.
- 4.2.3 Unavoidable Adverse Affects:** The proposed actions do not create unavoidable adverse affects.
- 4.2.4 Irreversible and Irrecoverable Commitments of Resources:** There are no irreversible commitments of resources other than costs of administering and enforcing the proposed rule resulting from implementation of this amendment.
- 4.2.5 Relationship Between Short-Term Uses and Long-Term Productivity:** Since 1985, the FMP has restricted annual catches in order to restore overfished stocks. The result of these actions has been a gradual rebuilding of the stocks; however, under current interpretation of the Sustainable Fisheries Act, stocks that are not currently producing MSY are considered overfished and must be restored to MSY. As such the Gulf group king mackerel fishery is below this level; however, rebuilding programs to increase standing stocks of all mackerel resources to their management goals of OY remain in effect.
- 4.2.6 Impacts on Other Fisheries:** The alternatives proposed in this amendment do not directly affect other fisheries.

4.3 Human Environment

- 4.3.1 Description of the Fishery:** The FMP and Amendments 1 through 3 with accompanying Environmental Impact Statements or Environmental Assessments describe the fishery for coastal migratory pelagic resources. In recent years, increasing fishing effort and other factors have caused some changes. The following is a synopsis of the fishery and some of the known changes.

For many years, king mackerel has been a major target species of an important commercial fishery in South Florida. Additionally, this species is and has been a major target species for the private boat and charterboat recreational fishery along widespread areas within the Gulf and South Atlantic regions. King mackerel are particularly important to the charterboat and offshore private boat fleets, and it is a highly sought species in many fishing tournaments. In addition, king mackerel are caught as a commercial supplement by the charterboat fleet in the Florida Keys and to a lesser extent in North Carolina.

A hook-and-line fishery for king mackerel developed commercially off Louisiana in the winter of 1982-1983. This trolled, handline fishery used gear and methods similar to the Florida hook-and-line fleet and was centered in the Grand Isle, Louisiana area. The number of participants

and effort have increased, and this fishery is no longer a winter fishery because the quota has been caught before the winter season in recent years. In 1997, the 770,000-pound quota was filled in 32 days from the start of the fishing season on July 1.

Recreational users have increased in numbers over time. Many come from outside the management unit as well as areas within it. Increased income, leisure time, and a wide variety of supplies have increased participation. This participation has, in turn, generated significant amounts of economic value and employment.

The commercial fishery for king mackerel is primarily located off Florida, and most are taken there from November through March. The available number on commercial mackerel permits in the Eastern Zone (Florida) Gulf migratory group king mackerel lists 2,132 hook-and-line (trollers), 68 net, and 264 combination of net and hook-and-line permits.

About 150 of the 200 trollers in the Florida east coast of the Eastern Zone (Volusia through Dade Counties on Florida's east coast) are dependent on the king mackerel fishery. They fish on Gulf group king mackerel from November through March or until the quota is filled. In recent years, they have been limited by a 50-fish trip limit and have only been able to harvest the available quota in the 1996-97 fishing year.

About 12 net boats have been consistently fishing for king and Spanish mackerel on the Florida west coast with landing capacities of 20,000 to 40,000 pounds per trip. King mackerel begin forming tight schools and become available to run-around gill nets in this area in January and February.

In the Florida west coast of the Eastern Zone, (Monroe County to the Florida/Alabama border) commercial fishing begins on Gulf group king mackerel on July 1 with relatively small vessels trolling off the Florida Panhandle. Daily trip catches are generally less than 500 pounds, and average annual landings were approximately 141,000 pounds from 1990 through 1996, as opposed to about 47,000 pounds during the 1980s. As a result of unusual environmental conditions in 1994, the fish remained off the Panhandle for a longer period, and an unusually large portion of the hook-and-line quota for the west coast of Florida was taken there by mid-December. A similar disparity in catch by area occurred in the 1996-97 and 1997-98 fishing years.

In November, when the boundary between Gulf group and Atlantic group stocks shifts northward, some 75 to 100 trollers in South Florida begin fishing on Gulf group king mackerel. Fishing becomes intense off Monroe County in December as the fish form large, over-wintering schools. In late December or early January, the fish become accessible to nets and 12 to 20 net boats from the Florida Keys enter the fishery. The beginning of the king mackerel net fishery in this area is variable depending on availability of other alternative fishery resources (lobster and stone crab), weather, water conditions, presence of sharks, and landing prices. With good weather and marketing conditions the quota is usually filled quickly by late December or early January by the large-capacity net boats.

Vessel trip limits have been implemented off Florida to extend and distribute catches. However, the commercial quota for Atlantic group king mackerel has been filled twice: once in 1988 with a low quota of 2.6 million pounds and again in the 1996-97 fishing year.

Bycatch of juvenile king and Spanish mackerels in trawls in the Gulf shrimp fishery exceeds the number taken in the directed commercial and recreational fishery (Powers et al 1994). In the Atlantic shrimp fishery, shrimp trawl bycatch estimates of king and Spanish mackerel were about 228,000 and 7.5 million, respectively, based on the 1992-94 average. Bycatch reduction has been addressed through the approval of Amendment 9 to the Gulf shrimp FMP plan and Amendment 2 to the South Atlantic Shrimp FMP, wherein both amendments require trawlers to install NMFS approved bycatch reduction devices (BRDs).

4.3.2 History of Management: The management regime is described in Section 1.1.

4.3.3 Economic and Social Assessment: The economic and social effects of this Amendment are discussed in detail in Section 3.0 and in the discussion following each set of alternatives.

4.4 Finding of No Significant Environmental Impact

I have reviewed the environmental assessment and determined that the proposed actions will not significantly affect the human environment and that preparation of an environmental impact statement is not required.

Assistant Administrator for Fisheries

Date

5.0 OTHER APPLICABLE LAW

5.1 Vessel Safety

The proposed alternatives do not impose requirements for use of unsafe (or other) gear nor do they direct fishing effort to periods of adverse weather conditions. On the contrary, some of the alternatives presented could reduce derby fishing and allow fishermen to harvest subquotas closer to their home ports. Such actions are expected to have positive impacts to vessel safety. The proposed actions would probably have minimal effects on vessel safety, if any; however, any effects would result in increased vessel safety.

5.2 Paperwork Reduction Act

The purpose of the Paperwork Reduction Act is to control paperwork requirements imposed on the public by the Federal Government. The authority to manage information, its collection, and record keeping is vested with the Director of the Office of Management and Budget. This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications. Sections 2.4 and 2.5 -

establishing additional subdivisions of TAC and allocations, and Section 2.7 - establishing trip limits in the Western Zone could increase the paperwork requirements for fishermen and NMFS. These increases would probably be minimal, and they would be offset by positive benefits to users in terms of harvestability, vessel safety, improved data collection, and increased economic returns from providing a better product at a lower cost.

5.3 Coastal Zone Management Consistency

The Councils have determined that this proposed action will be implemented in a manner that is consistent to the maximum extent practicable with the approved coastal zone management programs of the affected states. This determination has been submitted for review by the affected states under Section 307 of the Coastal Zone Management Act (CZMA).

5.4 Effect on Endangered Species and Marine Mammals

A formal Section 7 consultation under the Endangered Species Act (ESA) was completed for Amendment 6. In a biological opinion dated August 19, 1992, the NMFS determined that fishing activities conducted under the amendment and its implementing regulations, as well as the fisheries for coastal migratory pelagic resources, are not likely to jeopardize the continued existence of any endangered or threatened species under its jurisdiction. However, it was also determined that gill net fisheries may adversely affect the recovery of listed species of sea turtles. Accordingly, in compliance with the ESA, an Incidental Take Statement was issued and reasonable and prudent measures were specified to minimize such adverse impacts. The proposed actions described and considered in this amendment are not expected to have any additional impact on endangered or threatened species.

5.5 Scientific Data Needs

To monitor stocks to determine whether overfishing occurs, the Southeast Fisheries Science Center (SEFSC) of NMFS currently monitors catch by size (age) to estimate recruitment, ABC range, and other stock assessment parameters. No additional collection of scientific data would be required by this amendment. The SSC, MSAP, and SEP have identified the following data needs:

- Preparation of stock assessments of Gulf and Atlantic stocks of mackerels and cobia for SAP review.
- Conduct analytical research directed towards optimizing sampling survey designs associated with various stock indices of relative abundance, and that some effort be applied to identifying and promoting those indices that are both accurate and precise. (MSAP)
- Evaluate the impacts of unbalanced sampling designs on the estimated landings at size (and age). (MSAP)
- Monitor the Atlantic coast directed shrimp fishery and examine bycatch estimates of Atlantic group king and Spanish mackerels in detail. (MSAP) (SAFMC)

- Continue to monitor cobia, dolphin, and bluefish stocks to determine the need for management.
- Develop a comprehensive program of log-book and trip-intercept survey methodologies for coastal pelagics to address nominal fishing effort and its relationship to CPUE estimates. (MSAP)
- Development innovative fishery-independent monitoring methods to assess stock size for both Gulf and Atlantic group king and Spanish mackerels. (MSAP)
- Evaluate potential biases associated with inappropriate stratification of data used to generate age-length keys for Atlantic and Gulf group king and Spanish mackerels. (MSAP)
- Evaluate the implications of using alternative values of the natural mortality rate (M) on estimates of stock size and attendant ABC recommendations. (MSAP)
- Evaluate the effects of gear fishing power standardization using GLM techniques on temporal and spatial trends in bycatch, paying particular attention to before and after the implementation of TEDs in the directed shrimp fisheries. (MSAP)
- Compare the results of the 1998 otolith shape analysis with other available otolith samples and future collections to evaluate the proportions of Gulf and Atlantic migratory group king mackerel that comprise the overwintering population off southeast Florida (MSAP).
- Evaluate alternative stock assessment methods for Spanish mackerel such as non-equilibrium age-structured production models that may be particularly useful when assessments are projected from incomplete or imprecise catch-at-age data. (MSAP)
- Evaluate the effects of increasing the minimum size limit for king mackerel from 20 inches FL to 28 inches FL independent of and in conjunction with a maximum size limit of 39 inches FL to 48 inches FL. (Include the allowance for 1 fish over any maximum size limit).
- Determine the distribution of the commercial catch by size for the west coast of Florida (hook-and-line and gill net) and the average catch per trip (pounds) for the gill net fishery.
- Determine sales of Gulf group king mackerel by for-hire vessels during and after the commercial season by subzones as approved under Amendment 9.
- Expand the TIP data collection program and the MRFSS intercepts to gather additional data on king and Spanish mackerel, sharks, grouper other than gag, cobia, dolphin, amberjack, and perhaps several other species under Council or NMFS FMPs. (SSC)
- The effect of harvest outside of the U.S. Gulf, i.e., the Mexican coast or U.S. Atlantic, should be evaluated for species such as cobia and the dolphins, if these species are to be properly assessed. An evaluation of the interactions of stocks within those areas may be significant, depending on the migratory patterns of adult fish in the Gulf. (SSC)

- Preparation of economic and social assessments for Gulf mackerels and cobia fisheries. (SEP)
- Cost and returns data for commercial mackerel fishery. (SEP)
- Cost and returns data for-hire mackerel fishery. (SEP)
- At a minimum, collect the following information for the commercial and for-hire sectors:
 - Number of participants and their age, education, and marital status.
 - Years fishing, family history of fishing participation.
 - Percent of total household income from commercial fishing (include total household income).
 - Effort by species, month, and gear type (include all species fished and catch location to assess multi-species nature of mackerel fishermen)
 - Job skills and employment history (job training).
 - Perceived opportunities for alternative employment.
 - Unit harvesting costs for the variable factors of production.
 - Factor inputs used in the production of fish products.
 - Physical characteristics and age of vessels and boats in the fishery. (SEP)
- Any logbook data collection effort for the coastal migratory pelagic fishery should include the collection of social and economic data. (SEP)

5.6 Federalism

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

6.0 LIST OF PREPARERS

Dr. Richard Leard, Gulf of Mexico Fishery Management Council
 Dr. Antonio Lamberte, Gulf of Mexico Fishery Management Council

7.0 LIST OF AGENCIES, ORGANIZATIONS AND PERSONS TO WHOM COPIES OF THE AMENDMENT/ENVIRONMENTAL ASSESSMENT ARE SENT.

Gulf of Mexico Fishery Management Council

Law Enforcement Advisory Panel
Coastal Migratory Pelagic Advisory Panel
Socioeconomic Panel
Scientific and Statistical Committee

South Atlantic Fishery Management Council

King and Spanish Mackerel Advisory Panel
Scientific and Statistical Committee

Coastal Zone Management Offices

Alabama, Mississippi, Louisiana, Florida, Texas, Georgia, North Carolina, South Carolina, Virginia, New Jersey, Delaware, New York, Maryland and Pennsylvania

Others

Monroe County Commercial Fishermen's Association
Offshore Fishermen of Florida
Southern Offshore Fisheries Association
Southeastern Fisheries Association
Coastal Conservation Association
Louisiana Coastal Fishermen's Association
Center for Marine Conservation

PUBLIC HEARING SITES

Public hearings were held from 7:00 p.m. to 10:00 p.m. at all of the following locations, except Gulf Shores, Alabama where the hearing was from 4:00 p.m. to 6:00 p.m.:

Tuesday, February 17, 1998

Holiday Inn Beachside
3841 North Roosevelt Boulevard
Key West, Florida 33040

Wednesday, February 18, 1998

Hampton Inn
13000 North Cleveland
North Ft. Myers, Florida 33903

Thursday, February 19, 1998

Radisson Bay Harbor Inn
7700 Courtney Campbell Causeway
Tampa, Florida 33607

Monday, February 23, 1998

National Marine Fisheries Service
Panama City Laboratory
3500 Delwood Beach Road
Panama City, Florida 324408

Tuesday, February 24, 1998

Holiday Inn on the Beach
365 East Beach Boulevard
Gulf Shores, Alabama 36547

Wednesday, February 25, 1998

J. L. Scott Marine Education Center 115 East Beach Boulevard (Hwy 90) Biloxi, Mississippi 39530	Texas A&M Auditorium 200 Seawolf Parkway Galveston, Texas 77553
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Thursday, February 26, 1998

Larose Regional Park 2001 East 5 th Street Larose, Louisiana 70373	Ellis Memorial Library 700 West Avenue A Port Aransas, Texas 78373	*West Palm Beach Fishing Club 201 5 th Street West Palm Beach, Florida 33401
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*This public hearing was a joint hearing for both the Gulf and South Atlantic.

Written comments on the amendment were required to be mailed to the Gulf Council by: January 27, 1998. Additional public testimony was taken at the March 2-6, 1998 meeting of the South Atlantic Council in Jekyll Island, Georgia and at the Gulf Council meeting on March 9-13, 1998 Council in Duck Key, Florida and the May 10-15, 1998 meeting in Sandestin, Florida.

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- Vondruska, J. 1998. Commercial landings of coastal migratory pelagic fish, east and Gulf coasts, 1962-1997. National Marine Fisheries Service, 9721 Executive Center Drive, North, St. Petersburg, Florida 33702.

Table 1. Average annual landings of Gulf group king mackerel by county (Florida) and percent of total, 1990 through 1996.

Escambia	3,691	<1%
Santa Rosa	7,161	1%
Okaloosa	43,839	4%
Walton	42	<1%
Bay	72,443	6%
Gulf	917	<1%
Franklin	12,425	1%
Wakulla	239	<1%
Jefferson	0	0
Taylor	176	<1%
Dixie	67	<1%
Total	141,000	12%

Levy	387	<1%
Citrus	307	<1%
Hernando	0	0
Pasco	3,441	<1%
Pinellas	5,678	1%
Hillsborough	394	<1%
Manatee	2,954	<1%
Sarasota	1,044	<1%
Charlotte	484	<1%
Lee	2,555	<1%
Total	17,244	2%

Collier	67,597	6%
Monroe	908,880	80%
Total	976,477	86%

Total Average of All Counties	1,134,721	100%
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Table 2. Average annual landings of Gulf group king mackerel by county (Florida) and percent of total, 1980-89.

Escambia	4,711	<1%
Santa Rosa	265	<1%
Okaloosa	6,527	<1%
Walton	0	0
Bay	29,046	2%
Gulf	5,210	<1%
Franklin	396	<1%
Wakulla	5	<1%
Jefferson	0	0
Taylor	0	0
Dixie	384	<1%
Total	46,543	3%

Levy	53	<1%
Citrus	121	<1%
Hernando	2	<1%
Pasco	107	<1%
Pinellas	16,983	1%
Hillsborough	178	<1%
Manatee	16,519	1%
Sarasota	603	<1%
Charlotte	721	<1%
Lee	6,215	<1%
Total	41,52	3%

Collier	66,258	5%
Monroe	1,281,341	89%
Total	1,347,599	94%

Total of All Counties	1,435,643	100%
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Table 3a. Commercial hook and line landings of king mackerel for Option A, Section 2.4.1 by subzones, 1980-1992.

	Option A			
	Subzone 1		Subzone 2	
	Pounds	Percent	Pounds	Percent
YEAR				
1980	512,835	77	149,982	23
1981	740,259	94	47,398	6
1982	475,850	96	19,635	4
1983	321,879	91	29,954	9
1984	242,002	90	26,457	10
1985	220,569	95	10,752	5
1986	365,362	97	12,762	3
1987	251,825	93	20,133	7
1988	214,914	91	22,552	9
1989	210,131	95	10,107	5
1990	380,153	95	21,679	5
1991	263,508	75	87,160	25
1992	671,999	92	58,849	8
Total	4,871,286	90	517,420	10

Table 3b. Commercial hook and line landings of king mackerel for Option B, Section 2.4.1 by subzones, 1980-1992.

	Option B			
	Subzone 1		Subzone 2	
	Pounds	Percent	Pounds	Percent
YEAR				
1980	501,206	76	161,611	24
1981	737,796	94	49,861	6
1982	473,897	96	21,588	4
1983	321,351	91	30,482	9
1984	240,365	90	28,094	10
1985	219,351	95	11,970	5
1986	320,295	85	57,829	15
1987	250,744	92	21,214	8
1988	213,827	90	23,639	10
1989	207,836	94	12,402	6
1990	377,696	94	24,136	6
1991	256,238	73	94,430	27
1992	665,059	91	65,789	9
Total	4,785,661	89	603,045	11

Table 4. Catches and percentage of the total catch of Gulf group king mackerel for Subzones 1 and 2 under Options a and b or Section 2.4.1, including gill-net catches and excepting gill-net catches from Subzone 1 for fishing years 1992-93 through 1996-97.

Fishing Year		Catch (pounds)	Percent of Total	Catch Minus Gill Net (pounds)	Percent of Total
1992-93	Option a				
	Subzone 1	1,638,013	96%	671,369	91%
	Subzone 2	63,677	4%	63,677	9%
	Preferred Option b		100%		100%
	Subzone 1	1,618,234	95%	651,590	89%
	Subzone 2	83,456	5%	83,456	11%
	Total	1,701,690	100%	735,046	100%
1993-94	Option a				
	Subzone 1	988,946	90%	517,319	82%
	Subzone 2	112,653	10%	112,653	18%
	Preferred Option b		100%		100%
	Subzone 1	972,276	88%	500,649	80%
	Subzone 2	129,323	12%	129,323	20%
	Total	1,101,599	100%	629,972	100%
1994-95	Option a				
	Subzone 1	994,464	72%	584,349	60%
	Subzone 2	388,086	28%	388,086	40%
	Preferred Option b		100%		100%
	Subzone 1	965,132	70%	555,017	57%
	Subzone 2	417,418	30%	417,418	43%
	Total	1,382,550	100%	972,435	100%
1995-96	Option a				
	Subzone 1	1,079,886	92%	571,319	86%
	Subzone 2	90,545	8%	90,545	14%
	Preferred Option b		100%		100%
	Subzone 1	1,070,298	91%	561,731	85%
	Subzone 2	100,133	9%	100,133	15%
	Total	1,170,431	100%	661,864	100%
1996-97	Option a				
	Subzone 1	885,862	80%	442,977	66%
	Subzone 2	224,238	20%	224,238	34%
	Preferred Option b		100%		100%
	Subzone 1	874,559	79%	431,674	65%
	Subzone 2	235,541	21%	235,541	35%
	Total	1,110,100	100%	667,215	100%

Table 5. Possible percentage divisions of the TAC allocation of Gulf group king mackerel for the commercial hook-and-line fishery in the South/West Area (Florida west coast) based on the 2-subzone options presented in Section 2.4.1.

2 Subzones	Avg. of all years - 92/93 - 96/97	Avg. of all years - 92/93 - 96/97, except 94/95	Avg. of all years - 92/93 - 96/97, except 94/95 and 96/97
Option a Dixie/Levy Split	Subzone 1 - 77%	Subzone 1 - 81%	Subzone 1 - 86%
	Subzone 2 - 23%	Subzone 2 - 19%	Subzone 2 - 14%
Preferred Option b Collier/Lee Split	Subzone 1 - 75%	Subzone 1 - 80%	Subzone 1 - 85%
	Subzone 2 - 25%	Subzone 2 - 20%	Subzone 2 - 15%

Table 6. Gulf group king mackerel fishing season length and TACs for the western zone. (Alabama through Texas). (M. Godcharles, unpublished data).

Fishing Year	Quota (million pounds)	Start	End	Days Open
1985-86	0.48	July 1, 1985	March 12, 1986	254
1986-87	0.27	July 1, 1986	February 4, 1987	218
1987-88	0.22	July 1, 1987	November 2, 1987	124
1988-89	0.34	July 1, 1988	December 3, 1988	155
1989-90	0.42	July 1, 1989	October 25, 1989	116
1990-91	0.42	July 1, 1990	October 18, 1990	109
1991-92	0.57	July 1, 1991	September 29, 1991	90
1992-93	0.77	July 1, 1992	October 18, 1992	109
1993-94	0.77	July 1, 1993	October 1, 1993	92
1994-95	0.77	July 1, 1994	September 24, 1994	85
1995-96	0.77	July 1, 1995	September 5, 1995	66
1996-97	0.77	July 1, 1996	August 26, 1996	56
1997-98 ¹	0.77	July 1, 1997	August 2, 1997	32

¹ The 1997-98 fishing season reopened on February 20, 1998 under a revised 1.05 MP TAC for the Western Zone. The remainder of the of the TAC was taken in approximately 37 days.

Table 7. Gulf group king mackerel landings (pounds) for the Western Zone by region and percent of the total, 1991 through 1996.

Year	Region 1 - AL, MS, LA	% of Total	Region 2 - TX	% of Total	Total Landings
1990	637,728	99+%	1,322	<1%	639,050
1991	583,202	99+%	416	<1%	583,618
1992	1,101,661	96%	41,422	4%	1,143,083
1993	810,511	90%	91,746	10%	902,257
1994	751,624	85%	132,219	15%	883,843
1995	587,254	77%	171,381	23%	758,635
1996*	551,610	99+%	17	<1%	551,627

*Data are preliminary

Source: NMFS, unpublished data

Table 8a. MONTHLY COMMERCIAL LANDINGS OF GULF KING MACKEREL, 1985-1987
(Western Zone)

Month	YEAR										Percent	
	1985		1986		1987		1988		1989			
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)		
Jan	109	77	57	38	109	112	1	2	1	1	9	9
Feb	8	10	64	52	161	147	.	.	0	0	8	8
Mar	26	25	19	14	0	0	1	2	.	.	2	2
Apr	8	10	0	0	0	0	.	.	.	.	0	0
May	41	32	0	0	0	0	2	2	.	.	1	1
Jun	53	56	0	0	0	0	0	0	0	0	2	2
Jul	51	58	16	16	50	49	109	105	83	101	10	12
Aug	46	46	31	26	52	36	66	72	134	163	11	13
Sept	6	6	21	19	38	27	21	22	141	147	8	8
Oct	62	50	49	35	116	91	53	59	187	172	16	15
Nov	98	73	30	17	9	6	156	180	111	118	14	15
Dec	468	306	51	32	.	.	51	52	.	.	19	15
Total	976	750	338	251	535	469	463	494	658	703	100	100

Table 8b. MONTHLY COMMERCIAL LANDINGS OF GULF KING MACKEREL, 1990-1996

(Western Zone)

	YEAR															
	1990		1991		1992		1993		1994		1995		1996			
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value		
	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)	(1000)			Pounds	Value
Month																
Jan	.	.	.	.	.	.	.	.	0	0	.	.	.	.	0	0
Feb	1	1	.	.	.	.	.	.	.	.	.	.	.	.	0	0
Mar	.	.	.	.	4	5	0	0	0	0	0	0	.	.	0	0
Apr	.	.	0	0	0	0	1	0	.	.	2	1	.	.	0	0
May	.	.	0	0	0	0	0	0	.	.	0	0	0	0	0	0
Jun	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
Jul	172	182	127	121	408	370	382	342	433	372	484	410	438	397	43	44
Aug	168	136	262	203	225	205	257	214	205	207	205	198	277	248	28	28
Sept	146	167	191	162	187	186	250	161	234	231	66	60	21	18	19	20
Oct	141	104	2	1	316	288	12	12	11	13	0	0	.	.	9	8
Nov	.	.	.	.	2	2	0	0	0	0	0	0	.	.	0	0
Dec	11	9	.	.	0	0	.	.	.	.	0	0	.	.	0	0
Total	639	599	584	487	1,143	1,055	902	730	884	823	759	670	737	663	100	100

Table 9. Landings, trips, and landings per trip of Gulf group King Mackerel in the Western Zone.

State	1990			1991			1992			1993		
	Pounds	Trips	Pounds/trip	Pounds	Trips	Pounds/trip	Pounds	Trips	Pounds/trip	Pounds	Trips	Pounds/trip
AL				20.8	1	21	3373.3	20	169	6463.6	36	180
FL-W	747.8	17	44	4750.6	22	216	5758.9	16	360	25746.4	65	396
LA	10277.3	12	856	131549	77	1708	265426.3	131	2026	519591.1	263	1976
MS				1247.7	3	416	1834.6	2	917	195.6	7	28
TX				13313	7	1902	28083.3	17	1652	37441.2	27	1387
Unknown							6125.7	5	1225	1721.2	3	574
TOTAL	11025.1	29	380	150881.1	110	1372	310602.1	191	1626	591159.1	401	1474
State	1994			1995			1996					
	Pounds	Trips	Pounds/trip	Pounds	Trips	Pounds/trip	Pounds	Trips	Pounds/trip			
AL	11189.2	31	361	1783.4	13	137	546.1	4	137			
FL-W	31820.1	100	318	42237.7	154	274	9083.3	94	97			
LA	497870.2	264	1886	525003.7	228	2303	509049.9	199	2558			
MS	3629.1	5	726				50.9	4	13			
TX	53190.8	27	1970	96887.7	27	3588	75774.9	25	3031			
Unknown												
TOTAL	597699.4	427	1400	665912.5	422	1578	594505.1	326	1824			

Source: NMFS, unpublished data

Table 10. Annual Gulf group king mackerel landings, trips, and landings per trip from the commercial gill-net fishery for fishing years 1992-93 through 1996-97.

Fishing Year	Pounds	Trips	Average Pounds per Trip
1992-93	966,644	196	4,932
1993-94	471,627	135	3,494
1994-95	410,115	117	3,505
1995-96	508,567	69	7,371
1996-97	442,880	41	10,802