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FRAMEWORK SEASONAL ADJUSTMENT OF HARVEST LEVELS AND PROCEDURES UNDER THE FISHERY MANAGEMENT PLAN FOR COASTAL MIGRATORY PELAGIC RESOURCES (MACKERELS) IN THE GULF OF MEXICO INCLUDING ENVIRONMENTAL ASSESSMENT AND REGULATORY IMPACT REVIEW AND INITIAL REGULATORY FLEXIBILITY ANALYSIS

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GULF OF MEXICO FISHERY MANAGEMENT COUNCIL
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I. HISTORY OF MANAGEMENT

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

Amendment 1, implemented in September of 1985, provided a framework procedure for pre-season adjustment of total allowable catch (TAC), revised king mackerel maximum sustainable yield (MSY) downward, recognized separate Atlantic and Gulf migratory groups of king mackerel, and established fishing permits and bag limits for king mackerel. Commercial allocations among gear users were eliminated. The Gulf commercial allocation for king mackerel was divided into eastern and western zones for the purpose of regional allocation.

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

Amendment 3 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, implemented in 1989, reallocated Spanish mackerel equally between recreational and commercial fishermen on the Atlantic group.

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

- Extended management area for Atlantic groups of mackerels through the Mid-Atlantic Council's area of jurisdiction;
- Revised problems in the fishery and plan objectives;
- Revised the fishing year for Gulf Spanish mackerel from July-June to April-March;
- Revised the definition of "overfishing";
- Added cobia to the annual stock assessment procedure;
- Provided that the South Atlantic Council 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 specifying that bag limit catch of mackerel may be sold;
- Provided guidelines for corporate commercial vessel permits;
- Specified that Gulf king mackerel may be taken only by hook-and-line and run-around gill nets;
- Imposed a bag limit of two cobia per person per day;

- o Established a minimum size of 12-inch (30.5 cm.) fork length or 14-inch (35.6 cm.) total length 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:

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

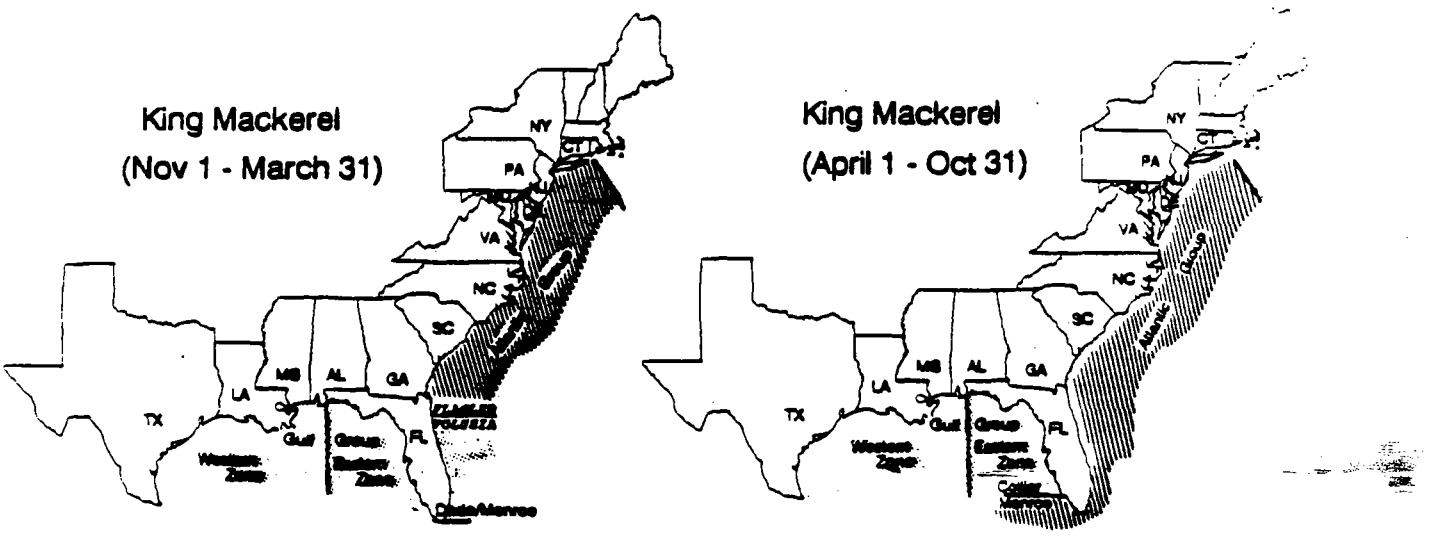
Amendment 7 equally divided the Gulf commercial allocation in the Eastern Zone at the Dade-Monroe County line in Florida. The suballocation for the area from Monroe County through Western Florida is equally divided between commercial hook-and-line and net gear users.

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

For the purpose of allocating a limited resource among users, the FMP has set ratios based on historic unregulated catches. The Gulf migratory group is 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 mechanism for seasonal framework adjustments is described in Appendix 1.

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



Management Objectives

The current FMP as amended lists eight plan objectives:

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

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

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

4. To minimize gear and user group conflicts.

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

6. To minimize waste and bycatch in the fishery.

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

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

II. PURPOSE AND NEED FOR ACTION

The proposed action would adjust the Allowable Biological Catch (ABC) ranges for Gulf migratory group king and Spanish mackerel in accordance with the stock assessment report. It also addresses underages in subquotas for the Eastern Zone Gulf group king mackerel fishery, enforcement, and other problems with king mackerel trip limits being specified in numbers of fish, TAC overruns in the Gulf group king mackerel fishery, and TAC underages in the Gulf group Spanish mackerel fishery.

In the Eastern Zone of the Gulf migratory group king mackerel fishery (Florida), fishermen in the North Area on the East Coast (Dade through Volusia Counties) have not been able to take their full suballocation during the last three seasons (1993/1994, 1994/1995, and 1995/1996). The structure of vessel-trip-limit regulations that have been in effect during this period may be precluding these catches. The proposed Action 1 would increase the trip limit in this area and modify the reduction criteria during the season. This action would also change the trip limit criteria from numbers of fish to pounds in both the North Area and the South/West Area.

Catches of Gulf group king mackerel by both recreational and commercial fishermen have consistently exceeded TAC since the 1986/1987 fishing year (Table 1). Although both user groups have been exceeding their TAC, the percent overrun of the recreational allocation has been slightly larger than the commercial overage (Table 2). Figure 2 shows increases in landings by charter boats in recent years. These increases coupled with the potential for double-counting of charter catches could be a major contributor to TAC overruns. Various options to reduce landings by the recreational king mackerel fishery were reviewed by Holiman (1996a) (Appendix 2) and include: reducing bag limits, increasing minimum size limits and possibly imposing maximum size limits, incorporating a combination of bag and size limit adjustments, and eliminating captain and crew catches on for-hire vessels. The proposed Action 2 would prohibit the captain and crew of charter boats from retaining the bag limit after January 1, 1997.

Since the 1989/1990 fishing year, Gulf landings of Spanish mackerel have been consistently below TAC and significantly below TAC in the last three years (Table 3). Based on the 1996 stock assessment, however, the transitional Spawning Potential Ratio (SPR) has remained low, 23 percent for the 1994/1995 fishing year. Restrictions on entangling net gear in Florida and changes in effort may be affecting catches; however, the Socioeconomic Assessment Panel (SEP), the Scientific Statistical Committee (SSC), and the Gulf Council have requested that the Mackerel Stock Assessment Panel (MSAP) conduct a thorough review of the available data, stock indices, and modeling, as was done for king mackerel in the 1996 assessment, in order to determine if catches are simply low or if the ABC ranges calculated in recent assessments are perhaps too high. The proposed Action 3 would reduce the TAC for Gulf group Spanish mackerel from 8.6 million pounds in the 1995/1996 fishing year to 7.0 million pounds in the 1996/1997 fishing year.

III. AFFECTED ENVIRONMENT

Description of the Fishery

King mackerel and Spanish mackerel are major target species of commercial, recreational, and for-hire fishermen throughout the Gulf and South Atlantic regions, particularly in South Florida. King mackerel are particularly important to the charter boat and offshore private boat fleets. In addition, smaller amounts of king mackerel are caught as a commercial supplement by the North Carolina charter boat fleet.

Most of the commercial fishery for king mackerel is located in Florida, and most are taken there from November through March. A winter troll fishery takes place along the east and south coast, and a run-around gill net fishery occurs in the Florida Keys (Monroe County) during January. A net fishery on the east coast of Florida, which occurred later (March), was eliminated in 1985 due to the filling of the commercial quota before fish became seasonally available there. Florida has attempted to allocate king mackerel catches among fishermen in different geographic areas by subquotas and landing (trip) limits. The Florida trip limit regulations were vacated in December 1992, by a federal court ruling, and the commercial quota was quickly taken in the Keys with 900,000 pounds being landed there during a 10-day period in January, 1993.

A commercial hook-and-line fishery for king mackerel developed off Louisiana in the winter of 1982-1983. This trolled-handline fishery is similar to the Florida hook-and-line fishery and is centered in the Grand Isle, Louisiana area.

Recreational users have increased in numbers over time. Many have immigrated to coastal areas of the Gulf from inland states and other regions. Increased income and leisure time have contributed to this increased participation in fishing, and it has stimulated the economy in many areas and generated employment in both direct and support industries.

The habitat of king mackerel was described and updated in Amendments 1 and 3. No new information is available.

Status of Stocks

The FMP provides that a migratory group of king or Spanish mackerel is defined as overfished when its SPR is below 30 percent. Gulf migratory king and Spanish mackerel have SPRs between 20 and 30 percent. In 1994, the Gulf Council convened a SPR Management Strategy Committee to review the various definitions of overfishing for fishes in the different fishery management plans. The committee recommended a decrease in the threshold (static and transitional) overfishing definition to 20 percent SPR for king and Spanish mackerel. This recommendation was subsequently endorsed by the MSAP and the SSC. It has also been approved by the Gulf and South Atlantic Councils as part of Amendment 8 to the Coastal Migratory Pelagics FMP which is pending submission to the NMFS.

IV. PROPOSED ACTIONS INCLUDING ALTERNATIVES

Action 1. Trip Limits for North Area and South/West Area, Eastern Zone King Mackerel

Proposed Alternative 1.A: In the North Area (Dade through Volusia Counties) of the Eastern Zone (Gulf migratory group), the king mackerel daily commercial trip and possession limit shall be 750 pounds per vessel unless 75 percent of the suballocation is met by February 15 of that year, then the trip limit reverts to 500 pounds until the season ends on March 31. If 75 percent of the suballocation is not taken by February 15, the 750 pound trip limit remains in effect until the subquota is filled or the season ends, whichever comes first.

Rationale: The purpose of trip limits is to extend the suballocation through the fishing season while retaining the catch within the suballocation. Fishermen in this area have not filled their suballocation for the last three seasons. Increasing the trip limit from approximately 500 pounds (50 fish translates to approximately 500 pounds because the average weight per fish in this area is about ten pounds) to 750 pounds at the beginning of the season will increase the chances that the North Area subquota will be met. Additionally, if 75 percent of the quota is met by February 15, there will still be about 29 percent of the quota remaining; therefore, the reduction in the trip limit to 500 pounds should both extend the season to its conclusion and prevent overrunning the subquota. Changing the trip criteria from numbers of fish to pounds should enhance enforcement efforts and prevent or ameliorate highgrading. This alternative was recommended by the Gulf Mackerel Advisory Committee as a way to more fairly allocate the TAC and allow this segment of the fishery to attain its share of the quota.

Rejected Alternative 1.B: Status Quo - In the North Area (Dade through Volusia Counties) of the Eastern Zone, the Gulf group king mackerel daily commercial trip and possession limits of up to 50 fish per vessel are allowed until 75 percent of the suballocation for that area is filled, then 25 fish per daily trip until the suballocation is filled. If 75 percent of the quota is not taken by March 1, the 50 fish limit remains until the subquota is filled or the season ends on March 31.

Rationale: This alternative was proposed as a measure that would help this area reach its subquota; however, landings for the North Area in 1994/1995 continue to be below the subquota at a level of about 82 percent of the area's allocation. Continuing this management strategy will probably not achieve the quota share for this area. Additionally, the criteria for specifying trip limits in numbers of fish creates enforcement problems and contributes to problems of highgrading.

Proposed Alternative 1.C In the South/West Area (Monroe County to Florida's western boundary) of the East Zone Gulf group king mackerel, commercial hook-and-line vessel daily trip and possession limits shall be 1,250 pounds until 75 percent of the suballocation is filled, then 500 pounds until the suballocation is filled.

Rationale: Changing the criteria for trip limits from numbers of fish to pounds for the South/West Area is consistent with proposed Alternative 1.A for the North Area, and this change should also enhance enforcement and help reduce the incidence of highgrading.

Rejected Alternative 1.D Status Quo - In the South/West Area (Monroe County to Florida's western boundary) of the East Zone Gulf group king mackerel daily commercial trip and possession limits are 125 fish until 75 percent of the suballocation is filled, then 50 fish until the suballocation is filled.

Rationale: The no change alternative would create inconsistencies with the actions taken in Alternative 1.A, and it could lead to continuing enforcement problems and highgrading.

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

Proposed Alternative 2.A: Establish a 0 bag limit on Gulf group king mackerel for the captain and crew of for-hire vessels effective January 1, 1997.

Rationale: Both the recreational and commercial suballocations of TAC have consistently been exceeded in recent years (Table 1). Commercial overruns have occurred as a result of projection inaccuracies and from sales by for-hire vessels after the quota has been reached. These sales may at times be counted against the commercial and recreational subquotas; consequently, overruns may be slightly exaggerated due to double counting.

With regard to the recreational fishery, landings from the private/rental boat mode of the MRFSS survey have remained relatively stable since 1990. The shore mode, which includes few king mackerel catches, has declined by about 56% over the same period; however, the charter/head boat mode has shown a steady and substantial increase in landings (Figure 2). The number of for-hire vessels has increased somewhat since 1990; however, the number of directed-effort, charter trips increased from about 41,000 in 1990 to 134,000 in 1994. Based on these data, it appears that for-hire landings may be the major contributor to the recreational TAC overages.

Holiman (1996a) (Appendix 2) reviewed various options for reducing recreational catches including: reducing bag limits, increasing minimum size limits and imposing maximum size limits, incorporating a combination of bag and size limits, and eliminating bag limit catches of the captain and crew of for-hire vessels. Based on a TAC of 6.8 million pounds, he determined that a 12.8 percent reduction in catch was needed to constrain catch to this TAC. Additional reductions in bag limits from two to one fish per person per day for all vessels and for charter boats only yielded percentage reductions of 30.6 and 22.5 percent, respectively. Reducing the bag limit for charter boats alone would only decrease catch by about 8.3 percent. In reviewing size limits, Holiman (1996a) noted that the 12.8 percent reduction goal could be met with a uniform minimum size limit of 28 inches, a uniform maximum size limit of 44-45 inches, or a combination of a 24-inch minimum size and a 47-inch maximum size. Finally, Holiman (1996a) reported that elimination of the captain and crew bag limit allowance would reduce the catch by approximately 12.2 percent.

Of the options available, the elimination of the captain and crew bag limit appears to be the least restrictive and most acceptable alternative. Based on Holiman's (1996a) evaluation, the percentage reduction would be slightly below that needed to prevent overrunning TAC; however, some charterboats make multiple trips in a day. Consequently, the actual percentage reduction from this option is probably greater. Bag limit reductions would only be effective if charter boats were included, and a reduction to one fish would probably have a significantly

greater negative effect on this industry than the elimination of captain and crew shares. Increasing the minimum size limit could also negatively affect the recreational fishery, and it would increase health risks from eating king mackerel based on current mercury contamination advisories in Florida. Of the options presented during public testimony, the 0 bag limit for captains and crew was favored by Mackerel AP members and others present.

Rejected Alternative 2.B: Status Quo - Continue the 2 fish per person per day bag limit for the captain and crew of for-hire vessels.

The no change option would likely result in continued TAC overruns for the recreational suballocation. Although the percentages of overruns are similar for the commercial and recreational fisheries, the recreational component is allotted a larger percentage of the total TAC, 68 percent versus 32 percent for the commercial sector. Consequently, overages by the recreational fishery account for a higher fishing mortality both in pounds and numbers of fish. Although the 1996 stock assessment shows that the Gulf group king mackerel fishery is not in a overfished state (transitional SPR is at 23 percent), the fishing mortality rate is such that the static SPR is estimated at 19 percent; and unless fishing mortality is curtailed, the stock will probably become overfished.

Action 3: TAC levels for Gulf group Spanish Mackerel.

Proposed Alternative 3.A: Set the TAC for Gulf group Spanish mackerel at 7.0 million pounds.

Rationale: Since the 1989/1990 fishing year, landings of Spanish mackerel have been below the TAC and usually at the lower range of ABC (Table 3). Although TACs have been low, unweighted, transitional SPR estimates have consistently been below 20 percent, the level that is now being considered as the overfishing threshold. In 1996/1997, the transitional SPR is estimated at 22 percent which is slightly above this threshold. Although the current fishing mortality rate is greater than the F30% static SPR, there is better than a 50 percent chance that it will be less than the F20% static SPR; thus the stock is not undergoing overfishing.

Reasons for the seemingly lack of or slow recovery of the stock are unknown. In an effort to address this problem, the Gulf Council has asked the MSAP to conduct a thorough evaluation of the data, indices, and models used in assessing Spanish mackerel stocks during the 1997 assessment. Additionally, concerns have been expressed regarding the possibility of a rapid expansion of a bait fishery for Spanish mackerel.

The ABC range at F30% SPR was calculated at between 1.6 and 9.5 million pounds with the 50th percentile mark at 5.9 million pounds. The TAC of 8.6 million pounds for the past five years is within this range, albeit near the upper end. Because of the institution of the net ban in Florida in July 1995, landings for the 1995/1996 fishing year are expected to be about 3.7 million pounds. The reduction in TAC to 7.0 million pounds should not curtail current harvest practices because of the net-ban effects; however, it could preclude an escalation in catches due to increased efforts of a nontraditional nature. Furthermore, the reduction in TAC represents a more conservative management approach until the assessment of the stocks can be more thoroughly evaluated.

Rejected Alternative 3.B: **Status Quo - Gulf group Spanish mackerel TAC remains at 8.6 million pounds.**

Rationale: The TAC of 8.6 million pounds is within the range of ABC recommended by the MSAP for 1996; and because of the net-ban effects on fishing effort, it is unlikely that this TAC would be exceeded during the 1996/1997 fishing season. However, the relatively low estimates of transitional SPR in recent years are a cause of concern, and estimates of the range of ABC may not accurately characterize the fishery. Additionally, the 50th percentile mark, at which there is a 50-50 chance of not achieving the 30% SPR goal, is only 5.9 million pounds; thus maintaining an 8.6 million pound TAC increases the possibility of not achieving the Council's OY goal.

V. REGULATORY IMPACT REVIEW

Introduction

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

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

This RIR analyzes the probable impacts of the proposed changes in the commercial trip limits for the king mackerel fishery in the Eastern Zone of the Gulf group of king mackerel. It also reviews the proposed elimination of bag limits for the captain and crew of for-hire vessel beginning in 1997. Finally, the RIR addresses potential impacts of the reduction in TAC for Gulf group Spanish mackerel from 8.6 million pounds to 7.0 million pounds.

Problems and Objectives

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

1. Change in the commercial trip limit for the Gulf group of king mackerel in the North Area, Eastern Zone and modifying the criteria of trip limits from numbers of fish to pounds in both the North and South/West Area;
2. For the Gulf group king mackerel fishery, reduce the bag limit to zero for captains and crew beginning January 1, 1997.

3. Reduce the TAC for Gulf group Spanish mackerel from 8.6 million pounds to 7.0 million pounds.

Methodology and Framework for Analysis

Ideally, the expected present values of net yield streams over time associated with the different alternatives would be compared in evaluating impacts. Net yield streams in the present context mean producer and consumer surpluses in the commercial sectors of the Gulf group of king mackerel in the Eastern Zone. Unfortunately, estimates of the yield streams and their associated probabilities are not available. The approach taken in analyzing alternative trip limits is to describe and/or quantify the changes in short-term net benefits. A qualitative discussion of long-term impacts is also attempted.

Impacts of Proposed Actions and Alternatives

Action 1. Trip Limits for North Area and South/West Area, Eastern Zone King Mackerel

Proposed Alternative 1.A: In the North Area (Dade through Volusia Counties) of the Eastern Zone (Gulf migratory group), the king mackerel daily commercial trip and possession limit shall be 750 pounds per vessel unless 75 percent of the suballocation is met by February 15 of that year, then the trip limit reverts to 500 pounds until the season ends on March 31. If 75 percent of the suballocation is not taken by February 15, the 750 pound trip limit remains in effect until the subquota is filled or the season ends, whichever comes first.

Rejected Alternative 1.B: Status Quo - In the North Area (Dade through Volusia Counties) of the Eastern Zone, the Gulf group king mackerel daily commercial trip and possession limits of up to 50 fish per vessel are allowed until 75 percent of the suballocation for that area is filled, then 25 fish per daily trip until the suballocation is filled. If 75 percent of the quota is not taken by March 1, the 50 fish limit remains until the subquota is filled or the season ends on March 31.

The fishing season for commercial Gulf king mackerel extends the period July 1 through June 30, but the fishery in the North Area covers only the period November 1 through March 31. A TAC of 7.8 million pounds (MP) has been maintained for the fishery. The established 68/32 recreational/commercial allocation translates to a 2.5 MP overall quota for the commercial sector. Out of this commercial quota, 1.73 MP is allocated to the Eastern Zone and the rest to the Western Zone. Half of the Eastern Zone quota (0.865 MP) is allocated to the North Area, and the other half to the South/West Area.

Since the onset of restrictive regulations on the Gulf king mackerel fishery until the 1992/1993 season, the commercial fishing season for Gulf king mackerel in the Eastern Zone had never remained open beyond January. With fishery closures occurring around January, net vessels (12 vessels by current account) that used to fish Gulf king mackerel in the North Area had been practically excluded from the fishery, since the effective fishing season for these vessels started around late February. However, the fishery for hook-and-line vessels in the North Area remained profitable until the 1992/1993 fishing season when the fishery closed early. Upon request by commercial fishermen in the area, the 1992/1993 season was extended by re-

opening the fishery from February 18 through March 26, 1993 via emergency action. Because of the low trip limit, only hook-and-line vessels could participate in the fishery during this extended season.

Since the 1993/1994 fishing season, the Eastern Zone sub-quota has been further divided equally between the North and South/West Areas. This split could have re-opened the net fishery, but the trip limits adopted have been too restrictive for net vessels to operate profitably. Only the hook-and-line fishery, with an estimated 150 full-time fishing crafts, has continued to operate in the area. Ever since, however, the commercial quota in the North Area has not been reached, presumably because of restrictive trip limits. Landings amounted to 0.6 MP in 1993/1994 and 0.7 MP in 1994/1995 (Godcharles, 1995). While the 1995/1996 trip limits were less restrictive than those of the previous two years, landings were still below the quota. Further relaxing the trip limits, as in the Proposed Alternative, could allow fishermen in the North Area to increase their harvests.

With king mackerel demand being elastic (Easley et al., 1993), an increase in harvest translates to short-run increases in gross revenues for trollers in the area. While catch rates may increase, the trip limits may still be sufficantly restrictive as to leave the fishery open until the normal end of the season on March 31. A steady supply of king mackerel over the entire season can take advantage of a relatively higher seasonal demand shifter in February and March (see Easley et al., 1993 for the relative magnitude of monthly demand shifters).[1] More revenues do not necessarily mean higher net vessel profits. In the particular case of the North Area king mackerel fishery, a higher net profit may be expected since vessels are rendered more efficient with higher trip limits throughout most of the season.

With potentially higher landings under the Proposed Alternative, consumer surplus will also increase as more fish become available in the market over a longer period at a relatively lower price. Dealer profits may also be positively affected by the increase in harvest.

One other feature in the Proposed Alternative is the denomination of trip limits in terms of pounds and not in number of fish. This has the advantage of curtailing the incidence of highgrading, a source of mortality that would only worsen the long-term status of the stock and of the Gulf king mackerel industry.

The long-run effects of higher trip limits depend on additional regulatory measures that may be adopted in the future. The proposed change in trip limits may appear to be restrictive enough for new vessels to enter the fishery. If the expected increase in vessel profitability due to the proposed change in trip limits persists over a longer period, new vessels may enter the fishery under an open access management system. While these new vessels may still be constrained by the trip limits, their presence in the fishery would mean that eventually the 75 percent benchmark for lowering the trip limits may be reached sooner. It may also be noted that current trip limit may be only one of the factors that constrained landings below the quota. In the 1993 extended season, the trip limit was 25 fish per vessel per trip. During this time, the

[1] It may be pointed out that this particular study was not intended to rigorously examine monthly demand for king mackerel, but it does provide monthly demand shifters that may be roughly considered as indicative of the relative strength of demand on a month-to-month basis.

fishery harvested about 0.259 MP between February 18 and March 26. This experience partly indicates that existing capacity can potentially harvest a relatively large amount of fish over a short period given a certain level of stock abundance and adequate prices in the market for mackerel. In the eventuality that harvests substantially increase, prices would be depressed and vessel profitability would tend to fall. In a sense, a derby-like fishery may occur. Lower trip limits that may be imposed to prevent a derby may only render the vessels inefficient, with adverse consequences on industry profitability. Thus, the long-run status of the fishery may not necessarily be beneficial as a result of the change in trip limits unless some form of effort limitation, possibly in terms of limiting entry of new vessels, is adopted.

Because of various potential changes to trip limits, the Proposed Alternative may entail a relatively higher cost of management from the standpoint of enforcement and monitoring of catches. Since similar regulations are now in effect, such an increase in cost may not be substantial.

Proposed Alternative 1.C In the South/West Area (Monroe County to Florida's western boundary) of the East Zone Gulf group king mackerel, commercial hook-and-line vessel daily trip and possession limits shall be 1,250 pounds until 75 percent of the suballocation is filled, then 500 pounds until the suballocation is filled

Rejected Alternative 1.D Status Quo - In the South/West Area (Monroe County to Florida's western boundary) of the East Zone Gulf group king mackerel daily commercial trip and possession limits are 125 fish until 75 percent of the suballocation is filled, then 50 fish until the suballocation is filled.

The only difference between the Proposed Alternative and the Rejected Alternative pertains to the denomination of trip limits, that is, pounds for the former and number of fish for the latter. This difference is not significant in terms of affecting the industry's short-run costs and revenues. The long-run effects may differ to the extent that trip limits in pounds helps to minimize highgrading by fishermen. Since only a small proportion of the entire Gulf king mackerel TAC is affected by the measure, the long-run benefits from less highgrading may be considered small.

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

Proposed Alternative 2.A: Establish a 0 bag limit on Gulf group king mackerel for the captain and crew of for-hire vessels effective January 1, 1997.

Rejected Alternative 2.B: Status Quo - Continue the 2 fish per person per day bag limit for the captain and crew of for-hire vessels.

Landings of Gulf group king mackerel have always exceeded TAC since the start of more restrictive management in 1986/1987. This is so despite relatively large increases in TAC in 1991/1992 and 1992/1993. A TAC of 7.8 MP has been in effect since 1992/1993, and the Council has chosen to retain this TAC for the 1996/1997 season.

In its report, the MSAP noted that although the Gulf king mackerel is not overfished (transitional

SPR of 23 percent), current fishing mortality rates are expected to drive the stock below 20 percent SPR in the future (MSAP, 1996). The MSAP suggested a reduction in fishing effort to prevent such occurrence, and recommended caution in selecting TAC. The SEP echoed this concern, and proceeded to delineate several disturbing trends that are inconsistent with the current objectives of the FMP and have the potential to frustrate the continued recovery of king mackerel and the realization of economic benefits (SEP, 1996). The SEP recommended reducing the TAC based on overages since 1992, enhancing commercial quota monitoring and maintaining commercial quota without additional enhancements, allowing retention of catch only for paying members of the charter, and exploring limited access management for all sectors of the coastal migratory pelagics industry.

Over the period 1992-1995, the average total catch overage is about 26 percent of TAC. The recreational sector exceeded its allocation by an average of 28 percent, the commercial sector, by 22 percent. For fishing year 1994/1995, recreational and commercial overages amounted to 48 and 18 percent of the respective sector's allocation.

Overages in the commercial sector come from several sources. Considering that the commercial sector closes when its allocation is met, most of the reported overages are landings after the closure. Some could come from not closing the fishery on time. It has also been reported that about 70- to 100-thousand pounds have been sold by charterboats during the time when the commercial fishery is closed. Finally, a good portion of commercial overage is attributable to an additional quota granted to a certain segment of this sector. In the 1992/1993 season, the commercial season in the Eastern Zone (North Area) was re-opened under a 0.259 MP quota, which was a little over 10 percent of the entire commercial quota. Commercial landings were about 44 percent above the quota for that year. A similar situation occurred in 1994/1995 when the South/West Area of the Eastern Zone was re-opened under a 0.30 MP quota, which was 12 percent of the entire commercial quota. About 0.35 MP were landed under this extended season, and the commercial landings exceeded the allocation by 18 percent that year. It appears that both close monitoring of the quota and disallowance of supplemental quotas can forestall substantial overages in the commercial sector in the short run. Additional regulatory restrictions are not warranted at this time; however, a long-run solution, such as a limited access program as suggested by the SEP, may need to be explored.

The case for the recreational sector is different from that of the commercial sector. Since the 1992/1993 fishing year, the recreational sector has been managed under a two-fish bag limit without closure. The annual, recreational TACs have also been consistant since then. Given these conditions, a growing recreational demand for king mackerel has resulted in allocation overages.

In recent years, the for-hire sector has substantially increased its share of recreational landings. MRFSS data show that over the period 1990-1994 the private/rental mode has accounted for about 40 percent of total recreational landings, followed closely by the charter mode at 40 percent, and by the shore mode at 16 percent (Holiman, 1996b). Since 1993, charterboat landings have exceeded private mode landings. This trend becomes more apparent by looking at the rate of increase in landings. Annually, over the 1990-1994 period, landings from the charter mode increased by an average of 57 percent; whereas those from private mode increased by only 14 percent. Shore-mode landings decreased by 21 percent. Such landings performance is partly explained by the trend in the number of trips targeting or catching king

mackerel. Target trips (i.e., trips for which king mackerel is the target species) rose by an annual average of 90 percent for the charter mode, 36 percent for the shore mode, and 10 percent for the private mode. Catch trips (i.e., trips in which king mackerel is caught) rose by an annual average of 44 percent for charter mode, 16 percent for private mode, and 1 percent for shore mode. MRFSS data indicate the fast growing importance of the for-hire segment of the recreational fishery.

The Proposed Alternative places a curb on the fastest growing (and currently the biggest) segment of the recreational fishery. Holiman (1996a) has estimated that this measure can reduce total recreational landings by about 0.584 MP, which is 12.2 percent of total recreational landings. Since the measure applies only to the for-hire boat captain and crew, the impacts of the measure will be borne by the for-hire sector. This landings reduction is roughly equivalent to 23 percent of charter boat landings in 1994.

While the reduction appears to be significant especially for the for-hire sector, there are several issues worth noting regarding the likely magnitude of effects. First, the 12.2 percent reduction is still below the 28 percent recreational landing overage. If the chosen TAC of 7.8 MP is already high enough to maintain long-run sustainability of the fishery, any measures allowing continued overage will only worsen the situation. Second, Holiman (1996a) qualified his estimate by indicating that it is an upper bound, and actual savings are likely to be substantially less. This qualification is significant considering that charterboat landings have increased by an annual average of 57 percent from 1990 to 1994. Third, effort in the charter industry has increased over the years by an average of 31 percent in terms of total number of trips, 90 percent in terms of trips targeting king mackerel, and 44 percent in terms of trips catching king mackerel. Such rates of change in effort are bound to negate the projected reduction in landings. We may particularly note that the Proposed Alternative affects only the captain and crew and not the individual anglers who fish through the charter mode. These anglers' demand for fishing trips are virtually unaffected by a zero bag limit on captain and crew, unless charter operations raise the price for the trips. Because the charter fishing market is relatively competitive, price increases in charter trips seem unlikely. All these conditions appear to severely limit the Proposed Alternative's effect on total recreational landings.

The impacts of the Proposed Alternative on charter operations are shaped by the nature of charter operations. In some areas in the Gulf, specifically in Southwest Florida, for-hire boats holding Saltwater Product Licenses with a restricted species endorsement can sell recreational bag limits of king mackerel even after the commercial season is closed in the EEZ. They can sell the captain and crew's bag limits as well as those left by customers. In a letter to the Gulf Council, Captain Bill Wickers (1996) indicated that in Key West 75 percent of kingfish caught on charter boats are left with the crew. Fish sales comprise 15 to 25 percent of the gross income of charterboats in the Key West area. In most charter operations, mates get half of the fish sales which make up 20 to 30 percent of their gross income. This practice of selling fish by charter boats remains unaffected by the Proposed Alternative; however, charterboats would be limited to selling fewer fish. As such, a reduction in charterboat revenues and crew wages is expected.

Since 15 to 25 percent of charterboat gross revenues comes from sale of fish (at least in the Key West area), a 23 percent reduction in charterboat landings would roughly result in a 3 to 6 percent reduction in their gross revenues. Also since fish sales contribute 20 to 30 percent

of the mates' income, these individuals would stand to lose 5 to 7 percent of their gross income. Using an income statement for a representative charterboat operation on the Gulf coast of Florida (see Holland and Milon, 1989), a combined 3 percent reduction in charter revenue and 5 percent reduction in crew wages would be equivalent to a 10 percent reduction in net income. A 6 percent reduction in charter revenues with a 7 percent reduction in crew wages would translate to a 26 percent reduction in charter net revenue. Thus, a relatively small reduction in gross revenue would actually translate to a larger reduction in net revenue.

In the event that, as contended above, the actual landings reduction would be less than the estimated 23 percent for charterboats and 12.2 percent for the entire recreational fishery, the corresponding reductions in revenues to the charterboats and crew would be substantially less than estimated above.

Action 3: TAC levels for Gulf group Spanish Mackerel.

Proposed Alternative 3.A: Set the TAC for Gulf group Spanish mackerel at 7.0 million pounds.

Rejected Alternative 3.B: Status Quo - Gulf group Spanish mackerel TAC remains at 8.6 million pounds.

More restrictive management for the Gulf group Spanish mackerel started during the 1987/1988 fishing season, with the TAC allocated to the commercial and recreational sectors according to a 57/43 percent split. For that year, both sectors fished their respective allocation, and the fishery was closed before the normal end of the season. The following year, the TAC was doubled, and only the commercial sector fished out its allocation. Since then both sectors have fished throughout the season as their respective landings have not reached their allocations. Part of the reason for this is that the TAC has been increased from 5.0 MP in 1988/1989 to 5.25 MP in 1989/1990 and 1990/1991. The TAC was further raised to 8.61 MP in 1991/1992, and since the 1992/1993 season has been set at 8.6 MP. Another reason could be the restrictive bag limits for the recreational fishery; however, the per-person bag limit has been substantially increased from 3 fish in 1987/1988 to 7 fish in Texas and 10 fish in the rest of the Gulf since the 1992/1993 season. On the commercial side, various reasons such as bad weather, fish being less schooled, and low market prices have been advanced as reasons for the relatively low landings. Whatever the reasons, the landings of Spanish mackerel have been substantially below the TAC. Over the last five years, a total of 12.7 MP of the TAC, or an annual average of 2.5 MP, have not been landed.

Considering the low levels of landings of Gulf Spanish mackerel by both the commercial and recreational sectors, the proposed reduction in TAC would have no immediate impacts on fishing participants, even if we consider each sector relative to its allocation. A 7.0 MP TAC means that the commercial and recreational allocations will be 3.99 MP and 3.01 MP, respectively. In 1994/1995, landings were 2.5 MP for the commercial sector and 1.6 MP for the recreational sector. Over the last five years, the commercial sector landed an average of 2.9 MP; while the recreational sector landed 2.5 MP. In addition, the commercial landings have declined over the years, and those for the recreational sector have remained relatively flat. Lastly, the net ban in Florida would mean that commercial landings would even be lower than the historical average; thus, it is likely that the Proposed Alternative would have no short-run effects on the fishery participants.

The long-run impacts of the Proposed Alternative would depend on the future status of the fish stock and on whether a strong commercial and recreational demand for Gulf Spanish mackerel would develop over the years. Neither factors can be ascertained at the present time.

Government Costs of Regulation

Federal government costs of this action were associated with meetings, travel, calculation of ABCs, preparation of various documents, and reviewing all documents. Other sources of additional costs include extraordinary research, specifically done for the purpose of this particular action; additional statistics costs; additional monitoring costs; and additional enforcement costs resulting from the action. In the latter cases, except enforcement, no additional costs are anticipated.

Council costs of document preparation, meetings, and information dissemination.....	$ 50,000
NMFS administrative costs of document preparation, meetings and review.....	$ 30,750
Law enforcement costs.....	$ 30,000
Research and statistics.....	None additional
TOTAL.....	$ 110,750

Summary and Expected Net Impact of Proposed Action

The Proposed Alternative for the commercial trip limits in the Northern Area is expected to result in higher short-run net economic benefits, in terms of producer and consumer surplus, to the fishery. The denomination of trip limits in terms of pounds rather than fish could scale down the possibility of highgrading that one may expect of limits in terms of numbers of fish. The long-run effects will be towards dissipation of such benefits as more vessels enter the fishery at the prospect of higher short-run profitability.

For the South/West Area, the Proposed Alternative is determined to have no direct effects on the profitability of the fishing vessels. The change in trip denomination from number to pounds of fish could cut down mortality from highgrading. The eventual effect of this measure on status of the stock is not known, but may be expected to be relatively small considering the small proportion of the total TAC that may be affected by the measure.

Reducing the bag limit from 2 to zero fish for captain and crew of for-hire vessels has been determined to reduce recreational landings by 12.2 percent, which is equivalent to a 23 percent reduction in charter boat landings. This measure would effect a 3 to 6 percent reduction in charter gross revenues and 5 to 7 percent reduction in the crew's gross income. Net revenues to charter operations could fall by 10 to 26 percent. Noting the various conditions regarding the projected reduction in recreational landings, it is likely that the magnitude of effects would be less than the above numbers.

Reducing the TAC for Gulf Spanish mackerel from 8.6 MP to 7.0 MP is determined to have no immediate effects on fishing participants. This is the case since an examination of landings showed that both the commercial and recreational sectors have been landing fish below their respective allocations. This low landing condition is expected to remain the same in the near future.

Government costs for preparing and implementing this action are estimated at $110,750.

Determination of a Significant Regulatory Action

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

The entire commercial Gulf king and Spanish mackerel fishery is valued at significantly less than $100 million. The trip limits proposed for the Northern Area and for the hook-and-line fishery in the South/West Area are expected to result in revenue increases but are deemed to be significantly less than $100 million annually. The zero king mackerel bag limit for captain and crew of for-hire vessels would reduce gross revenues of charter boats and gross income of the crew members, but such reduction is significantly less than the $100 million mark. The proposed reduction in TAC for Gulf Spanish mackerel is expected to have no impacts of the revenues of businesses dependent on this fishery. Hence, given the size of the fishery and the mentioned revenue effects of the proposed actions, it is concluded that impacts on the fishery resulting from this regulatory action would be significantly less than $100 million annually.

The proposed changes in the commercial trip limits for the hook-and-line fishery in the Northern and South/West Areas of the Eastern Zone of the commercial king mackerel fishery have been determined to result in an increase in revenues to the harvest sector and therefore in an increase in expenditures to the consumers. However, price per pound to consumers are not expected to increase, and in fact may decrease due to an increase in landings that would drive the prices down given that mackerel demand is elastic. Both the proposed zero king mackerel bag limit for captain and crew of for-hire vessels and the reduction in TAC of Gulf Spanish mackerel have no effect on mackerel prices.

The proposed changes in the commercial trip limits for the Northern and South/West Areas of the Eastern Zone Gulf king mackerel fishery are expected to effect no major cost increase to the Gulf mackerel industries. They may even slightly reduce the cost to fishing vessels as the incentive to highgrade is eliminated. The proposed zero king mackerel bag limit for captain and crew of for-hire vessels could change the cost structure of the charter operation, but such change is not substantial. Since the TAC reduction on Gulf Spanish mackerel has no impact on landings, prices of Spanish mackerel will not be affected by the measure. The $80,750 identified as federal cost has been incurred in the preparation of the regulatory action. An additional $30,000 is expected to be incurred to enforce the changes in trip limits for the hook-and-line fishery in the South/West Area and Northern Area of the Eastern Zone Gulf king mackerel fishery and the reduction to zero bag limit for captain and crew of for-hire vessels.

The proposed changes in the trip limits on the fishery in the North Area and South/West Areas and the reduction in TAC for Gulf Spanish mackerel are expected to rule out any adverse effects on employment, investment, productivity, innovation, or on the competitive status of the domestic fishery relative to domestic and foreign markets. On the other hand, the proposed zero bag limit for captain and crew of for-hire vessels would affect the profitability of the affected vessels, although such effect may not be deemed substantial.

It is therefore concluded that this regulation if enacted would not constitute a "significant regulatory action" under any of the mentioned criteria.

Initial Regulatory Flexibility Analysis

Introduction

The purpose of the Regulatory Flexibility Act is to relieve small businesses, small organizations, and small governmental entities from burdensome regulations and record keeping requirements. The category of small entities likely to be affected by the proposed regulatory amendment is that of commercial businesses currently engaged in the Eastern Zone of the Gulf king mackerel fishery. The impacts of the proposed action on these entities have been discussed above. The following discussion of impacts focuses specifically on the consequences of the proposed action on the mentioned business entities. An Initial Regulatory Flexibility Analysis (IRFA) is conducted to primarily determine whether the proposed action would have a "significant economic impact on a substantial number of small entities." Although an IRFA focuses more on adverse effects, determination of beneficial significant effects is also an integral component of the analysis. In addition to analyses conducted for the RIR, the IRFA provides an estimate of the number of small businesses affected, a description of the small businesses affected, and a discussion of the nature and size of the impacts.

Description of Economic Impacts on Small Entities

In general, a "substantial number" of small entities is more than 20 percent of those small entities engaged in the fishery (NMFS, 1992). In the Gulf area, a total of 3,069 mackerel permits were issued broken down into 1,623 commercial, 938 charterboat, and 549 both commercial and charterboat permits. In the Northern Area of the Eastern Zone of the Gulf king mackerel fishery, there are about 150 hook-and-line vessels, and in the South/West Area of this Eastern Zone there are about 100 troll vessels and 12 to 20 net vessels. The Small Business Administration (SBA) defines a small business in the commercial fishing activity as a firm with receipts of up to $3.0 million annually and in the charter or party vessel activity as a firm with receipts of up to $5.0 million annually. Since taken all together the proposed action will affect practically all participants of the Eastern Zone commercial Gulf king mackerel fishery, the "substantial number" criterion will be met in general.

Economic impacts on small business entities are considered to be "significant" if the proposed action would result in any of the following: (a) reduction in annual gross revenues by more than 5 percent; (b) increase in total costs of production by more than 5 percent as a result of an increase in compliance costs; (c) compliance costs as a percent of sales for small entities are at least 10 percent higher than compliance costs as a percent of sales for large entities; (d) capital costs of compliance represent a significant portion of capital available to small entities,

considering internal cash flow and external financing capabilities; or (e) as a rule of thumb, 2 percent of small business entities being forced to cease business operations (NMFS, 1992).

The proposed trip limits for both the Northern and South/West Areas are expected to increase benefits to the industry or to some segments of the industry. They therefore rule out potential major reduction in gross revenues (item a), potential major increases in compliance costs (items b through d) to the entire industry, and forcing any business entity to cease operation. The TAC reduction for Gulf Spanish mackerel has no effects on gross revenues and costs of both the commercial and recreational business entities. On the other hand, the proposed zero king mackerel bag limit for captain and crew would reduce charter revenues by 3 to 6 percent, so that item (a) would be met. This measure, however, has minimal effects on production and compliance costs (items b through d) and is not expected to force any charter operation to cease business (item e).

Considering that all participants in the commercial Gulf king mackerel fishery may be deemed small business entities, the issue of big versus small business operations is not relevant in determining distributional/regional effects of regulations, and it thus also rules out disproportionate effects on capital costs of compliance (item d).

Due mainly to the proposed zero king mackerel bag limit for captain and crew of for-hire vessels, the proposed regulation, if enacted, will have a significant economic impact on a substantial number of small entities in the for-hire sector of the Gulf king mackerel fishery. An IRFA is therefore required, and the following sections comprise the rest of the IRFA.

Explanation of Why the Action is Being Considered

Refer to Section II of this document: Purpose and Need for Action.

Objectives and Legal Basis for the Rule

Refer to the subsection, Management Objectives, of Section I: History of Management. The Magnuson Fishery Conservation and Management Act of 1976, as amended, provides the legal basis for the rule.

Demographic Analysis

Refer to the Fishery Management Plan for the Coastal Migratory Pelagics, as amended.

Cost Analysis

Refer to Section V: Regulatory Impact Review, including the subsection of government costs of regulation.

Competitive Effects Analysis

The industry is composed entirely of small businesses, so that the impacts of the measures considered under this regulatory amendment will not involve disproportional effects on small versus large businesses.

Identification of Overlapping Regulations

The proposed action does not create overlapping regulations with any state regulations or other federal laws.

Conclusion

The foregoing information and pertinent portions of the RIR are deemed to satisfy the analysis required under the RFA.

VI. ENVIRONMENTAL CONSEQUENCES

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

Fishery Resources: The TACs previously developed and established under this framework seasonal adjustment are consistent with the Council's objective of rebuilding stocks. The proposed action is intended to protect coastal pelagic fish stocks from recruitment and growth overfishing while fairly allocating allowable catch among fishermen. The proposed actions will have insignificant effects on the fishery resources.

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

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

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

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

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

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

Finding of No Significant Environmental Impact

The proposed action is not a major action having significant impact on the quality of the marine or human environment of the Gulf of Mexico. The proposed action is an adjustment of the original regulations of the FMP under the framework procedure set forth in Amendment 6 to rebuild overfished stocks. The proposed action should not result in impacts significantly different in context or intensity from those described in the environmental impact statement and environmental assessment published with the regulations implementing the FMP and Amendment 6. The environmental consequences of this action are almost entirely economic in nature and are discussed in the RIR and IRFA (Section V).

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

Approved: _____ _____

Assistant Administrator for Fisheries Date

Scientific Data Needs

To monitor stocks to determine whether overfishing occurs, the SEFC of NMFS currently monitors catch by size (age) to estimate recruitment and acceptable biological catch. No additional collection of scientific data would be required by this amendment. The Mackerel Stock Assessment Panel and the Socioeconomic Assessment Panel have identified the following data needs:**[get from NMFS operation plan comments]**

1. An evaluation of CPUE indices should be completed relative to standardization methods and management history.
2. The socioeconomic risks of selecting TAC's above the recommended ABC range needs to be completed.
3. The size at age of both king and Spanish mackerel need to be evaluated.
4. Size/age samples need to be increased for cobia, particularly in the Gulf.
5. The identification of Spanish mackerel stocks through multiple research techniques need to be completed.
6. Yield per recruit analyses should be conducted relative to alternative selective fishing

patterns.

7. Mexican landings data need to be obtained.
8. Research on the consequences and estimation of bycatch needs to be completed.
9. Research on the application of assessment and management models relative to dynamic species such as Spanish mackerel needs to be completed.
10. Recreational and commercial demand studies on the Spanish mackerel fishery need to be conducted and there is a need to estimate supply functions for the vessels involved in the commercial and for-hire mackerel fishery. The supply studies would involve collection of vessel costs and returns information. The studies should also involve consideration of the effect of Mexican fisheries for Spanish and king mackerel.
11. There remains a need to determine the priority research which is necessary to provide minimally acceptable analyses of stock allocation among user groups.
12. The Socioeconomic Assessment Panel recommends that the Marine Recreational Fisheries Statistical Survey be augmented in ways that provide additional data for estimating economic models.

VII. OTHER APPLICABLE LAW

Impacts on Other Fisheries: The proposed action increases the commercial trip limit for Gulf group king mackerel in the north area of the Eastern Zone; however, it does not change quotas or subquotas. The action also reduces the bag limit on Gulf group king mackerel to zero for captains and crew of for-hire vessels, and reduces TAC to 7.0 million pounds for Gulf group Spanish mackerel. It does not redirect effort to other fisheries, and they should not be impacted by this action.

Vessel Safety: The 1995 Framework Seasonal Adjustment which implemented daily commercial trip possession limits for mackerel was discussed with representatives of the affected Coast Guard District and commercial fishermen. They believed that because some catch was allowed on all days during the restricted, daily-limit period, fishermen would not require alternative fishing opportunities to compensate for unsafe weather for fishing. It was felt that these possession limits posed fewer safety problems than the previous derby fishing in which vessels tended to fish as hard as possible regardless of weather conditions before the quota is taken. The proposed action to modify trip limits, reduce TAC on Gulf group Spanish mackerel, and revert the bag limit to 0 for captains and crew of for-hire vessels should not change the current status of vessel safety; therefore, the proposed actions do not impose requirements for use of unsafe (or other) gear, nor do they direct fishing effort to periods of adverse weather conditions.

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

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

VIII. PUBLIC REVIEW

A hearing to obtain public comment on the proposals contained in this regulatory amendment was held by the Gulf of Mexico Fishery Management Council at Tampa, Florida on July 17, 1996.

List of Agencies Consulted:

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

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

List of Organizations Consulted:

- Concerned Fishermen of Florida
- Organized Fishermen of Florida
- Monroe County Concerned Fishermen, Inc.

Responsible Agency:

Gulf of Mexico Fishery Management Council
5401 West Kennedy Boulevard
Suite 331
Tampa, Florida 33609
813-228-2815

List of Preparers:

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

IX. REFERENCES

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TABLE 1. Comparisons of Gulf group king mackerel allocations and landings for fishing years 1986/87 through 1994/95.

	RECREATIONAL		COMMERCIAL	
FISHING YEAR	ALLOCATION	LANDINGS	ALLOCATION	LANDINGS
1986-87	1.97	3.27	0.93	1.47
1987-88	1.50	2.15	0.70	0.87
1988-89	2.31	5.28	1.09	1.41
1989-90	2.89	3.36	1.36	1.95
1990-91	2.89	3.95	1.36	1.82
1991-92	3.91	4.77	1.84	2.12
1992-93	5.30	6.26	2.50	3.60
1993-94	5.30	6.15	2.50	2.57
1994-95	5.30	7.86	2.50	2.94

Source: MSAP Report 1996 (Supplement)

TABLE 2. Percentage overages of TAC by the recreational and commercial fishery for Gulf king mackerel, fishing years 1986/89 through 1994/95.

YEAR	RECREATIONAL OVERAGE	COMMERCIAL OVERAGE
1986 - 1987	66.0%	58.1%
1987 - 1988	43.3%	24.3%
1988 - 1989	99.9%	29.4%
1989 - 1990	16.3%	43.4%
1990 - 1991	36.7%	33.8%
1991 - 1992	22.0%	15.2%
1986-92 AVERAGE	47.4%	34.0%
1992 - 1993	18.1%	44.0%
1993 - 1994	16.0%	2.8%
1994 - 1995	48.3%	17.6%
1995 - 1996		
1992-95 AVERAGE	27.5%	21.5%

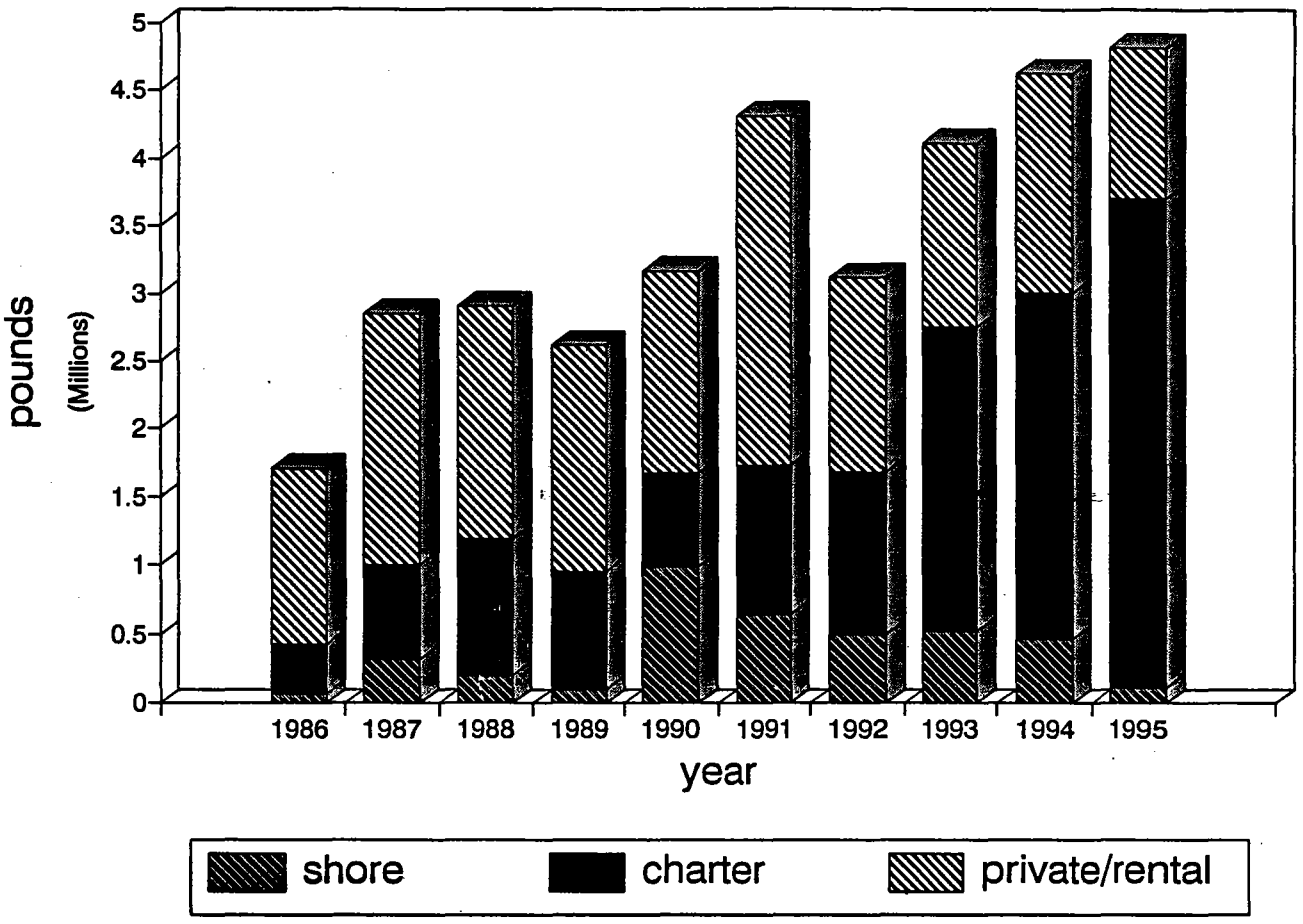
Source: Socioeconomic assessment panel report, July 1996

TABLE 3. Landings, ABC ranges, and TAC'S for Gulf group Spanish mackerel 1989/1990 through 1994/1995.

FISHING YEAR	ABC (lbs)	TAC (lbs)	TOTAL
1989/1990	4.9 - 6.5	5.25	4001
1990/1991	3.9 - 7.4	5.25	4213
1991/1992	7.1 - 12.2	8.61	7053
1992/1993	5.1 - 9.8	8.60	6243
1993/1994	4.7 - 8.7	8.60	5309
1994/1995	4.4 - 8.7	8.60	4100
1995/1996	4.0 - 10.7	8.60	

Source: MSAP Report 1996

FIGURE 2. Comparisons of recreational (shore, charter, and private/rental) Gulf group king mackerel landings to fishing years 1986 through 1995.



Source: Socioeconomic assessment panel report, July 1996

APPENDIX I

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

Section 12.6.1.1

A. An assessment panel appointed by the Councils will normally reassess the condition of each stock or group of king and Spanish mackerel and cobia in alternate years for the purpose of providing for any needed preseason adjustment of TAC and other framework measures. However, in the event of changes in the stocks or fisheries, the Councils may request additional assessments as may be needed. The Councils, however, may make annual seasonal adjustments based on the most recent assessment.

The Panel shall be composed of NMFS scientists, Council staff, Scientific and Statistical Committee members, and other state, university, and private scientists as deemed appropriate by the Councils. The Panel will address the following items for each stock:

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

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

3. Condition of the stock(s) or groups of fish within each stock which could be managed separately. When the panel is able separate ABC ranges for the eastern and western groups of Gulf king mackerel, separated at the Alabama/Florida border, the ratio of the mix is to be calculated on allele frequencies. Allocations between recreational and commercial users are to remain unchanged or 68 to 32 percent. For each stock, this should include but not be limited to:

    a. Fishing mortality rate relative to F_{msy} and $F_{0.1}$
    b. Abundance relative to an adequate spawning biomass.
    c. Trends in recruitment.
    d. Acceptable Biological Catch (ABC) which will result in long-term yield as near MSY as possible.
    e. Calculation of catch ratios based on catch statistics using procedures defined in the FMP

4. Overfishing (See options 2.73)

    a. A mackerel or cobia stock shall be considered overfished if the spawning potential ratio (SPR) is less than the target level percentage recommended by the assessment panel, approved by the Scientific and Statistical Committee (SSC), and adopted by the Councils.

b. When a stock is overfished (as defined in a), the act of overfishing is defined as harvesting at a rate that is not consistent with programs to rebuild the stock to the target level percentage and the assessment panel will develop ABC ranges based on a fishing mortality rate that will achieve and maintain at least the minimum specified SPR. The recovery period is not to exceed 12 years for king mackerel beginning in 1987.

c. When a stock is not overfished [as defined in (a)], the act of overfishing is defined as a harvest rate that if continued would lead to a state of the stock that would not at least allow a harvest of OY on a continuing basis, and the assessment panel will develop ABC ranges based upon OY (currently MSY).

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

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

6. Other biological questions as appropriate.

B. The assessment panel will prepare a written report with its recommendations for submission to the Councils by such date as may be specified by the Councils. The report will contain the scientific basis for their recommendations and indicate the degree of reliability which the Council should place on the recommended stock divisions, levels of catch, and options for nonquota controls of the catch.

C. The Councils will consider the reports and recommendations of the assessment panel and such public comments as are relevant to the assessment panel's submission. A public hearing will be held at a time and place where the Council consider the panel's report. The Councils may convene the Scientific and Statistical Committee to provide advice prior to taking final action. After receiving public input, Councils will make findings on the need for changes.

D. If changes are needed in MSYs, TACs, quotas, bag limits, size limits,vessel trip limits, closed seasons or areas, gear restrictions, or onotial requirement of permits for each stock of king or Spanish mackerel or cobia, the Councils will advise the Regional Director of the Southeast Region of the National Marine Fisheries Service (RD) in writing of their recommendations, accompanied by the assessment panel's report, relevant background material, and public comment.

Recommendations with respect to the Atlantic groups of king and Spanish mackerel will be the responsibility of the South Atlantic Council, and those for the Gulf groups of king

and Spanish mackerel will be the responsibility of the Gulf Council. This report shall be submitted by such date as may be specified by the Councils.

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

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

Appropriate regulatory changes which may be implemented by the Regional Director by notice in the Federal Register are:

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

2. Setting total allowable catches (TACs) for each stock or migratory group of fish which should be managed separately, as identified in the FMP provided:

    a. No TAC may exceed the best point estimate of MSY by more than 10 percent.
    b. No TAC may exceed the upper range of ABC if it results in overfishing as defined in Section 12.6.1.1, A.4.
    c. Downward adjustments of TAC of any amount are allowed in order to protect the stock and prevent overfishing.
    d. Reductions or increases in allocations as a result of changes in the TAC are to be as equitable as may be practical utilizing similar percentage changes to allocations for participants in a fishery. (Changes in bag limits cannot always accommodate the exact desired level of change).

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

Implementing or modifying quotas, adjusted quotas, bag limits, size limits, vessel trip limits, closed seasons or areas, gear restrictions, or initial requirement of permits, as necessary to limit the catch of each user group to its allocation.

Appendix 2

LANDINGS REDUCTION OPTIONS FOR THE RECREATIONAL KING MACKEREL FISHERY OF THE GULF OF MEXICO

Prepared for the Gulf of Mexico
Fishery Management Council
Mackerel Management Committee
Meeting on July 15-18, 1996

by
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July 15, 1996

LANDINGS REDUCTION OPTIONS FOR THE RECREATIONAL KING MACKEREL FISHERY OF THE GULF OF MEXICO

This document presents landings projections produced by bag and size limit analyses of the Gulf of Mexico (GOM) king mackerel recreational fishery. This document contains information originally presented in Holiman (1996). The data presented in this document and utilized in the analyses is derived from the NMFS Marine Recreational Fisheries Statistics Survey (MRFSS), the NMFS Headboat Survey, and the Texas Parks and Wildlife Survey (TPWD).

Because the management of king mackerel in the Southeast does not follow the time and geographic organization of MRFSS, an analysis that fully accomodates the shifts of the Gulf Group stock is difficult if not impossible. Under the current data structure, it is a relatively easy process to produce landings estimates, effort estimates, catch and size frequencies, etc., for king mackerel in the Gulf subregion for a calendar year (or wave). The same cannot be said when accounting for fishing year Gulf Group king mackerel. Hence, direct comparisons of summary data are difficult and mostly inappropriate. For example, king mackerel landings in the GOM were approximately 4.9 million pounds (see Table 1) in 1993-95, whereas the recreational "seasonal" allocation for Gulf Group king mackerel was 5.3 million pounds. At first glance, it might appear that anglers did not achieve the allocation. This is not the case, however, when the appropriate components of southeast Florida are included and adjustments are made for the fishing year vs. calendar year are made. Gulf Group landings were actually 6.15 and 7.86 million pounds for the 1993/94 and 1994/95 fishing years, respectively (Mackerel Stock Assessment Panel, 1996). While reasonably straightforward adjustments in the analysis will produce landings estimates by Gulf Group (this involves analysis by subregion, state and wave, dividing wave landings by half for certain waves, and assuming landings in specific counties during certain periods are zero), summarizing catch effort, landings frequencies and size frequencies of the fishery (all required components of landings reduction models) is potentially not possible with any degree of accuracy or confidence.

In light of these difficulties, the approach used in this analysis is to assume that fishing conditions in the Gulf Group region mirror those of the Gulf subregion and, thus, any method capable of reducing landings in the Gulf subregion will be equally effective throughout the range of the Gulf Group. This requires determining, on a percentage basis, the reduction from current landings levels required by recommended TACs, and identifying the bag or size limits necessary to produce the required reductions. For example, if current Gulf Group landings were 6.0 million pounds and TAC 4.5 million pounds, a 25 percent reduction in landings would be required. Hence, the task is identifying the bag or size limit that reduces projected landings in the Gulf of Mexico by 25 percent, and conclude that these measures will simultaneously accomplish desired reductions for the Gulf Group.

The following sections discuss the results of the king mackerel bag and size limit analyses.

RESULTS

LANDINGS REDUCTION REQUIREMENTS

Preliminary recreational Gulf Group king mackerel landings for the 1995/96 fishing season are estimated to be 572,904 fish (Appendix A). The 1993-95 average weight per landed king mackerel in the GOM from the MRFSS is 9.11 pounds, while that of 1995 is 9.52 pounds (Table 2). This translates into projected landings of 5.219-5.454 million pounds for the 1995/96 fishing season as compared to the recreational allocation of 5.304 million pounds. Thus, landings are expected to approximately meet the allocation.

Recommendations for the 1996/97 fishing season, however, are that the TAC be reduced to 6.8 millions (Mackerel Stock Assessment Panel, 1996) which would reduce the recreational allocation to 4.624 million pounds. Using the 1993-95 average king mackerel weight, the required reduction in landings is 0.595 million pounds (5.219 - 4.624) or 12.87 percent.

BAG LIMIT ANALYSIS

Landings projections were made under differential bag limits for the for-hire sector (headboat/charterboat, and hereafter referred to as the charterboat sector) and the not-for-hire sector (shore and private/rental, and hereafter referred to as the private sector). Data used in the analysis are presented in Tables 3-8 and include 1994 and 1995 catch trips by mode (the number of angler trips that caught king mackerel, regardless of disposition), 1994 and 1995 landing frequency for catch trips by mode(proportion of catch trips that landed 0 fish, 1 fish, 2 fish, etc.), 1994 and 1995 size frequency of landed king mackerel by mode, and 1986-95 landings (pounds) by statistical reporting source (MRFSS, Headboat and TPWD). All results in this section assume continuation of the current 20-inch minimum size.

The model assumes that non-compliance rates do not increase as a result of the more restrictive bag limits. However, bag-limit non-compliance is incorporated at current levels. (Additional discussion on bag limit compliance/non-compliance is contained in the "Captain/Crew Catch" section below.) Additionally, improved stock effects as a result of releasing fish previously landed in excess of the new bag limit are not assumed to increase the success rates of anglers previously landing less than the legal bag limit. In reality, both factors are likely to change and, thus, the analysis potentially underestimates landings.

The results of the analysis are contained in Table 9. Four scenarios were modeled: status quo with a uniform 2-fish limit, a uniform 1-fish limit, a 2-fish charter:1-fish private limit, and a 1-fish charter:2-fish private limit. Zero-limits were not considered due to the requirement to develop a full amendment to the FMP in order to allow zero-limits.

The model calculates MRFSS landings and then extrapolates entire Gulf landings using historical non-MRFSS:MRFSS landings ratios. These ratios are shown in Table 1. Three ratios were used for final extrapolation: the 1986-94 average ratio, the 1990-94 average ratio, and the 1994 ratio. The first two ratios

were approximately equal, about 13%, and therefore produced similar projections. The 1994 ratio, 6.5%, produces lower projections and may be more appropriate as 1995 data, although incomplete, is similar to 1994 performance. Differences in the projections using the different ratios are relatively minor, varying by approximately 6%, for the highest to lowest projection.

Under the status quo of a uniform 2-fish bag limit, landings projections range from 4.9 to 5.2 million pounds. This compares with 5.0 (4.96) and 4.9 million pounds in 1993 and 1994, respectively. Landings in 1995 appear to be slightly higher than those of 1994 (see Table 1). A 2-fish charter:1-fish private bag limit would reduce landings to 4.5-4.8 million pounds, a 1-fish charter:2-fish private limit would reduce landings to 3.8-4.1 million pounds, and a uniform 1-fish bag limit would reduce landings to 3.4-3.6 million pounds.

The results reflect the relative importance of the different sectors to total landings and the per-trip landing success within each sector. Of total MRFSS Gulf estimates, the charterboat sector accounted for 55% of king mackerel landings in 1994 and 73% in 1995. Further, as seen in Tables 7 and 8, less than 24%, on average, of the private catch trips land 2 or more king mackerel per trip, whereas 49%, on average, of the charterboat catch trips land 2 or more king mackerel. Thus, savings as a result of more restrictive limits on the private sector will be relatively minor.

Using the 1994 non-MRFSS:MRFSS ratio, the 2:1, 1:2 and 1:1 bag limits, are projected to produce landings savings of 8.2, 22.5 and 30.6 percent, respectively. As such, the results demonstrate that meeting the required landings savings through the use of bag limit reduction requires lowering the charter limit.

SIZE LIMIT ANALYSIS

Landings projections were smilarly made under increased minimum size limits and under a maximum size limit for the charter and private sectors. Data used in the analysis consisted of the same effort, catch and size data previously described and, as above, the model first estimates MRFSS landings and extrapolates to Gulf landings. All results in this section assume continuation of the current 2-fish bag limit.

The model assumes that non-compliance rates do not increase as a result of the more restrictive size limits. However, size-limit non-compliance is incorporated at current levels. In reality, non-compliance might be expected to increase and, thus, the analysis potentially underestimates landings.

The results of the analyses are contained in Table 10 and contain projections based only on the 1994 non-MRFSS:MRFSS landings ratio. Note should be made that projections using this ratio are approximately 6.5 percent less than the projections using the 1986-94 or 1990-94 ratios. Three scenarios were modeled: a higher uniform minimum size, a uniform maximum size, and a uniform maximum size under a uniform 24-inch minimum size. Differential size limits were not considered. Additionally, allowing one fish greater than a certain size (a so-called "trophy" fish) was not evaluated due to the uncertainty associated with resulting size frequencies.

Achieving the target reduction through adjustment of size limits would require either a uniform 28-inch (27.5 inches) minimum or 44-45-inch maximum size. Under a uniform 24-inch minimum size, the target reduction could be achieved with a concurrent 47-inch maximum. The results reflect that, although certain size categories may account for large portions of landed fish, particularly in the smaller size categories, translation into poundage dilutes the impact of the larger minimum sizes on landings reductions.

COMBINATION BAG AND SIZE LIMIT

An additional analysis was conducted incorporating a differential bag limit and larger uniform minimum size. The results are contained in Table 11. A 2-fish charter:1-fish private was modeled to determine how large the minimum size would have to be increased to achieve the target reduction. The results indicated that a uniform 25-inch limit would be required. This result again reflects the relative importance of the charter vs. the private sector in determining landings showing that, in the absence of bag-limit reductions in the charter sector, fairly severe size adjustments are required to control the king mackerel fishery.

CAPTAIN/CREW CATCH

An additional option proposed for reduction of king mackerel landings is the elimination of the allowance of the 2-fish bag limit for captains and crew on charter vessels. Although the king mackerel bag limits refer to individual angler limits, from an enforcement standpoint, limits are monitored/enforced from a vessel standpoint and evaluated based on the total number of fish divided by the total number of people on the vessel. Thus, while individual angler performance may violate legal limits, the vessel may be fully compliant.

The difficulty of assessing the impact of eliminating this allowance lies with quantifying the landings attributable to the captain and crew. An intuitive source of information for quantifying this component is landing frequency data, as contained in Table 7. The assumption could be made that no charter operation would jeopardize their licenses by allowing customers to exceed the bag limits and therefore data observations indicating per-angler-landings in excess of the bag limit, observations that indicate non-compliance in the context of all analyses contained here, are a clear indication of anglers landing the captain/crews share. This could explain the data showing that 20.3 percent of charter anger catch trips landed fish in excess of the bag limit for 1994-95, whereas only 1.45 percent of private angler trips exceeded the bag limit (Tables 7 and 8). As such, the captain/crew contribution could then be quantified by assuming all landings in excess of the bag limit constituted the captain/crew share and summed accordingly. If these landings were eliminated (zero non-compliance), projected Gulf king mackerel landings would be reduced to 4.316 million pounds, or a reduction of 12.22 percent under a uniform 2-fish bag limit and using the 1994 Gulf extrapolation ratio. Under a 2:1 charter:private bag limit, zero non-compliance would result in landings of 3.913 million pounds, or a reduction of 20.42 percent. Either scenario would thus approximately achieve or exceed target reductions.

The core assumption for such an analysis is, however, potentially seriously flawed and these projections represent, at best, an upper bound of potential savings and actual savings are likely to be substantially less. While it is not questioned that captain/crew allowances contribute to "observed non-compliance" rates, since not all anglers on a given charter trip are interviewed, it is equally possible that the excess fish reflect the unsuccessful effort of other anglers on the vessel. This is supported by the observation that, if the typical charter carried 4 or more people, the captain/crew allowance would be expected to add at most 1-1.5 fish per angler and, thus, in no way accounts for the 5, 6 and 8-fish observations. If the entire vessel were sampled, then the true captain/crew phenomena could be observed and assessed. Unfortunately, the primary source of charter data, the MRFSS data, is not implemented in a manner that allows this type of assessment.

The NMFS charterboat data is a possible source of this information. However, it must be emphasized that, although this data contains self-reported activity, the survey is not statistically valid as representative of industry activity. At best, the data is simply representative of only the participants in the survey. The charterboat survey contains, among other variables, information on landed fish (KEPTNON and KEPTTROL for kept fish, non-troll and troll, respectively) by species code. Data from 1992 and 1993 (1994 and 1995 data was unavailable at the time of this analysis) show non-compliance rates (for trips that landed king mackerel, and fishing duration of less than 12 hours) to be 19.8 and 11.7 percent, respectively. The majority of this excess came in the 1-1.5 additional fish category (for total landings of 2-3.5 fish), thus suggesting that, while captains truthfully reported charter performance (hence indicating per-angler overages), boats remained legal.

Observations in the charterboat data in the 4, 5, 6 and upward category nevertheless still exist, showing that not all "observed" non-compliance can be attributable to the captain/crew share. Hence, as previously stated, any estimate of savings based on non-compliance rates is likely to be an upper bound as not all fish in this category can be attributed to the captain/crew allowance.

REFERENCES

Holiman, Stephen G. 1996. Summary Statistics and Discussion on the Recreational King Mackerel Fishery of the Gulf of Mexico. Report prepared for the Gulf of Mexico Fishery Management Council Socioeconomic Panel Meeting, July 1-2, 1996.

Mackerel Stock Assessment Panel. 1996. Supplement to the 1996 Report of the Mackerel Stock Assessment Panel. Report prepared by the Mackerel Stock Assessment Panel at the Panel Workshop held June 20-26, 1996.

TABLE 1. GULF OF MEXICO KING MACKEREL RECREATIONAL LANDINGS (THOUSANDS OF POUNDS).

YEAR	MRFSS	HEADBOAT	TPWD	TOTAL	NON-MRFSS/ MRFSS
1986	1,723	107	181	2,011	0.1672
1987	2,862	112	230	3,204	0.1195
1988	2,919	110	201	3,230	0.1065
1989	2,630	114	186	2,930	0.1141
1990	3,168	132	234	3,534	0.1155
1991	4,325	128	201	4,654	0.0761
1992	3,135	160	492	3,787	0.2080
1993	4,119	157	688	4,964	0.2051
1994	4,634	172	130	4,936	0.0652
1995	4,690	212			
1986-94 AVERAGE RATIO					0.1308
1990-94 AVERAGE RATIO					0.1340
1994 RATIO					0.0652

TABLE 2. MRFSS GULF OF MEXICO KING MACKEREL AVERAGE WEIGHTS.			
YEAR	TOTAL POUNDS	TOTAL FISH	AVERAGE WEIGHT
1993	4,118,916	446,829	9.22
1994	4,633,703	538,502	8.60
1995	4,696,549	493,275	9.52
		AVERAGE	9.11

TABLE 3. 1994 RELATIVE FREQUENCIES OF LANDED KING MACKEREL BY LENGTH CATEGORIES, GULF OF MEXICO, CHARTERBOAT, ALL AREAS, ALL WAVES, MRFSS DATA ONLY.

	N	FREQ
	SUM	SUM
LENGTH CATEGORY		
>16 inches but less than 17	1	0.30%
>17 inches but less than 18	1	0.30%
>18 inches but less than 19	2	0.61%
>19 inches but less than 20	4	1.23%
>20 inches but less than 21	4	1.23%
>21 inches but less than 22	6	1.85%
>22 inches but less than 23	10	3.09%
>23 inches but less than 24	15	4.64%
>24 inches but less than 25	13	4.02%
>25 inches but less than 26	19	5.88%
>26 inches but less than 27	22	6.81%
>27 inches but less than 28	24	7.43%
>28 inches but less than 29	18	5.57%
>29 inches but less than 30	19	5.88%
>30 inches but less than 31	33	10.21%
>31 inches but less than 32	24	7.43%
>32 inches but less than 33	28	8.66%
>33 inches but less than 34	17	5.26%
>34 inches but less than 35	11	3.40%
>35 inches but less than 36	13	4.02%
>36 inches but less than 37	6	1.85%
>37 inches but less than 38	7	2.16%
>38 inches but less than 39	6	1.85%
>39 inches but less than 40	5	1.54%
>40 inches but less than 41	2	0.61%
>41 inches but less than 42	2	0.61%
>42 inches but less than 43	3	0.92%
>44 inches but less than 45	1	0.30%
>47 inches but less than 48	3	0.92%
>50 inches but less than 51	2	0.61%
>51 inches but less than 52	1	0.30%
>61 inches but less than 62	1	0.30%
ALL	323	100.00%

TABLE 4. 1994 RELATIVE FREQUENCIES OF LANDED KING MACKEREL BY LENGTH CATEGORIES, GULF OF MEXICO, NON-CHARTERBOAT, ALL AREAS, ALL WAVES, MRFSS DATA ONLY.

	N	FREQ
	SUM	SUM
LENGTH CATEGORY		
>13 inches but less than 14	1	0.76%
>20 inches but less than 21	2	1.53%
>21 inches but less than 22	3	2.30%
>22 inches but less than 23	6	4.61%
>23 inches but less than 24	7	5.38%
>24 inches but less than 25	5	3.84%
>25 inches but less than 26	11	8.46%
>26 inches but less than 27	2	1.53%
>27 inches but less than 28	5	3.84%
>28 inches but less than 29	5	3.84%
>29 inches but less than 30	7	5.38%
>30 inches but less than 31	9	6.92%
>31 inches but less than 32	3	2.30%
>32 inches but less than 33	6	4.61%
>33 inches but less than 34	9	6.92%
>34 inches but less than 35	3	2.30%
>35 inches but less than 36	4	3.07%
>36 inches but less than 37	9	6.92%
>37 inches but less than 38	5	3.84%
>38 inches but less than 39	5	3.84%
>39 inches but less than 40	8	6.15%
>40 inches but less than 41	3	2.30%
>41 inches but less than 42	1	0.76%
>42 inches but less than 43	2	1.53%
>44 inches but less than 45	1	0.76%
>45 inches but less than 46	3	2.30%
>47 inches but less than 48	2	1.53%
>49 inches but less than 50	1	0.76%
>50 inches but less than 51	1	0.76%
>53 inches but less than 54	1	0.76%
ALL	130	100.00%

TABLE 5. 1995 RELATIVE FREQUENCIES OF LANDED KING MACKEREL BY LENGTH CATEGORIES, GULF OF MEXICO, CHARTERBOAT, ALL AREAS, ALL WAVES, MRFSS DATA ONLY.

	N	FREQ
	SUM	SUM
LENGTH CATEGORY		
>16 inches but less than 17	2	0.70%
>17 inches but less than 18	4	1.40%
>18 inches but less than 19	2	0.70%
>20 inches but less than 21	2	0.70%
>21 inches but less than 22	2	0.70%
>22 inches but less than 23	6	2.11%
>23 inches but less than 24	14	4.92%
>24 inches but less than 25	12	4.22%
>25 inches but less than 26	9	3.16%
>26 inches but less than 27	11	3.87%
>27 inches but less than 28	18	6.33%
>28 inches but less than 29	12	4.22%
>29 inches but less than 30	16	5.63%
>30 inches but less than 31	21	7.39%
>31 inches but less than 32	23	8.09%
>32 inches but less than 33	24	8.45%
>33 inches but less than 34	21	7.39%
>34 inches but less than 35	18	6.33%
>35 inches but less than 36	11	3.87%
>36 inches but less than 37	7	2.46%
>37 inches but less than 38	11	3.87%
>38 inches but less than 39	7	2.46%
>39 inches but less than 40	4	1.40%
>40 inches but less than 41	7	2.46%
>41 inches but less than 42	6	2.11%
>42 inches but less than 43	3	1.05%
>43 inches but less than 44	1	0.35%
>44 inches but less than 45	2	0.70%
>45 inches but less than 46	1	0.35%
>46 inches but less than 47	3	1.05%
>47 inches but less than 48	1	0.35%
>50 inches but less than 51	1	0.35%
>51 inches but less than 52	1	0.35%
>54 inches but less than 55	1	0.35%
ALL	284	100.00%

TABLE 6. 1995 RELATIVE FREQUENCIES OF LANDED KING MACKEREL BY LENGTH CATEGORIES, GULF OF MEXICO, NON-CHARTERBOAT, ALL AREAS, ALL WAVES, MRFSS DATA ONLY.

	N	FREQ
	SUM	SUM
LENGTH CATEGORY		
>16 inches but less than 17	1	1.35%
>17 inches but less than 18	1	1.35%
>19 inches but less than 20	1	1.35%
>22 inches but less than 23	4	5.40%
>24 inches but less than 25	2	2.70%
>25 inches but less than 26	5	6.75%
>26 inches but less than 27	4	5.40%
>27 inches but less than 28	6	8.10%
>28 inches but less than 29	8	10.81%
>29 inches but less than 30	6	8.10%
>30 inches but less than 31	7	9.45%
>31 inches but less than 32	8	10.81%
>32 inches but less than 33	4	5.40%
>33 inches but less than 34	3	4.05%
>34 inches but less than 35	2	2.70%
>35 inches but less than 36	2	2.70%
>36 inches but less than 37	1	1.35%
>38 inches but less than 39	1	1.35%
>39 inches but less than 40	2	2.70%
>41 inches but less than 42	2	2.70%
>43 inches but less than 44	1	1.35%
>45 inches but less than 46	1	1.35%
>51 inches but less than 52	1	1.35%
>61 inches but less than 62	1	1.35%
ALL	74	100.00%

TABLE 7. GULF OF MEXICO CHARTERBOAT KING MACKEREL LAND FREQUENCIES (AS A PERCEN OF CATCH TRIPS), MRFSS DATA ONLY.

	1994		1995	
# OF FISH	N	%	N	%
0	9	5.17	1	1.19
0.5	23	13.22	12	14.29
1	59	33.91	27	32.14
2	55	31.61	20	23.81
3	19	10.92	15	17.86
4	8	4.60	4	4.76
5	1	0.57	3	3.57
6			1	1.19
7				
8			1	1.19
TOTAL	174	100.00	84	100.00.

TABLE 8. GULF OF MEXICO NON-CHARTERBOAT KING MACKEREL LAND FREQUENCIES (AS A PERCENTAGE OF CATCH TRIPS), MRFSS DATA ONLY.

	1994		1995	
# OF FISH	N	%	N	%
0	23	13.69	22	20.37
0.5	9	5.36	6	5.56
1	100	59.52	52	48.15
2	34	20.24	26	24.07
3	1	0.60	1	0.93
4				
5			1	0.93
6				
7				
8				
9				
10	1	0.60		
TOTAL	168	100.00	108	100.00

TABLE 9. GULF OF MEXICO KING MACKEREL RECREATIONAL PROJECTED LANDINGS (THOUSANDS OF POUNDS) AS DERIVED FROM A BAG LIMIT ANALYSIS. TARGET = 12.87 PERCENT REDUCTION.

BAG LIMIT		NON-MRFSS/MRFSS RATIO YEARS			% REDUC.
CHARTER	NON-CHARTER	1986-94	1990-94	1994	USING 1994
2	2	5,219	5,234	4,917	-
2	1	4,792	4,805	4,514	8.2
1	2	4,048	4,059	3,813	22.5
1	1	3,620	3,631	3,410	30.6

TABLE 10. GULF OF MEXICO KING MACKEREL RECREATIONAL PROJECTED LANDINGS (THOUSANDS OF POUNDS) AS DERIVED FROM A SIZE LIMIT ANALYSIS. TARGET = 12.87 PERCENT REDUCTION.

UNIFORM MINIMUM SIZE		
MINIMUM SIZE (INCHES)	LANDINGS	PERCENT REDUCTION
26	4.508	8.32
27	4.385	10.82
28	4.193	14.72
UNIFORM MAXIMUM SIZE		
MAXIMUM SIZE (INCHES)	LANDINGS	PERCENT REDUCTION
43	4.202	14.54
44	4.234	13.89
45	4.297	12.61
24-INCH MINIMUM AND UNIFORM MAXIMUM SIZE		
MAXIMUM SIZE (INCHES)	LANDINGS	PERCENT REDUCTION
NO MAXIMUM	4.727	3.86
47	4.260	13.36
48	4.378	10.96

TABLE 11. GULF OF MEXICO KING MACKEREL RECREATIONAL PROJECTED LANDINGS (THOUSANDS OF POUNDS) AS DERIVED FROM A BAG AND UNIFORM MINIMUM SIZE LIMIT ANALYSIS. TARGET = 12.87 PERCENT REDUCTION.

MINIMUM SIZE (INCHES)	LANDINGS	PERCENT REDUCTION
24	4.339	11.76
25	4.262	13.32

TABLE 12. KING MACKEREL AVERAGE WEIGHT (POUNDS) BY SIZE (FORK LENGTH, INCHES).

FORMULA: WEIGHT=[[[[LENGTH(INCHES)*25.4(CM/INCH)]^2.9881] *[8.464E-06]]/454]

LENGTH (INCHES)	WEIGHT (POUNDS)
18	1.656469
19	1.946915
20	2.269401
21	2.62559
22	3.017148
23	3.445739
24	3.913025
25	4.420669
26	4.970331
27	5.563672
28	6.202351
29	6.888028
30	7.62236
31	8.407005
32	9.24362
33	10.13386
34	11.07938
35	12.08184
36	13.14289
37	14.26419
38	15.44738
39	16.69412
40	18.00607
41	19.38487
42	20.83218
43	22.34964
44	23.93891
45	25.60164
46	27.33947
47	29.15406
48	31.04705
49	33.0201
50	35.07484
51	37.21293
52	39.43601
53	41.74574
54	44.14375
55	46.63169
56	49.21121
57	51.88396
58	54.65157
59	57.51569
60	60.47797

APPENDIX A

PRELIMINARY GULF GROUP KING MACKEREL RECREATIONAL CATCH ESTIMATES FOR FY 95/96

PRELIMINARY GULF GROUP KING MACKEREL RECREATIONAL CATCH ESTIMATES for FY95/96 6/20/96 PLP

MRFSS, substituting wave 3, 1995, for wave 3, 1996

			FLE	AL	FLW	LA	MS	ALL
			AB1	AB1	AB1	AB1	AB1	AB1
yr	wave	mode						
95	4	3=SH			3906	0		3906
		5=CH		3236	14232	1509	1626	20603
		7=PR		12540	2461	2915		17916
		ALL		15776	20599	4424	1626	42425
	5	mode						
		3			2085			2085
		5		3861	11132		4174	19166
		7		12532	1773			14304
		ALL		16393	14989		4174	35555
	6	mode						
		3	884					884
		5	9801		37132			46933
		7	51551		2342			53893
		ALL	62236		39474			101710
96	1	mode						
		5	15077		106598	349		122024
		7	6162		2281			8442
		ALL	21239		108879	349		130467
	2	mode						
		3			4165			4165
		5			105391			105391
		7		282	35130			35412
		ALL		282	144687			144968
	3	mode						
		3		4026	4459			8485
		5		6256	10677	1936		18868
		7		18725	19987	1024	1454	41191
		ALL		29007	35123	2960	1454	68544
ALL	mode							
	3		884	4026	14614	0		19524
	5		24879	13352	285162	3794	5799	332986
	7		57712	44079	63974	3938	1454	171159
	ALL		83475	61457	363751	7732	7254	523669
ALL			83475	61457	363751	7732	7254	523669

TX and HBT:
latest 12-month period available = CY 1995:

TX = 14154
HBT= 35081

Projected total recreational (all 3 sources) = 572,904

APPENDIX B

CHARTERBOAT KING MACKEREL LANDING FREQUENCIES, 1992-93,

AS DERIVED FROM THE NMFS CHARTERBOAT SURVEY

Variable definition: AVE = the average number of king mackerel kept per angler ([KEPTNON + KEPTTROL]/ANGLERS), Monroe County, FL westward through Texas.

Analysis Variable : AVE

YEAR=1992

N	Mean	Std Dev	Minimum	Maximum
1053	1.3096838	1.1750303	0.0625000	17.7500000

YEAR=1993

N	Mean	Std Dev	Minimum	Maximum
633	0.9967102	0.9019372	0.0625000	5.3333333

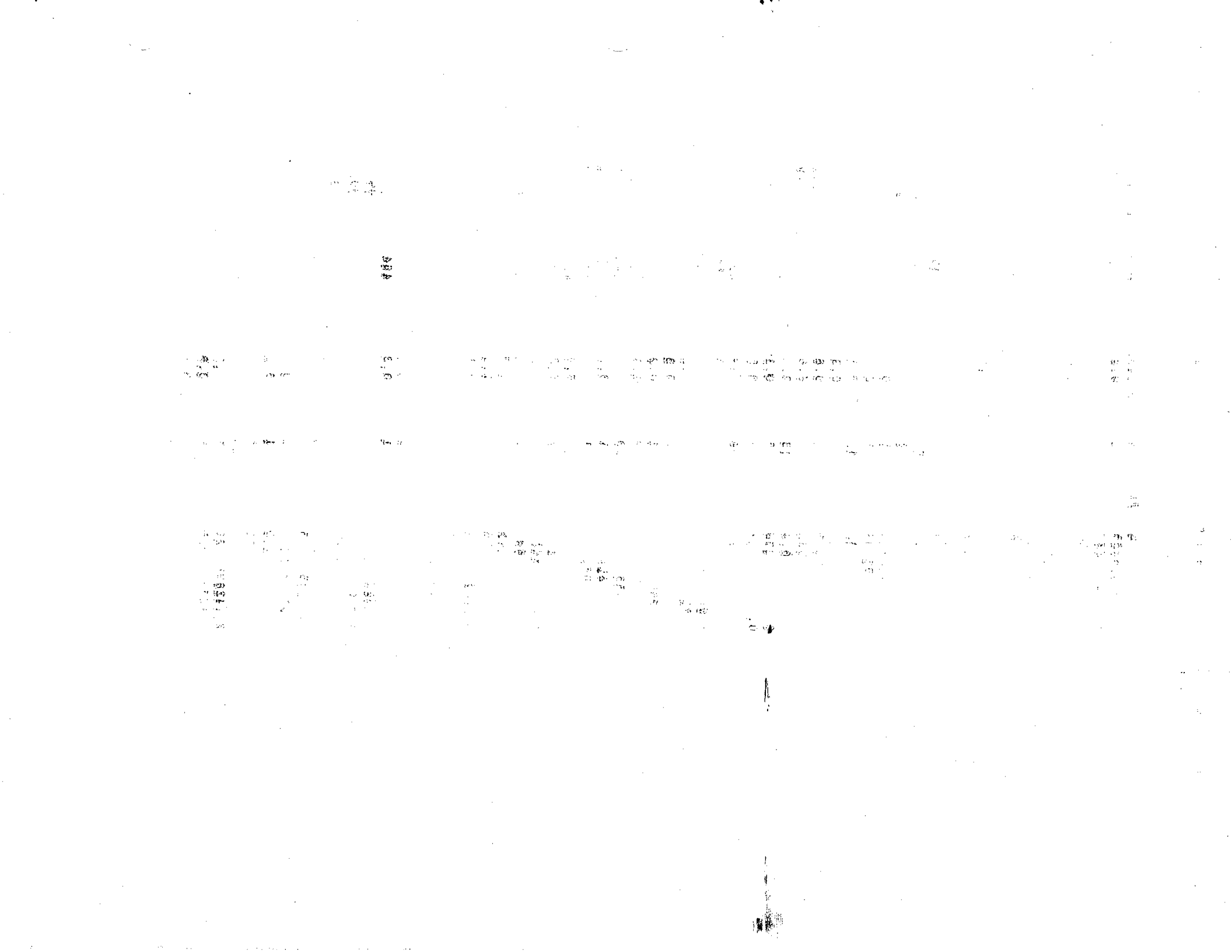
---------- YEAR=1992

AVE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0.0625	1	0.1	1	0.1
0.0666666667	1	0.1	2	0.2
0.0714285714	1	0.1	3	0.3
0.0833333333	4	0.4	7	0.7
0.0909090909	5	0.5	12	1.1
0.1	13	1.2	25	2.4
0.1111111111	6	0.6	31	2.9
0.125	13	1.2	44	4.2
0.1428571429	12	1.1	56	5.3
0.1666666667	45	4.3	101	9.6
0.1764705882	1	0.1	102	9.7
0.1818181818	2	0.2	104	9.9
0.2	29	2.8	133	12.6
0.2142857143	1	0.1	134	12.7
0.2222222222	1	0.1	135	12.8
0.25	43	4.1	178	16.9
0.2727272727	2	0.2	180	17.1
0.2857142857	9	0.9	189	17.9
0.3	5	0.5	194	18.4
0.3333333333	66	6.3	260	24.7
0.3636363636	3	0.3	263	25.0
0.3846153846	1	0.1	264	25.1
0.4	18	1.7	282	26.8
0.4166666667	1	0.1	283	26.9
0.4285714286	3	0.3	286	27.2
0.4444444444	4	0.4	290	27.5
0.5	57	5.4	347	33.0
0.5555555556	2	0.2	349	33.1
0.5714285714	4	0.4	353	33.5
0.6	13	1.2	366	34.8
0.6153846154	2	0.2	368	34.9
0.625	1	0.1	369	35.0
0.6428571429	1	0.1	370	35.1
0.6666666667	30	2.8	400	38.0
0.7	1	0.1	401	38.1
0.7142857143	5	0.5	406	38.6
0.7272727273	1	0.1	407	38.7
0.75	21	2.0	428	40.6
0.8	13	1.2	441	41.9
0.8125	1	0.1	442	42.0
0.8333333333	17	1.6	459	43.6
0.8571428571	4	0.4	463	44.0
0.875	3	0.3	466	44.3
0.8888888889	1	0.1	467	44.3
1	92	8.7	559	53.1
1.125	2	0.2	561	53.3
1.1428571429	1	0.1	562	53.4
1.1666666667	15	1.4	577	54.8
1.2	17	1.6	594	56.4
1.2222222222	1	0.1	595	56.5
1.25	14	1.3	609	57.8
1.2857142857	3	0.3	612	58.1
1.3333333333	29	2.8	641	60.9
1.375	1	0.1	642	61.0
1.4	26	2.5	668	63.4
1.5	44	4.2	712	67.6
1.5714285714	1	0.1	713	67.7
1.6	2	0.2	715	67.9
1.625	2	0.2	717	68.1
1.6666666667	12	1.1	729	69.2
1.7142857143	2	0.2	731	69.4
1.75	4	0.4	735	69.8
1.8	5	0.5	740	70.3

1.8333333333	11	1.0	751	71.3
1.8571428571	1	0.1	752	71.4
2	92	8.7	844	80.2
2.1666666667	2	0.2	846	80.3
2.2	3	0.3	849	80.6
2.25	7	0.7	856	81.3
2.3333333333	12	1.1	868	82.4
2.4	11	1.0	879	83.5
2.5	19	1.8	898	85.3
2.6666666667	11	1.0	909	86.3
2.75	2	0.2	911	86.5
2.8	11	1.0	922	87.6
2.8333333333	2	0.2	924	87.7
3	91	8.6	1015	96.4
3.25	1	0.1	1016	96.5
3.3333333333	11	1.0	1027	97.5
3.5	4	0.4	1031	97.9
3.6	1	0.1	1032	98.0
4	13	1.2	1045	99.2
5	3	0.3	1048	99.5
6	3	0.3	1051	99.8
8.8	1	0.1	1052	99.9
17.75	1	0.1	1053	100.0

---------- YEAR=1993 ----------

AVE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0.0625	1	0.2	1	0.2
0.0666666667	1	0.2	2	0.3
0.0714285714	3	0.5	5	0.8
0.0769230769	1	0.2	6	0.9
0.0833333333	3	0.5	9	1.4
0.0909090909	4	0.6	13	2.1
0.1	6	0.9	19	3.0
0.1111111111	4	0.6	23	3.6
0.125	11	1.7	34	5.4
0.1333333333	1	0.2	35	5.5
0.1428571429	7	1.1	42	6.6
0.1538461538	1	0.2	43	6.8
0.1666666667	59	9.3	102	16.1
0.2	38	6.0	140	22.1
0.2222222222	3	0.5	143	22.6
0.2307692308	1	0.2	144	22.7
0.25	46	7.3	190	30.0
0.2666666667	2	0.3	192	30.3
0.2857142857	5	0.8	197	31.1
0.3333333333	42	6.6	239	37.8
0.4	13	2.1	252	39.8
0.4285714286	2	0.3	254	40.1
0.4444444444	1	0.2	255	40.3
0.5	43	6.8	298	47.1
0.6	4	0.6	302	47.7
0.6666666667	18	2.8	320	50.6
0.7142857143	1	0.2	321	50.7
0.75	14	2.2	335	52.9
0.7692307692	1	0.2	336	53.1
0.8	8	1.3	344	54.3
0.8333333333	10	1.6	354	55.9
0.8571428571	1	0.2	355	56.1
0.8888888889	1	0.2	356	56.2
1	50	7.9	406	64.1
1.1	1	0.2	407	64.3
1.1428571429	1	0.2	408	64.5
1.1666666667	4	0.6	412	65.1
1.2	11	1.7	423	66.8
1.25	10	1.6	433	68.4
1.3333333333	13	2.1	446	70.5
1.4	13	2.1	459	72.5
1.4285714286	1	0.2	460	72.7
1.5	20	3.2	480	75.8
1.6	3	0.5	483	76.3
1.625	1	0.2	484	76.5
1.6666666667	6	0.9	490	77.4
1.7142857143	1	0.2	491	77.6
1.75	7	1.1	498	78.7
1.8	4	0.6	502	79.3
1.8333333333	1	0.2	503	79.5
1.8571428571	1	0.2	504	79.6
1.9	1	0.2	505	79.8
1.9090909091	1	0.2	506	79.9
2	53	8.4	559	88.3
2.1428571429	1	0.2	560	88.5
2.1666666667	1	0.2	561	88.6
2.2	1	0.2	562	88.8
2.25	3	0.5	565	89.3
2.3333333333	8	1.3	573	90.5
2.4	4	0.6	577	91.2
2.5	9	1.4	586	92.6
2.6	1	0.2	587	92.7
2.6666666667	11	1.7	598	94.5



2.75	2	0.3	600	94.3
2.8	3	0.5	603	95.3
3	17	2.7	620	97.9
3.3333333333	8	1.3	628	99.2
4	4	0.6	632	99.8
5.3333333333	1	0.2	633	100.0