AMENDMENT NUMBER 5

TO

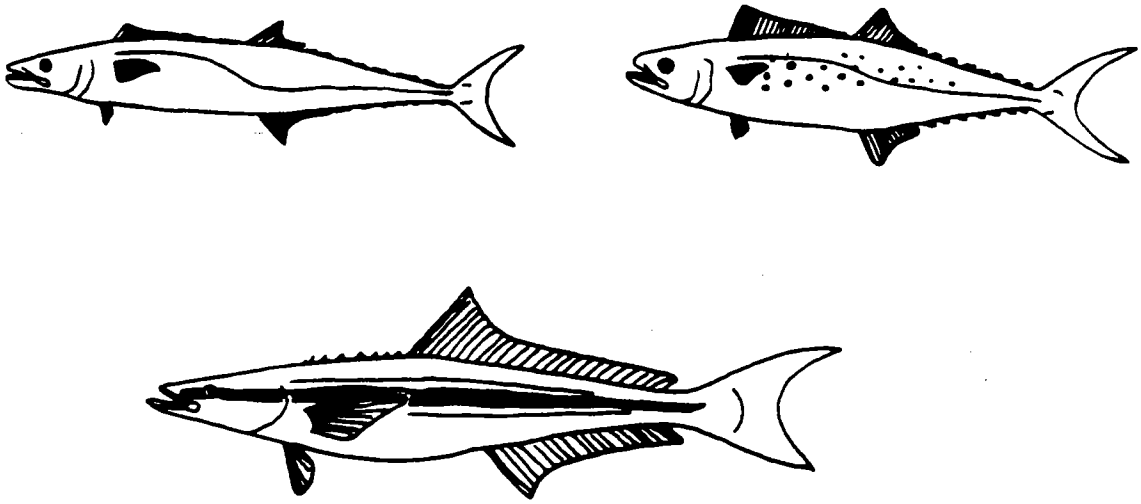
THE FISHERY MANAGEMENT PLAN

FOR THE

COASTAL MIGRATORY PELAGIC RESOURCES

(MACKERELS)

INCLUDES ENVIRONMENTAL ASSESSMENT
AND
REGULATORY IMPACT REVIEW



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I. Introduction

The "mackerel" 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 made 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 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 as was the use of purse seines on overfished stocks.

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).

Amendment 3 was partially approved to prohibit drift gill nets for the overfished groups of Gulf mackerels and Atlantic Spanish mackerel.

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

Amendment 5 proposes a number of changes in the management regime which are described in Section III.

II. Description of Fishery and Utilization Patterns

Amendments 1 through 3 describe the fishery and recent trends in catch. Tables 1 through 4 show catches from 1979 through October of 1988. Table 5 shows the ranges of acceptable biological catch (ABC), the total allowable catches (TAC), and actual catch since implementation of the framework for seasonal adjustment in 1985.

All migratory groups of mackerel have been at one time recognized by the Councils as being overfished; however, the 1989 stock assessment report noted strong recruitment in the Atlantic group of king mackerel and redefined it as not being overfished. Spawning stock biomass for Atlantic and Gulf Spanish mackerel and Gulf king mackerel remains low enough to affect recruitment, and therefore they are currently designated as being "overfished."

Permits are required to fish under the commercial quotas for mackerels and be exempt from the bag limits. For the 1988-1989 season, the National Marine Fisheries Service (NMFS) issued 1,051 permits for Gulf king mackerel, 1,567 for Atlantic king mackerel, 108 for Gulf Spanish mackerel, and 1,242 for Atlantic Spanish mackerel. Cobia catches, which are restricted only by a 33-inch (83.8 cm.) minimum size limit, have exceeded the one million pound (M) (453592 kg) MSY since 1981 (Table 6).

III. Proposed Action

This amendment would:

- o Extend the management area for Atlantic groups of mackerels through the Mid-Atlantic Council's area of jurisdiction (Action 1);
- o Revise problems in the fishery (Action 2);
- o Revise plan objectives (Action 3);
- o Revise the fishing year for Gulf Spanish mackerel (Action 4);
- o Revise the definition of "overfishing" (Action 5);
- o Add cobia to the annual stock assessment procedure and provide 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 (Action 6).
- o Continue 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 (Action 7);
- o Redefine recreational bag limits as daily limits (Action 8);
- o Delete the provision specifying that bag limit catch of mackerel may be sold (Action 9);
- o Provide guidelines for corporate commercial vessel permits (Action 10);
- o Specify that Gulf king mackerel may be taken only by hook-and-line and run-around gill nets (Action 11);
- o Impose a bag limit of two cobia per person per day (Action 12);
- o Establish a minimum size of 12-inch (30.5 cm.) fork length or 14-inch (35.6 cm.) total length for king mackerel (Action 13);
- o Include a definition of "conflict" to provide guidance to the Secretary (Action 14);

ACTION 1: AREA FOR MANAGEMENT

Section 2.2.1 - Area for Management is revised as follows:

2.2.1 Area for Management

Federal regulation pursuant to this plan will apply to coastal migratory pelagic fishes in the Exclusive Economic Zone (EEZ) within the jurisdiction of the Gulf and South Atlantic Councils but only to Atlantic migratory groups of king and Spanish mackerels within the jurisdiction of the Mid-Atlantic Council. However, maximum sustainable yield and optimum yield are based on the stocks in the U.S. EEZ, the territorial sea, and internal waters of the various states. Consequently, the allocations to various gear types include catches both from the EEZ and waters landward thereof. The states bordering the areas of jurisdiction of the Gulf of Mexico, South Atlantic, and Mid-Atlantic Councils are urged to adopt regulations which are compatible with those applying in the EEZ.

Discussion:

a. Ecological: This action would extend management of Atlantic migratory groups of king and Spanish mackerels into the Mid-Atlantic Council's area of jurisdiction. Recovering Spanish mackerel stocks have expanded their range

and increased in abundance in areas where they historically occurred but had declined or disappeared in recent years. This may be due to unusually warm waters or actual rebuilding of the stocks. Commercial landings in the Mid-Atlantic area increased to 176,000 pounds (79,832 kg) in 1986 and to 381,000 pounds (172,819 kg) in 1987 (Table 4). Less than 5 percent of these landings came from the EEZ with 95 percent being taken in state controlled waters (NMFS, NEFC). Prior to 1986, the Marine Recreational Fisheries Statistical Survey (MRFSS) showed no recreational catch in the area; but, in 1986, 1987, and 1988 some have been recorded (Table 4). The total recreational annual estimate based on few specimens is less than 25,000 pounds (11,340 kg). Recent total catches of king mackerel off Mid-Atlantic states are about 150,000 pounds (68,039 kg) (Table 2).

Although these fish have been considered in the stock assessment, their unregulated catches have not been used in monitoring quota catches.

b. Socioeconomic: Extension of management to the Mid-Atlantic Council's area of jurisdiction would require approval by that Council and its participation in the decision process.

The direct impact of this measure on both commercial and recreational interests in the EEZ will be minimal since reported mackerel catches by both sectors come almost exclusively from state waters. In this regard, this action is more likely to increase management cost with negligible expected impacts on fishing participants.

Indirect beneficial effects of this measure occur if bordering states adopt the EEZ measures which essentially consist of quotas, bag limits, and gear restrictions. More effective enforcement and compliance with regulations would be expected from fishermen in the extended area. Thus, the proposed extension of management would serve also as an educational tool promoting greater user responsibility and conservation. These indirect impacts would be either significant or minimal depending on the nature of the commercial and recreational fishing sectors in these states. Commercial and recreational catches of king mackerel are relatively small. In 1988, with highest landings in recent years, the recreational sector took 139,000 pounds (63,000 kg) and the commercial sector took only 14,000 pounds (6,350 kg). These figures (Table 2) are only through October but cover the effective availability of fish in that area. Recent expansion of the Spanish mackerel fishery occurred in state waters with only five percent being taken in the EEZ. This amounted to 21,000 pounds (9,525 kg) in 1988 by recreational and commercial fishermen. If the implementation of regulation resulted in the unlikely maximum adverse impact of total loss of these commercial fisheries, the value lost would be only $14,700 for king mackerel and $5,164 for Spanish mackerel.

It is not known whether the net effect of these direct and indirect impacts would be positive or negative.

Rejected Alternative for Action 1

No Change: Federal regulation pursuant to this plan will apply to the EEZ within the jurisdiction of the Gulf and South Atlantic Councils. However, maximum sustainable yield and optimum yield are based on the stocks in the U.S. EEZ, the territorial sea, and internal waters of the various states.

Consequently, the allocation to various gear types include catches both from the EEZ and waters landward thereof. The states bordering the areas of jurisdiction of the Gulf of Mexico and South Atlantic Councils are urged to adopt regulations which are compatible with those applying in the EEZ. Regulations are not applied in the area of jurisdiction of the Mid-Atlantic Council because the catches there and the quantities of regulated species occurring there are so small that regulation may not be cost effective and may not be necessary to accomplish the objectives of the plan. Similarly, catches there have not been included in OY or in catch allocations. Should a fishery develop which significantly affects the stocks and is in the EEZ beyond the area for management, the management area may be extended by plan amendment.

Discussion:

a. Ecological: Regulation of the catch of coastal pelagics in the Mid-Atlantic EEZ will contribute to more effective management throughout the range of these species and will stimulate cooperative management in state waters where most of the Spanish mackerel catch occurs. These benefits would not be realized under this alternative.

b. Socioeconomic: By definition, this option has no short-run effects. Its long-run effects may be contrasted with those of the proposed option. With respect to its direct impact on the mackerel fishery in the EEZ, this option may avoid incurring some management costs that may be more than any expected benefits. With regard to indirect impacts, i.e. with respect to the possibility that bordering states adopt the EEZ measures should the management area be extended, this option eliminates the likely cost to the fishery as a result of catch restrictions, but also forgoes possible benefits that may come about as a result of extending the protection of the mackerel stocks to subject areas.

ACTION 2: PROBLEMS IN THE FISHERY

Section 2.5 Problems in the Fishery is revised as follows:

2.5 Problems in the Fishery

1. **The stocks of Spanish mackerel and Gulf king mackerel are below the level of producing MSY, and spawning stocks have been reduced such that recruitment has been affected. The harvest levels of Atlantic king mackerel are close to their upper limit. Uncontrolled fishing would further reduce biomass.**

2. **A. Available recreational catch statistics were not designed to track catch for quota purposes.**

   B. Additional biological and statistical data on both the recreational and commercial fisheries are needed and economic information that assesses the impact of regulations and allocations is not available.

3. **Intense conflicts and competition exist between recreational and commercial users of the mackerel stocks and between commercial users employing different gears.**

4. **The existence of separate state and federal jurisdiction and lack of coordination between these two make biological management difficult since, in some instances, the resource may be fished beyond the allocation in state waters.**

5. **The condition of the cobia stock is not known and increased landings over the last ten years have prompted concern about overfishing.**

6. **Lack of information on multiple stocks or migratory groups of king mackerel which may mix seasonally confounds and complicates management.**

7. **Large catches of mackerel over a short period cause quotas and TAC to be exceeded before closures could be implemented. Therefore, some users obtained a share in excess of their allocation.**

8. **Closures of a fishery and reversion of bag limits to zero due to the filling of a quota have deprived geographic areas of access to a fishery.**

9. **Fish caught under the bag limit and sold contribute to the filling of both the recreational and commercial quotas.**

10. **Part-time commercial fishermen compete with full-time commercial fishermen for the available quota.**

Discussion:

Problem 1: The condition of the stocks has changed and fishing has been limited.

Problem 2: A stock assessment system for pre-season adjustment has been implemented. The MRFSS in two-month waves, six times a year was not designed to monitor catch for seasonal closures as it is now being used. An economic assessment system for evaluating the performance of the fishery and the likely impact of pre-season adjustments has not been developed nor have economic data for allocations been collected. Information on age structure of catch needs to be expanded.

Problem 3: No change.

Problem 4: No change. Some states lack the authority to implement timely bag limits and closures when quotas are filled. As a result, fishing may continue in state waters after closure of the EEZ causing TAC to be exceeded.

Problem 5: Cobia MSY was set a 1,000,000 pounds (1 M) (453,592 kg) and was recognized as being imperfect. Annual catches from 1981 to 1986 (Table 6) have averaged 1.9 M (861,826 kg).

Former Problem 6 was deleted. Quotas have reduced high catches of both the large adult fish overwintering off Louisiana and recruits. Under quotas the more marketable, smaller fish are targeted to maximize economic returns.

A new Problem 6 is added. Most fishery scientists agree that there are at least three migratory groups of king mackerel. Mixing occurs seasonally, and the extent of interbreeding is unknown.

A new Problem 7 is added. The gill-net fleet is capable of landing 800,000 pounds (362,874 kg) and the commercial hook-and-line fleet 50,000 pounds (22,680 kg) a day. Quotas could be quickly exceeded before the fishery could be closed on overfished populations.

Additionally, the monitoring of the recreational catch in 2-month waves also provides the opportunity for overruns of TAC before the bag limit can revert to zero on overfished stocks.

A new Problem 8 is added. Closure of the Gulf king mackerel fishery in December of 1987 eliminated the South Florida winter fishery.

A former Problem 7 addressing inappropriate allocation of Atlantic group Spanish mackerel was addressed and corrective measures were taken in Amendment 4.

New Problems 9 and 10 are added.

Permits were required of commercial fishermen to restrict all fishermen to one or the other allocation. Some bag limit catches are sold, and some permit holders are not full-time commercial fishermen. Recreational catch that is sold is counted in 2 quotas.

Rejected Alternative for Action 2

A. No change, the problems remain as follows:

1. Fishing effort is jeopardizing the biological integrity of the king mackerel fishery. That portion of the stock which inhabits the Gulf of Mexico during the summer and supports the winter fishery in southeast Florida appears to be severely overfished, and fishing mortality on this group needs to be reduced. That portion of the stock which inhabits the Atlantic coast has been exploited to a lesser degree, and fishing mortality rate on that group is below the level which will produce maximum yield.

2. Adequate management has been hindered by lack of current and accurate biological and statistical and economic information. The present system does not provide a mechanism which insures rapid incorporation of new data into stock assessments. Further, there is no coordinated plan to generate stock assessment data.

3. Intense conflicts and competition exist between recreational and commercial users of the mackerel stocks and between commercial users employing different gears.

4. The existence of separate state and federal jurisdiction and lack of coordination between these two makes biological management difficult since, in some instances, the resource may be fished beyond the allocation in state waters (Table 5).

5. Cobia are presently harvested at a size below that necessary for maximum yield and may be overfished in some areas beyond the management area. Most southeastern states have not yet adopted the recommended minimum size limit. Also, no management action has been taken by states which have jurisdiction over cobia populations in Chesapeake Bay, which appear to have been overfished. Federal enforcement capability is limited and not believed to be very effective in this case.

6. Development of a fishery targeting large, mature king mackerel in the wintertime off Louisiana may eventually reduce recruitment to the resource. Total catch of large, mature king mackerel has greatly increased due to development of a commercial fishery in Louisiana during the winter months. Reported commercial catch increased from 0 during 1981-1982 to 1.2 million pounds (544,311 kg) during the 1982-1983 winter season. Given the already excessive fishing effort on smaller fish in the Gulf of Mexico, increasing fishing effort on the spawning population could result in recruitment declines.

7. Current allocations of Atlantic migratory group Spanish mackerel do not reflect the distribution (i.e., recreational/commercial ratios) of catches during the early to mid 1970s, which was prior to the development of the deep water run-around gill-net fishery and when the resource was not overfished.

Discussion: Management measures implemented by the amended FMP have eliminated some of the originally identified problems, and new problems have developed in the fishery.

ACTION 3: PLAN OBJECTIVES

Section 2.6, Management Objectives is revised as follows to add new objectives:

2.6 Management Objectives

1. **The primary objective of this FMP is to stabilize yield at MSY, allow recovery of overfished populations, and maintain population levels sufficient to ensure adequate recruitment.**

2. **To provide a flexible management system for the resource which minimizes regulatory delay while retaining substantial Council and public input into 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 area.**

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 total allowable catch 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.**

   Discussion: This objective was approved in Amendment 4.

6. **To provide appropriate management to address specific migratory groups of king mackerel. Action 7 addresses this issue.**

   Discussion: New Objective 6 addresses the issue of two migratory groups of king mackerel in the Gulf.

Rejected Alternative for Action 3

No change - The plan would address Objectives 1 through 4.

Discussion: The purpose of the plan is to address and resolve problems in the fishery as they arise and are identified. These problems may be resolved by appropriate management which meets stated objectives that are current to needs.

ACTION 4: FISHING YEAR

Gulf Spanish Mackerel Fishing Year -

Section 12.2 is revised as follows:

12.2 Fishing year: For the Gulf group of king mackerel, the fishing year is July 1 through June 30. For Atlantic king mackerel and Atlantic and Gulf Spanish mackerel, the fishing year is April 1 through March 31. For other species in the fishery, the fishing year is January 1 through December 31.

Discussion:

a. Ecological: This action will change the fishing year for Gulf Spanish mackerel to begin April 1 instead of July 1. Prior to initiation of quota closures of the fishing year, April had been a month of high catch with 582,000 pounds (263,991 kg) of Gulf Spanish mackerel being landed in Florida in 1987. Reopening of the quota during a fishing season without some other type of catch restraint could result in the harvest beyond the quota of a cohort group in a fishing season. Such problems arose in April of 1988 in the Atlantic fishery and resulted in the Councils requesting emergency trip limits.

b. Socioeconomic: Most of the commercial catch of Gulf Spanish mackerel is taken in Florida waters. The state has tried to zone its reduced quota so fishermen in different geographic areas have the opportunity to take their historic ratios of the unregulated catch. In 1989, the federal quota was taken and fishing ended April 6 before fishing began in the Panhandle. After federal closure, Florida regulations permitted 500-pound (227 kg) trips which

are insufficient for the net boats. Almost all Spanish mackerel fishing on Florida's upper west coast occurs in the 9-mile (17 km) state territorial waters and can be controlled by state quotas. Florida allocated its traditional portion of the commercial catch to provide about 20 percent to the Panhandle fishery, composed of about 52 small boats. In Southwest Florida and the Keys there are about 65 small and 28 large net boats, although over half of these boats rarely target Spanish mackerel. In Alabama, Mississippi, and Louisiana there are about 20 small net boats that fish directly for or take Spanish mackerel as a bycatch (NMFS data).

Changing the fishing year to begin on April 1 would provide fishermen in the northern Gulf first access to the fish in a new fishing year. This measure could partly solve the perceived geographical inequity, but it has some implications that need to be recognized. Florida's zoning of its quota on Spanish mackerel refers mainly to landings in a particular geographical area and not necessarily by boats in that area. Thus, it is possible for larger boats from one area, for example those from southwest Florida and the Keys, to fish and land in other areas and fill the quota therein. This occurrence has the tendency to negate the intentions of the measure as well as increase the harvest cost of the industry. Another possibility which is partly in response to the quota and the highly migratory nature of Spanish mackerels is for northern Gulf mackerel fishermen to increase their harvest capacity or intensify their harvest effort. This situation could possibly lead to overcapacity in the mackerel fishery.

Rejected Alternative:

No change: Fishing year for Gulf groups king and Spanish mackerel is July 1 through June 30 and for Atlantic group king and Spanish mackerel is April 1 through March 31.

Discussion:

a. Ecological: In those years when spring water temperatures remain cool, fish may remain schooled and vulnerable to net fishing beyond March when winter fishing usually ends. In such years, the net fishing season can be extended when the fishing year reopens in April. In 1989, the Councils requested emergency action to limit catch per trip of Atlantic Spanish and king mackerel in April and May to prevent continued fishing on the same overwintering schools. This activity has occurred on the Atlantic Coast of Florida where the Atlantic migratory group occurs after April 1.

b. Socioeconomic: Basically, this alternative has no short-run impacts. In contrast to the proposed action, its effects would be in terms of not changing the fishing activities for the Gulf group of Spanish mackerel. The July fishing year for Gulf group was set to open a new quota when the fish are most widely distributed in order to provide equal initial access geographically to all fishermen. As described in the proposed action, it has been perceived that this equal initial access has not materialized for the Spanish mackerel fishery, and this perceived unequal access would be maintained under this alternative. At the same time

this option could prevent a possible increase in harvest cost should larger boats from South Florida and the Keys move up north at the start of the fishing year proposed under the proposed action.

ACTION 5: DEFINITION OF OVERFISHING

Discussion: The Councils must provide a definition to conform with recently approved guidelines for fishery management plans. These guidelines read in part:

"Overfishing. (1) Overfishing is a level or rate of fishing mortality that jeopardizes the long-term capacity of a stock or stock complex to produce MSY on a continuing basis. Each FMP must specify, to the maximum extent possible, an objective and measurable definition of overfishing for each stock or stock complex covered by that FMP, and provide an analysis of how the definition was determined and how it relates to reproductive potential."

"(2) The definition of overfishing for a stock or stock complex may be developed or expressed in terms of a minimum level of spawning biomass ("threshold"); maximum level or rate of fishing mortality; or formula, model or other measurable standard designed to ensure the maintenance of the stock's productive capacity. Overfishing must be defined in a way to enable the Council and the Secretary to monitor and evaluate the condition of the stock or stock complex relative to the definition."

"(i) If data indicate that an overfished condition exists, a program must be established for rebuilding the stock over a period of time specified by the Councils which is acceptable to the Secretary."

"(ii) Councils should identify what actions or combination of actions will be undertaken if it is determined that a stock or stock complex is approaching an overfished condition."

"(iii) If overfishing is defined in terms of a threshold biomass level, the Council must ensure that targeted fishing effort does not cause spawning biomass to fall or remain below that threshold."

"(iv) If overfishing is defined in terms of a maximum fishing mortality rate, the Councils must ensure that targeted fishing effort on that stock does not cause the maximum rate to be exceeded."

Section 12.6.1.1 Number A.4. is revised as follows:

4. Overfishing.
(a) A mackerel or cobia stock shall be considered overfished if the spawning stock biomass per recruit (SSBR) is less than the target level percentage recommended by the assessment group, approved by the Scientific and Statistical Committee (SSC), and adopted by the Councils. The target level percentage shall not be less than 20 percent.

(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 a program to

rebuild the stock to the target level percentage, and the assessment group will develop ABC ranges for recovery periods consistent with a program to rebuild an overfished stock.

(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 group will develop ABC ranges based upon OY (currently MSY).

Discussion:

a. Ecological: This action revises the definition for overfishing and provides a flexible program to prevent overfishing and to rebuild any overfished stocks. Flexibility is provided to enable scientific advisors to recommend appropriate target levels of SSBR as better data become available. The Councils retain the option of selecting a program from within ABC ranges for various periods of recovery as recommended by the stock assessment group and the SSC.

The Council's stock assessment group in its 1989 report stated in part: "Spawning stock biomass per recruit is recommended as the technical target for defining overfishing in order to prevent recruitment overfishing. Recent examination of several stocks that have collapsed (done primarily by NMFS, NEFC scientists and used for red drum and reef fish in the Gulf of Mexico) have shown that risk of collapse becomes a concern once the spawning stock biomass per recruit value drops below 40 percent of the value it would have in the absence of fishing. Below 20 percent, collapse is quite likely, and below 10 percent, chances for quick recovery, even if fishing is severely curtailed, may be jeopardized. The Panel concluded that the Councils should select the actual target level percentages in the overfishing definition (20 to 40 percent or some higher level), depending on the risk desired."

"Spawning stock biomass per recruit (SSBR) is recommended as the model for defining overfishing to prevent recruitment overfishing directly. The SSBR (reproductive potential) is determined by integrating or summing the multiple, for each age, of relative number of fish alive times the fraction mature times the weight of fish. Typically the models used to determine SSBR (which is a variant of yield per recruit) are the Beverton-Holt continuous model or the Ricker discrete model. The total contribution of a cohort to the spawning stock biomass over its lifetime is found by summing the cohort's contribution at each age, which is then scaled to a per recruit basis to derive a theoretical measure of SSBR. The SSBR measure can be used to evaluate alternative fishing mortality scenarios without knowing actual levels of recruitment or spawning stock. Maximum SSBR is obtained by setting fishing mortality to zero."

"There will still be 'uncertainty' that must be considered under spawning stock biomass per recruit criteria. Our knowledge of 'true' catch, natural mortality (M), fishing mortality (F), and thus spawning stock biomass per recruit, are inevitably imperfect. Any particular level of spawning stock biomass per recruit does not guarantee recruitment success or failure. Some stock may be able to sustain a low spawning stock biomass per recruit while the environment is favorable to larval survival, collapsing only when poorer conditions occur. Councils should still expect to evaluate the uncertainty surrounding the estimation of current spawning stock biomass per recruit."

The Scientific and Statistical Committee noted that the models for SSBR have been based on long-term data records for cold water fishes, and the target percentage levels for southern fishes have not been perfected. The SSC, therefore, recommended that the target percentage level be subject to revision as the data base improves.

This definition parallels that approved in the Gulf Reef Fish Plan Amendment 1 except that this one provides for adjustment as data become available.

b. Socioeconomic: This definition considers both the preservation of the stock or stock complex and the avoidance of harvest beyond OY via a two-part definition of overfishing. In both situations, certain management measures are expected to be employed. The part that relates the concept of overfishing to OY has particular significance from a social standpoint as socioeconomic factors may be given explicit considerations in the determination of OY and in designing measures that render the rate of harvest consistent with the definition of overfishing.

Rejected Alternatives:

A. A stock shall be considered overfished if the spawning stock biomass per recruit is less than the target level percentage recommended by the assessment panel, approved by the Scientific and Statistical Committee, and adopted by the Councils.

If the spawning stock biomass per recruit exceeds the target level percentage, then the assessment panel will calculate Acceptable Biological Catch ranges (ABC) based upon optimum yield (currently MSY).

If the stock is overfished, i.e., the spawning stock biomass per recruit is less than the target level percentage, the assessment panel will develop ABC ranges for recovery periods of 1 year, 3 years, 5 years, or other periods as requested by the Councils.

Discussion: This option is contained in the 1989 report of the Mackerel Stock Assessment Panel.

a. Ecological: This option is similar to the preferred alternative but lacks the 20 percent minimum level of SSBR. The preferred alternative provides more protection to the stocks.

b. Socioeconomic: Overfishing is defined essentially in biological terms, with accompanying management measures once certain critical spawning stock ratio occurs. The impacts of these management measures cannot be definitively assessed at this time. In principle, however, commercial quotas and closures and recreational bag limit will incur short-run losses to the commercial and recreational sectors. If these measures can prevent the depletion of the stock or help to rebuild the stock, certain benefits can accrue to both sectors of the fishery. The net effect is generally unknown.

B. No change. Overfishing. A stock of fish shall be considered overfished if the fishing mortality rate exceeds F_{msy} or $F_{0.1}$, or spawning biomass is low enough to affect recruitment. The $F_{0.1}$ fishing rate is the level of fishing mortality at which an increase in effort produces ten percent of the increase in yield that would occur in a lightly fished fishery for a comparable increase in effort. An $F_{0.1}$ yield per recruit management strategy better protects against growth overfishing and maintains a larger spawning population than does a F_{max} management strategy. If any stock or subgroup is overfished, the assessment group will estimate levels of ABC which would allow that stock to recover in one year, three years, five years, or other period as requested by the Councils.

Discussion: The current definition which uses three criteria has proved to be confusing and does not conform well to the new guidelines.

a. Ecological: Fishing mortality rate of $F_{0.1}$ is conservative and has been utilized to rebuild depleted stocks. When stocks recover, this definition may prevent the attainment of OY by limiting fishing to a lower level.

b. Socioeconomic: This definition, although again essentially biological in character, can be related to the level of fishing at which maximum economic yield (MEY) occurs. Theoretically, MEY occurs below MSY, assuming fixed price for fish. Also, F0.1 occurs generally below MSY. Although there is no reason for MEY to occur at the same fishing level as F0.1, it is generally believed that MEY is closer to F0.1 than to MSY. Thus, the choice of the definition of overfishing namely, as it relates to either MSY or F0.1, has repercussions on whether the allowed fishing level is near or far off the level that maximizes economic benefit.

ACTION 6: REVIEW OF ANNUAL REPORT OF STOCK ASSESSMENT PANEL

Section 12.6.1.1 D is revised as follows:

D. If changes are needed in MSYs, TACs, quotas, bag limits, or 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 group'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 each year by such date as may be specified by the Councils.

Discussion:

a. Ecological: No impact other than that cobia has been included in the annual assessment procedure.

b. Socioeconomic: The proposed change would provide the South Atlantic Council with the responsibility of making recommendations for seasonal adjustments on Atlantic king and Spanish mackerel and the Gulf Council with responsibility for the same with Gulf king and Spanish mackerel. The separation of responsibility would facilitate management procedures and eliminate the need for annual joint meetings to develop recommendations for pre-season adjustments. At the same time, this option would prompt each Council's various committees to concentrate more on specific migratory groups. The inclusion of cobia in the stock assessment procedure will facilitate future adjustment of MSY and bag limits.

Rejected Alternative for Action 6

No change: Both Councils continue to recommend pre-season adjustments on all mackerel groups.

Discussion:

a. Ecological: No impact.

b. Socioeconomic: Currently each Council, Scientific and Statistical Committee, and Advisory Panel recommend action for all migratory groups. Annual joint meetings are required for the Councils to develop joint recommendations. Cost-wise, this option is inferior compared to the proposed option.

ACTION 7: SEPARATION OF MIGRATORY GROUPS OF KING MACKEREL

Recognize that two Gulf migratory groups of king mackerel exist but continue to manage the two U.S. Gulf migratory groups as a unit until management measures appropriate to the two groups can be determined.

Discussion:

a. Ecological: The Councils are aware of evidence that two migratory groups of king mackerel occur in the Gulf and mix seasonally (summer) in an area from Texas through Alabama. Managing the Gulf fish as one group may be less conservative than managing as two groups. As pointed out by a member of the Scientific and Statistical Committee, "All catches of king mackerel made in the U.S. Gulf are combined for the virtual population analysis (the essential part of the stock assessment). Catches made in the Gulf mixing zone (Texas to about Mississippi or Alabama) have a significant component of western group fish which appear to be independent of eastern Gulf fish. Including these western fish in the virtual population analysis means that the calculated population upon which fishing effects are assessed will be larger than if western fish were omitted. Most fishing mortality is imposed in South Florida on eastern fish. Therefore, the effects of fishing are assessed on too large a fishing mortality. This process can only lead to an overly optimistic assessment of fish in the eastern Gulf, and too pessimistic view of the impact of fishing where the two stocks/groups are mixed."

The 1989 Stock Assessment Report stated: "As noted with eastern Gulf type fish, western Gulf fish are defined on biological bases and not geographical bases. Western Gulf type fish occur throughout the Gulf of Mexico, but predominately west of Florida. If western Gulf fish are considered to be a separate stock, then Mexican catches are the largest portion of the catches of this group by far. Mexican fisheries are known to be directed at younger fish more than other fisheries, but data to quantify this are not available. Hence, complete analyses, such as those above, could not be conducted under this hypothesis. The best information available about spawning stock levels of western Gulf fish is the CPUE index from Texas (Texas Parks and Wildlife), which indicates a decline in the early 1980's and stabilization in the late 1980's. This trend, coupled with the effect of Mexican catches, leads the Panel to conclude that if western Gulf fish are to be considered separately, then it is likely that the abundance of these fish has declined in the last decade and that controls on the U.S. rate of fishing should be maintained and controls on the Mexican rate of fishing be explored."

With the data available to them at this time, the Councils have been unable to develop appropriate management measures for two Gulf groups. They propose to continue a conservative approach appropriate for either one or two groups until additional data are available on Mexican catch, the nature and timing of mixing and annual rates of exchange (physical and reproductive) between these two groups. The Councils have requested that the assessment group prepare separate ABC ranges for the Gulf group using the Florida/Alabama border as an initial point of separation of the stock.

b. Socioeconomic: The socioeconomic impact cannot be evaluated until it can be determined what management measures and allowable catches would apply under the revised stock identification. There is an apparent misconception among some fishermen that the larger king mackerel that overwinter off Louisiana and spend warmer months off Texas are western group of fish when in fact they are a mixture of eastern and western fish. A change in the management regime for two stocks would not suddenly allow unrestricted fishing on these large fish and may require more restrictive quotas to adjust for high Mexican catches.

Rejected Alternative for Action 7

Separate the Gulf king mackerel group into eastern and western groups and provide separate TACs for them in this amendment.

Discussion:

a. Ecological: A geographic or seasonal division would be established on the basis of distribution of fish with different allele types and on findings from tagging studies. Separate TACs and commercial allocations would be established, and the Mexican catch of approximately 6 or 7M would be considered in the calculation. Unfortunately, recent data on Mexican catches are not available.

b. Socioeconomic: This option tends to complicate management procedures, but it offers possibilities of adopting management measures appropriate to

fishermen targeting different stocks. There exists the possibility that western Gulf fishermen may be penalized for high Mexican catches.

ACTION 8: REDEFINITION OF BAG LIMITS AS DAILY BAG LIMITS

Section 12.6.6.1 is revised:

12.6.6.1 King and Spanish Mackerel Bag Limits

The recreational allocation of mackerels will be controlled by bag limits for anglers per day with a one-day possession limit. Charter and head boats on multi-day trips may have 2-day possession limits provided that two qualified captains are aboard and anglers have been provided with receipts for multi-day trips. Different bag limits may be set for anglers on charter or private recreation vessels. The bag limit is intended to reduce the recreational catch and distribute fairly throughout the fishing year. If overfishing as defined in Section 12.6.1.1, A4 is occurring in a stock or group of fish, the bag limit for that group will revert to zero when its quota is caught.

Discussion:

a. Ecological: Currently, bag limits are set per boat trip. Fishermen have pointed out that in some instances vessels can make multiple trips in a day thus accelerating the recreational vessel catch and causing the allocation to be reached more quickly.

   The reversion of the bag limit to zero in the EEZ provides some protection from exceeding TAC. Much of the harvest occurs in state waters, however. The Atlantic Spanish mackerel recreational fishery took 216 percent over the quota in 1987. States have, however, begun to implement bag limits and closures compatible with those for federal waters.

b. Socioeconomic: The bag limit procedure is consistent with that approved in Amendment 1 of the Gulf Reef Fish FMP. This change in bag limits will adversely affect those making multiple trips in one day. The precise extent of effects on these groups is not known. With respect to fishing in the EEZ, these effects can be expected to be minimal as it is likely that the number of private and charter boat anglers making multiple trips in a day is very small. Also, the number of anglers making multiple day trips is likely to be small. Multiple trips within state waters can be more than those in the EEZ, but the number is unknown.

   It is unlikely the charter vessels will be adversely affected by this measure. Since the bag limit change is proposed for the anglers, charter vessels could continue to have two half-day trips with different anglers. Full-day trips will not be affected since per trip and daily limits are the same for this type of trips. The change to daily limit would mean that multiple day trips would be restricted to two-days' possession limit. Under these conditions, the demand for charter fishing trips is not likely to shift downward.

As with the status quo, closure of the fishery can happen under the proposal. The demand for charter fishing trips can be affected by this closure. The only way whereby this change in bag limit can alter (relative to the status quo) the demand for charter fishing trips via a closure of the fishery is for the timing of the closure to change. In principle, the daily limit has the capability to keep the fishery open longer than the trip limit, mainly because of the possibility of multiple trips in a day which can result in more fish being taken. Thus, it is reasonable to expect that closure of the fishery would not be hastened by the change in bag limits from a per trip to a daily basis.

A bag limit on a daily basis, in principle, places anglers on equal footing with respect to allowable catch while the same bag limit on a trip basis tends to favor those making multiple trips. It is worth noting that this concept of equality looks only on the catch and overlooks the cost side of the issue. it can be safely assumed that anglers making multiple trips find it more beneficial to do so than those not making the same number of trips. On the margin, the value of an additional fishing trip appears to be the same for all anglers even if they differ in number of trips made. Redefining bag limits from trip to daily basis tends to render these marginal values unequal.

Rejected Alternatives for Action 8:

A. No change, bag limits would be set for anglers per trip.

Discussion:

a. Ecological: The extent of multiple trips per day by anglers is not known, but the total impact on the fishery is believed to be small. Trip bag limits were originally established because data available for bag limit catch were by trip.

b. Socioeconomic: Essentially no impacts can be expected from this option. In contrast to the proposed measure, this option would benefit those making multiple trips in terms of allowable number of catch per day. In terms, however, of marginal valuation of fishing trips, this option appears to equalize these values among anglers making a different number of trips.

B. The recreational allocations for Atlantic and Gulf migratory groups of king and Spanish mackerels be subdivided into six-month quotas, one half for the first six months, and the remainder for the second. The bag limit is to revert to zero when its quota is taken.

Discussion:

a. Ecological: No change.

b. Socioeconomic: If recreational bag limits are set too high for migratory fish, those with first access will have disproportionate opportunity to the quota. High bag limits could result in two closures in a fishing year. If, however, bag limits were set correctly or low, no closures would occur. Example: a recreational allocation of 5 million pounds for Gulf group

king mackerel would be set with 2.5 M for the period July through December and 2.5 M for December through June.

Two seasonal quotas would increase the monitoring and enforcement burden and would further complicate management and confuse fishermen.

Difficulties in fair apportionment could occur when harvest continues unchecked in state waters after the quota is filled.

C. The recreational allocations be subdivided into geographical zones. The bag limit is to revert to zero when the quota is taken.

Discussion:

a. Ecological: No change.

b. Socioeconomic: As in the case of the Gulf king mackerel commercial allocation, the recreational allocations could be subdivided by geographical area. Consideration could be given to fishing demand by area (population, access, etc.), and recent distribution might serve this purpose. Compatibility of state regulations and seasonality of availability could also be factors.

Percent Distribution of Recent Recreational Catch
FY 1985-1986

	Atlantic			Gulf	
	KM	SpM*		KM**	SpM*
FL	27	22	FL	50	63
GA	2	2	AL/MS	37	20
SC	21	7	LA	3	12
NC	51	69	TX	10	4

* Florida implemented a bag limit in October, 1986.
** Bag limit for king mackerel was implemented in September, 1985.

D. Do not apply provision reverting bag limit to zero when quota is taken but require a rule that the bag limit for the next fishing season be automatically reduced by the percentage the quota was exceeded (in terms of whole fish per person or per vessel) or by one fish, whichever is greater. This reduction would automatically apply to any new bag limit specified as well as the existing bag limit (if new bag limit is disapproved).

Discussion:

a. Ecological: Could result in harvest greater than TAC reducing effectiveness of stock restoration objective and requiring a longer period to achieve OY. Severity of impact would depend on amount the quota

was exceeded and degree that the bag limit for the subsequent season is adjusted for overfishing (the 1987-1988 catch of Atlantic Spanish mackerel was 216 percent over the quota).

Could result in unnecessarily low bag limits if stock assessment showed much improved stock and TAC were to be substantially increased.

b. Socioeconomic: Continuation of fishery would ameliorate the short-term adverse impact associated with zero bag limits, but would delay achieving the greater long-term benefit associated with restoration of the stock. Reduced or zero bag limit in years after an overrun could greatly impact the recreational fishery.

E. Bag limit would revert to 50 percent of current level (but not less than one fish) for the remainder of the year when harvest is projected to reach 67 percent of the quota.

Discussion:

a. Ecological: Assuming fish harvest at a bag limit is equally distributed over time, at the point two-thirds of the quota is harvested reduction of the bag limit by one-half should result in harvest of the additional one-third of the quota. Depending on the distribution of fish harvest and the initial bag limit, the impact could be slightly beneficial or more likely adversely affect restoration of the stock when harvest continues beyond TAC.

b. Socioeconomic: This action would reduce the short-term adverse impact of a complete closure but may delay attaining the longer-term benefit. Persons with access to the migratory fish in the first part of the fishing year could have higher bag limits.

F. Set reduced bag limits in EEZ off states where no or higher bag limits exist in state waters. Example: if a bag limit is set at 4 fish, it could be set at 2 fish in EEZ off states with higher bag limits.

Discussion:

a. Ecological: Uncontrolled or liberal fishing regulations in some areas contribute to the probability that TAC will be exceeded; i.e., the 1987-1988 catch of Atlantic Spanish mackerel was 216 percent over quota.

b. Socioeconomic: This would provide incentive for states to adopt coordinated management regimes. Presently, fishermen in cooperative states are "penalized" while those in unregulated states fish unchecked and contribute to early reversion to a zero bag limit.

G. Restrict recreational fishing for mackerels to weekend and federal holidays. The bag limit would remain through the year.

Discussion:

a. Ecological: Recreational fishing effort would be reduced, and in areas where there is only a small commercial fishery (Texas), total effort would be substantially reduced.

b. Socioeconomic: This measure would separate user groups by reducing the recreational fishing opportunity. Those individuals most affected would be charter boat operators and vacationers who would normally fish also on week days. Pulse fishing on weekends would increase.

H. Restrict recreational fishing for mackerel to weekends and federal holidays when 67 percent of a recreational allocation is reached. The bag limit would remain through the year.

Discussion:

a. Ecological: This action would reduce the possibility of exceeding the recreational allocation by reducing recreational fishing opportunity.

b. Socioeconomic: Those fishermen who have access to fish in the first part of the fishing year (until 2/3 of the allocation is reached) would have the advantage of greater fishing opportunity. Charter boat operators would lose fishing days for mackerel after the weekday closure became effective in federal waters.

I. The bag limit for a mackerel group would be reduced by 50 percent when 67 percent of an allocation is taken. The bag limit would remain open through the remainder of the year.

Discussion:

a. Ecological: This action would reduce the possibility of exceeding the recreational allocation.

b. Socioeconomic: The recreational fishery would not be closed but would be reduced. Bag limits may revert to a level too low to provide an incentive to fish in federal waters. Fishermen with early access would have greater fishing opportunity, but no area would have a zero bag limit imposed.

ACTION 9: SALE OF MACKEREL

Section 12.6.4.1B is amended to delete the statement that king and Spanish mackerel taken under the bag limits may be sold until the commercial quota for that group or zone is closed.

Removal of this provision would permit state licensing provisions for the sale of king and Spanish mackerel taken under a bag limit in the EEZ to apply when landed in that state in the absence of conflicting federal regulation. This action does not create a void in regulation but eliminates conflict and supersession where it occurs. (This action addresses Problem 4 which cites management difficulties created by a lack of coordination in state and federal management.)

Discussion:

a. Ecological: The ecological impact of this change is expected to be slight because total allowable catch is not affected. A reduction in the ability to sell a recreational catch in some states may have the effect of stimulating release of fish instead of landing for sale any unwanted bag limit catch. The sale of mackerel taken from the EEZ after the commercial quota is filled would continue to be prohibited.

b. Socioeconomic: Amendment 1, implemented in 1985, included a recommendation by the Councils that each state give consideration to requiring all persons who sell fish to have a commercial license of significant enough value to differentiate between commercial and recreational fishermen (Section 15.4). Many states have provided for commercial and in some instances recreational licenses to separate user groups. The permissive language currently in the FMP which allows sale of EEZ bag limit mackerel may supersede a state's intent to separate user groups.

Individual Gulf states have requirements for the sale of fish, including king and Spanish mackerel, that generally involve possession of a commercial permit. Texas and Louisiana laws also prohibit the sale of fish taken by recreational fishermen. A recently enacted Florida law requires that fishermen to be eligible for state permits to sell mackerel and other "restricted" species must have derived 25 percent of their total income or $5,000, whichever is less, from the sale of saltwater products. A recreational license applies to most coastal anglers in Florida.

The sale of recreationally caught king mackerel by Gulf fishermen is estimated by NMFS port agents and state fishery extension agents to be relatively low. Bag limit sales of king mackerel in the Florida Keys from charter boats are estimated to have been about 100,000 pounds (45,359 kg) valued at $105,000 in 1987-1988 (NMFS/SEFC). A representative of the Key West Charter Boat Association advised the Councils at their April, 1988 joint meeting that 60 to 65 percent of the charter catch in that area was left with the crews who are dependent on the sale of these fish. Florida charter boats which qualify for the state's restricted species permit may continue to sell bag limit catches. Neither will sale of mackerel by these vessels be affected by the measure when they fish under the commercial quota.

Alabama and Mississippi do not have separate recreational and commercial licenses; however, fishermen must possess a license for sale. A transfer of two percent of the recreational allocation of Gulf king mackerel reduces the impact of double counting.

In the management area of Atlantic group king mackerel, Georgia, South Carolina, Maryland, Delaware, and New York require licenses for the sale of fish taken by hook-and-line. North Carolina also requires such license but provides an exemption for catches less than 500 pounds (227 kg). Florida has separate recreational fishing licenses and a marine products license requiring that 25 percent of one's income or $5,000 be from commercial fishing if one fishes for restricted species which include mackerels. Virginia and New Jersey have no license requirements for sale. In North Carolina, it has been

estimated that 20 to 25 percent of the commercial landings in recent years, 276,000 pounds (125,191 kg) of king mackerel and 504,000 pounds (228,611 kg) of Spanish mackerel in 1987-1988 came from bag limit catches (personal communication, Katy West, N.C. DNRCD).

In the case of both Gulf and Atlantic groups of king and Spanish mackerel, this measure is expected to have minimal impacts on the participants of the fishery. To a large extent, the status quo is preserved under the measure with respect to these two species. Present state differences with respect to the sale of these species is still maintained. Fishermen who currently qualify to sell their catch under state licensing programs could continue to do so.

Rejected Alternative

No change - Commercial permits allow a vessel to fish for mackerel under the commercial quota and to be exempt from bag limits when fishing commercially. Vessels without commercial permits are limited to bag limits, but the catch may be sold.

a. Ecological: No change, no impact.

b. Socioeconomic: Essentially, this option has no short-run impacts. However, there is a certain issue that has been identified with this measure. Fish taken by recreational fishermen and sold may be counted both in the recreational and commercial quotas. Fishermen who do not qualify for a commercial permit and sell their catch are reducing the allowable catch for qualifying commercial fishermen. In the Gulf group king mackerel allocation, two percent of the allocation was transferred to the commercial quota to allow for this practice. In the Marine Recreational Fishery Statistical Survey, less than two percent of Gulf and North Carolina recreational fishermen interviewed expressed intent of selling a portion of their catch (Mark Holliday, NMFS).

State regulations which require that fishermen be licensed either as being recreational or commercial are superseded by federal regulations which currently allow sale of mackerel taken under a bag limit in the EEZ.

ACTION 10: COMMERCIAL PERMITS FOR CORPORATE VESSELS

Section 12.6.4.1 A is revised as follows:

A. Commercial Vessel Permits

Annual permits are required for vessels fishing under the commercial quota on king or Spanish mackerel. These vessels are exempt from the recreational bag limit. To be eligible for a commercial permit, the owner or operator of the vessel must be able to show he derived more than ten percent of his earned income from commercial fishing, i.e., the sale of his catch during the previous calendar year.

An operator who is issued a permit must be aboard the vessel when it is operating under the permit. For a corporation to be eligible for a permit, a shareholder or officer of the corporation or the vessel operator must qualify.

Vessels fishing a group of fish for which commercial permits are issued and which do not possess a permit are presumed to be recreational boats and are subject to recreational bag limits.

Qualifying charter boats may obtain commercial permits to fish under the commercial quotas but must adhere to bag limits when under charter or when more than three persons are aboard.

Permits are issued for an April through March permit year and are available at any time and are valid through the following March. Permits valid for the following permit year become available in February.

Permits are transferable on sale of vessel with new owner being responsible for changing name and address. The new owner or operator must be able to qualify.

Boats with permits must cease fishing for that group or zone for mackerel when its commercial quota is reached and the season closed. Charter boats with commercial permits may continue to fish under the bag limit.

A fee may be charged for the permit, but shall not exceed administrative costs incurred in issuing the permits. Fees are expected to be about $24.

The commercial vessel's official number is to be displayed on the port and starboard sides of the deck house or hull and on an appropriate weather deck so as to be clearly visible from enforcement vessels and aircraft. The number is to be in black Arabic numerals at least 18 inches in height for vessels over 65 feet in length and 10 inches in height for all other vessels.

Discussion:

The only change is stipulating that for a vessel owned by a corporation, an individual (shareholder or officer of the corporation or the vessel operator) must be able to show that ten percent of his earned income the previous year was derived from commercial fishing.

a. Ecological: No change.

b. Socioeconomic: The permit requirement provides a means to separate users for fishing under commercial quotas or bag limits. This change is intended to reduce the practice of incorporating recreational vessels for the purpose of becoming eligible for a commercial permit and allowing anglers to exceed the bag limit. If the catch is sold, it contributes toward filling the commercial quota. If the catch exceeds the bag limit and is not sold, it constitutes an uncounted catch that risks exceeding the TAC. The provision that fees for issuance of permits be charged on permittees mitigates the budgetary constraints on the administration of permit issuance. Although the fee, amounting to about $24 per permittee or about $56,000 using current number of permittees, is minimal relative to the value of the resource, this consideration alleviates part of the administrative burden.

Rejected Alternative:

A. Commercial Vessel Permits - No change.

Annual permits are required for vessels fishing under the commercial quota on king or Spanish mackerel. These vessels are exempt from the recreational bag limit. To be eligible for a commercial permit the owner or operator of the vessel must be able to show he derived more than ten percent of his earned income from commercial fishing, i.e., the sale of his catch during the previous calendar year.

An operator who is issued a permit must be aboard the vessel when it is operating under the permit.

Vessels fishing a group of fish for which commercial permits are issued and which do not possess a permit are presumed to be recreational boats and are subject to recreational bag limits.

Qualifying charter boats may obtain commercial permits to fish under the commercial quotas but must adhere to bag limits when under charter or when more than three persons are aboard.

Permits are issued for an April through March permit year and are available at any time and are valid through the following March. Permits valid for he following permit year become available in February.

Permits are transferable on sale of vessel with new owner being responsible for changing name and address. The new owner or operator must be able to qualify.

Boats with permits must cease fishing for that group or zone for mackerel when its commercial quota is reached and the season closed. Charter boats with commercial permits may continue to fish under the bag limit.

A fee may be charged for the permit, but shall not exceed administrative costs incurred in issuing the permits. Fees are expected to be about $24.

The commercial vessel's official number is to be displayed on the port and starboard sides of the deck house or hull and on an appropriate weather deck so as to be clearly visible from enforcement vessels and aircraft. The number is to be in black Arabic numerals at least 18 inches in height for vessels over 65 feet in length and ten inches in height for all other vessels.

Discussion:

a. Ecological: Corporate vessels which may in fact be recreational vessels that fish under the commercial quota but do not sell their catch increase the uncounted recreational catch and contribute toward exceeding TAC.

b. Socioeconomic: Recreational vessels obtaining commercial permits in order to fish under the commercial quota and sell their catch contribute toward the filling of the commercial quota and skew the allocation.

ACTION 11: PERMISSIBLE FISHING GEAR

A new Section 12.6.8.1.1 is added as follows:

Section 12.6.8.1.1 Gulf group king mackerel may be taken only with the following gear: hook-and-line and run-around gill nets.

Discussion:

a. Ecological: This stock of fish has been severely overfished, and recovery has been very slow and is expected to take a decade. Introduction of new and non-traditional fishing gear on a depleted stock is not prudent, as high catch gear could cause the quotas to be exceeded in a brief period. This action has been limited to Gulf king mackerel because of the severe condition of its spawning stock biomass.

b. Socioeconomic: The use of drift gill nets and purse seines has been prohibited on this migratory group as non-traditional gear. Current gear used in the fishery are hook-and-line and run-around gill nets. There is no anticipated adverse impact on current users. Introduction of new gear could reduce the effective allocation to the current users who are already on reduced quotas. Of course, the effective allocation to the current users would also be reduced if more fishermen enter the fishery using the nonrestricted gear types. As only traditional gear types are permitted, this measure impedes technological improvement that could render the harvest sector more efficient.

Rejected Alternatives:

A. No change - only specified fishing gear is prohibited, i.e., Spanish mackerel gill nets smaller than 3 1/2 inch (8.9 cm) stretched mesh, king mackerel gill nets smaller than 4 3/4 inch (12 cm) stretched mesh and purse seines on certain migratory groups.

   Discussion:

   a. Ecological: Gear and fishing methods which may be destructive to the habitat (dynamite) or which may result in wasteful bycatch (toxic chemicals) could be used. Specification of prohibited gear cannot anticipate all developments in gear technology.

   b. Socioeconomic: This option has no short-run effects. Over the long-run, this approach to management of gear usage allows the development and use of more efficient gear. Gear development can occur under permit. Under this condition, the possibility of improving efficiency in the industry is open. But as long as current users of allowed gear do not adopt the new ones, the use of a more efficient gear may be viewed as socially unacceptable, just as drift gill nets and purse seines.

B. Prohibit the taking of coastal pelagics with all except the following gear: hook-and-line and run-around gill nets except that run-around gill nets are prohibited on Atlantic group king mackerel.

Discussion:

a. Ecological: Specification of appropriate gear could eliminate destructive or wasteful gear. The introduction of new, more efficient gear on depressed stocks would deter recovery.

b. Socioeconomic: This option would apply to all groups of migratory pelagics. The Atlantic group of king mackerel is not considered to be overfished, and current users may be unable to take the TAC with further gear restriction. The fishery would be limited to conventional fishing methods, practically ruling out the possibility of improving the efficiency of the industry.

ACTION 12: COBIA BAG LIMIT

A new Section 12.6.6.1.2 is added as follows:

12.6.6.1.2 The bag limit for cobia is 2 fish per person per day with a 1-day possession limit.

Discussion:

a. Ecological: The cobia fishery is largely opportunistic and incidental. Most catches are made during spring migration. A charter boat catch of 4 fish would be considered a large catch. MSY for cobia is estimated to be one million pounds, but catches have exceeded this each year since 1981 (Table 6). A 2-fish bag limit would reduce the charter boat catch of cobia by 12 percent but would impact only 4 percent of the trips (Table 7).

b. Socioeconomic: Table 6 shows the historical catch distribution of cobia. Although the table reflects about equal catches by both the commercial and recreational sectors, most of the commercial landings are deemed to be catches of "recreational" fishermen who sold their catch. It is believed that as much as 90 percent of cobia landings is accounted for by the recreational sector. Much of the commercial fishery consists of small catches of one or two fish.

The short-run impacts of this measure on the commercial sector are expected to be minimal. The short-run impacts on the recreational sector may also be insignificant. A bag limit analysis on charter boat catches reveals that about 12 percent of the catch and about 4 percent of the trips would be impacted by this measure.

MSY for cobia is currently estimated at 1.0M pounds (0.45 M kg) while landings far exceed this level. The proposed bag limit is expected to cut down these landings. If these landings are not reduced far enough, chances for stock depletion become high. It also has to be noted that under the assumption of fixed output price maximum economic yield (MEY) occurs below MSY, so that larger cuts in landings may have to be instituted to approximate the level at which economic yield is maximized. It is not

determinable as to whether the proposed measure can lead to landings that approximate MSY or MEY, but relative to the status quo it can be expected to result in long-run net gains to society if actual MSY is as estimated.

Rejected Alternative:

A. No change. OY for cobia is set at 1.0 M, the best but crude estimate of MSY based on landing statistics. The only management measure is a 33-inch fork length minimum size limit which has also been adopted by all states except Georgia and North Carolina. A 33-inch (84 cm) cobia weighs about 14 pounds (6.4 kg).

Discussion:

a. Ecological: Recent landings of cobia exceed OY by 143-279 percent since 1981 (Table 6). The 1990 stock assessment should include a reevaluation of MSY.

b. Socioeconomic: This option has no short-run effects. From the analysis of the proposed measure, maintaining the status quo would mean foregoing some net gains equivalent, for example, to what can be gained under the proposed option.

ACTION 13: KING MACKEREL SIZE LIMIT

A new Section 12.6.7.2.1 is added as follows:

12.6.7.2.1 King Mackerel

Minimum size limit is 12-inch (30.5 cm) fork or 14-inch (35.6 cm) total length for king mackerel.

Discussion:

a. Ecological: A 12-inch (30.5 cm) king mackerel is about 6 months old. Few are taken in a hook-and-line fishery. However, the regulation would facilitate enforcement of the same size limit for Spanish mackerel.

Undersize Spanish mackerel are taken in a directed fishery and some fishermen may confuse the species because of their similar appearance. The same size limit for both species would benefit the Spanish mackerel stocks. Release mortality for small fish of both species is believed to be low.

b. Socioeconomic: Few king mackerel under 12 inches (30.5 cm) fork length are currently taken in a directed commercial fishery (some trawl bycatch is taken and discarded). The prevalence of recreational catches of king mackerel under 12 inches (30.5 cm) fork length is not readily determinable. It is possible that a size limit in addition to a bag limit could have some impact on the recreational sector. The negative impact of this measure on the commercial and recreational sectors may be minimal. Magnitudes of losses and benefits have to be generated to determine precisely these negative short-run impacts on both sectors.

Over the long-run, this action may generate beneficial effects in comparison with the status quo as described above in conjunction with the discussion of the rejected alternative of no change. The net effect of this measure may be positive, but a definitive statement necessitates estimating magnitudes of both short-run loss and possible long-run gains.

From an administrative perspective, this measure could generate some positive gains over the status quo by facilitating the enforcement of a similar size limit on Spanish mackerel.

Rejected Alternative

A. No change. No size limit for king mackerel.

Discussion:

a. Ecological: Cryptic mortality of released fish at a 25-inch (63.5 cm) size limit was judged to be too high to provide additional yield.

b. Socioeconomic: This measure has no short-run impacts. In contrast to size limit options, this measure may forego certain benefits offered by restricting catch to bigger fish. It is likely that bigger (possibly up to some level) sized fish would command higher prices on a per pound basis so that if the same cost is expended by the commercial sector to catch the same poundage of small and big fish, the latter catch would command a higher market value. It is also possible that recreational fishermen value a bigger fish more than a smaller one. The outcome is not readily determinable if the cost of catching small and big fish differs, and this difference is likely to occur in the case of depleted stocks where mostly small-sized fish are available.

ACTION 14: DEFINITION OF "CONFLICT"

To Section 12.6.9, Measures to Resolve User Conflict, add a definition of conflict as follows:

Conflict means any incident at sea involving one or more fishing vessels (a) in which one fishing vessel or gear comes into contact with another vessel or the gear of another vessel which results in damage or destruction of fishing gear, loss of gear and associated catch through disappearance of the gear or its location buoys, preemption of fishing grounds, removal of catch from the gear, or vessel collision; or (b) in which there is imminent threat of one fishing vessel or gear coming into contact with another vessel or the gear of another vessel; or (c) competition for a resource between one fishing vessel or gear and another vessel or gear such that (1) it results in displacement of a traditional fishery by new gear, (2) it results in reduced catches to the traditional fishery, or (3) it leads the Councils to conclude that the situation will lead to (1) and/or (2) as described above. Competition is not in and of itself conflict; however, when competition is intensified, it can lead to conflict.

Discussion:

a. Ecological: No change.

b. Socioeconomic: The plan provides that in the event of user or gear conflicts, the Secretary, after consultation with the Councils, may take specified action to separate the users to resolve the conflict. However, "conflict" is not defined and the intent of the Councils has been unclear. When the Councils proposed to use this procedure to prohibit the introduction of drift gill nets, the question arose whether competition constituted conflict. This definition would provide guidelines for Secretarial action.

Rejected Alternative:

No Change - Conflict to remain undefined.

Discussion:

a. Ecological: No effect.

b. Socioeconomic: The proposed definition could prevent the introduction of new, more efficient gear in the fishery. The Secretary will have no guidance on Councils' intent.

IV. Habitat and Vessel Safety

A Description of Habitat for Coastal Pelagics and a discussion of vessel safety issues were included in Amendment 3 and remain current for this amendment.

V. Coastal Zone Consistency

Copies of the proposed action were provided to the Coastal Zone Management Offices of the Gulf, South Atlantic, and Mid-Atlantic states. The action as proposed will be consistent with plans of the coastal states.

VI. Environmental Consequences

Physical Environment - The proposed actions in this amendment will have no adverse impact on the physical environment.

Fishery Resource - The proposed actions are intended to rebuild overfished stocks and to prevent healthy stocks from becoming overfished.

Human Environment - Fishermen would be affected by allocations, bag limits, daily limits, permits, and other restrictions intended to conserve the stocks of fish and distribute the allowable catch fairly among the users. Long term benefits are expected to exceed short term loss.

Effect on Endangered Species and Marine Mammals - The proposed amendment will have no effect on endangered species and marine mammals. A Section 7 consultation was held for this FMP with a "no jeopardy opinion" being rendered. The proposed actions do not alter provisions of the FMP that would affect these animals.

Effect on Wetlands - The proposed amendment will have no effect on any flood plains, wetlands, trails, or rivers.

VII. Conclusions

The 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 major under criteria provided in Executive Order 12291 (E.O. 12291) and whether the proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Act of 1980 (RFA). The primary purpose of the RFA is to relieve small businesses, small organizations, and small governmental jurisdictions (collectively: "small entities") of burdensome regulatory and recordkeeping requirements. An Initial Regulatory Flexibility Analysis (IRFA) has been done as part of the RIR to determine whether the requirements pursuant to this amendment, if promulgated, would not have a significant effect on a substantial number of small entities.

The analyses of the impacts of alternative measures considered under this amendment have been done in previous sections and are deemed to satisfy the basic elements for RIR/IRFA. Table 8 is a summary of impacts of the proposed measures. Impacts of the rejected measures are summarized in Table 9.

The extension of the management area for mackerels to the Mid-Atlantic Council's area of jurisdiction is expected to increase enforcement cost. Its long-run effects could be positive or negative depending on how successful such action would help in rebuilding the mackerel stock. The change in fishing year has merit on equity grounds. Its negative economic effects may not be realized if fishing vessels from closed areas do not find it profitable to fish in open areas. The provision for an overfishing definition renders the plan consistent with recently revised guidelines for fishery management. The proposed overfishing definition is better than the rejected ones, mainly due to its explicit consideration of OY. The separation of responsibility between the South Atlantic and Gulf Councils has a net positive effect by facilitating the management procedures. The separation of the Gulf group of king mackerel into two groups has no effects, since no changes in management measures are proposed to accompany such recognition of two migratory groups. The redifinition of bag limits as daily instead of per trip bag limits has essentially indeterminate effects. The deletion of a federal prohibition to sell mackerel caught under the bag limit has minimal effects on fishing participants while possibly reducing enforcement costs on the part of the federal government. The charging of fees for the issuance of permits merely shifts the burden from NMFS to the permittees. This shift is deemed to be beneficial in its net result since the fee has minimal impact on each permittee but appears to free about $56,000 to enhance administration of the mackerel FMP or other fishery

plans. The provision on permissible fishing gear has no short-run impacts as the permitted gear are the ones that are currently allowed. This provision though, may have negative impacts on the future efficiency of the harvest sector as innovations will be discouraged. The cobia bag limit is expected to have minimal negative short-run effects, but it offers potential for protecting the fish which could generate more future benefits for both recreational and commercial sectors. The mackerel size limit has a negative short-run effect that cannot be measured with current information. The long-run effect is expected to be beneficial to major user groups. It is not precisely known as to what the impacts are of the proposed definition of conflict, except that it appears to simplify the management procedures once a "conflict" has been determined.

By and large, the measures proposed appear to be either more beneficial or less costly than their corresponding rejected measures. The extension, however, of the management area to the Mid-Atlantic Council's area of jurisdiction may pose certain problems as it is difficult to project the extent of stock protection that may be generated by the measure especially that additional enforcement costs may have to be incurred.

Mitigating Measures Related to the Proposed Action - No significant environmental impacts are expected; therefore, no mitigating actions are proposed.

Unavoidable Adverse Effects - Allocation of limited total allowable catch will have adverse impact on some users. Distribution of allowable catch, however, is intended to be fair and equitable, based on historic and current use.

Relation Between Local, Short-Term Users of the Resource and Enhancement of Long-Term Productivity - The Councils have concluded that short-term reduction of catch to all users can restore the fishery resource to the long-term benefit of all users.

Irreversible or Irretrievable Commitment of Resources - None.

Enforcement Costs - Extension of the management area to the jurisdiction of the Mid-Atlantic Fishery Management Council is estimated to cost about $132,000 per year.

Finding of No Significant Environmental Impact

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

_____ _____

Assistant Administrator for Fisheries Date

LIST OF PUBLIC HEARINGS

October 22
Holiday Inn - Beachside
North Roosevelt Boulevard
Key West, Florida

October 23
Texas A&M Research and Extension Center
Highway 44 (four miles west of the airport)
Corpus Christi, Texas

October 23 - 1 p.m. to 4 p.m.
Broward County Government Center
115 South Andrews Avenue
Room 515
Ft. Lauderdale, Florida

October 23
Holiday Inn - Sunshine Parkway
7151 Okeechobee Road
Room A & B
Ft. Pierce, Florida

October 24
Riviera Utilities
Kilowatt Room
413 East Laurel Avenue
(Highway 98)
Foley, Alabama

October 24
Holiday Inn - Oceanfront
1617 First Street North
Jacksonville, Florida

October 25
Best Western Bayside Inn
Bay Room
711 West Beach Drive
Panama City, Florida

October 25
Quality Inn
490 New Jesup Highway
Brunswick, Georgia

October 26
Holiday Inn - Downtown
121 West Boundary Street
Savannah, Georgia

October 27
Holiday Inn
South Forest Beach Drive
Hilton Head Island, South Carolina

October 28
Quality Royale Beach Cove Inn
4800 South Ocean Boulevard
North Myrtle Beach, South Carolina

October 30
City Hall Auditorium
300 Municipal Drive
Madeira Beach, Florida

October 30
New Hanover County Courthouse
320 Chestnut Street
Room 302
Wilmington, North Carolina

October 31
Duke Marine Laboratory
Duke Auditorium
Pivers Island
Beaufort, North Carolina

November 1
Nichols State University
Powell Auditorium
Thibodaux, Louisiana

November 1
Marine Resource Center
Airport Road
Manteo, North Carolina

November 2
Lake Wright Quality Inn
6280 Northampton Boulevard
Room MR-1
Norfolk, Virginia

LIST OF PREPARERS

Gulf of Mexico Fishery Management Council
- Terrance Leary, Biologist
- Antonio Lamberte - Ph.D., Economist

South Atlantic Fishery Management Council
- Gregg T. Waugh, Fishery Biologist/Statistician

Table 1. King Mackerel Gulf Stock Catch Summary for weight and numbers (July-June fishing year). The listings for East Gulf and West Gulf represent catch estimates derived by assuming a zone of mixing between these two hypothesized stocks. The assumed mixing zone ranges from Alabama through Texas with variable proportions of the catch attributed to each hypothesized stock as a function of distance along the US Gulf of Mexico coast.[1]

Fishing Year	East Gulf			West Gulf			US Gulf			Mexico	Gulf		
	Com	Rec	Total	Com	Rec	Total	Com	Rec	Total	Com	Com	Rec	Total
a) thousands of pounds[3]													
1979	4509	2118	6627	0	2208	2208	4509	4326	8836	-	4509	4326	8836
1980	6154	8589	14,743	0	5120	5120	6154	13,709	19,863	-	6154	13,709	19,863
1981	5997	3507	9503	0	4449	4449	5997	7956	13,952	-	5997	7956	13,952
1982	3811	2393	6205	946	1344	2291	4758	3738	8495	-	4758	3738	8495
1983	2589	1335	3923	394	817	1210	2982	2151	5134	-	2982	2151	5134
1984	2497	2847	5344	682	936	1618	3179	3783	6962	2831	6010	3783	9793
1985	2846	1676	4523	648	892	1541	3495	2569	6063	5301	8796	2569	11,364
1986	813	2249	3062	346	797	1143	1159	3046	4205	7425	8584	3046	11,630
1987	651	1440	2091	218	527	745	869	1956	2826	6319	7188	1956	9145
1988[2]	101	2054	2190	267	728	1030	369	2782	3152	1174	1543	2782	4325
b) thousands of fish													
1979	629	378	1007	0	221	221	629	599	1228	-	629	599	1228
1980	890	1243	2133	0	435	435	890	1678	2568	-	890	1678	2568
1981	705	464	1169	0	407	407	705	872	1577	-	705	873	1577
1982	434	374	807	48	103	151	482	477	958	-	482	477	958
1983	363	220	583	33	71	104	396	292	688	-	396	292	688
1984	278	339	617	51	85	136	328	424	753	485	814	424	1238
1985	319	194	514	47	67	114	368	261	628	710	1078	261	1338
1986	89	314	403	21	68	89	110	382	492	1124	1234	382	1615
1987	64	194	258	13	47	60	78	241	319	1179	1257	241	1498
1988[2]	6	216	222	12	57	69	17	273	290	220	237	273	510

1 Fishing year 1979 begins on 1 July 1979 and ends on 30 June 1980.

2 Fishing year 1988 data through October 1988 only, and should be considered preliminary.

3 1 lb. = 0.45 kg

Source: 1989 Report of the Mackerel Stock Assessment Panel (NMFS - SEFC)

Table 2. King Mackerel Atlantic Stock Catch Summary for weight and numbers of fish (April - March fishing year).[1]

Fishing Year	Mid and North[2] Com	Mid and North[2] Rec	Mid and North[2] Total	South[3] Com	South[3] Rec	South[3] Total	Combined Com	Combined Rec	Combined Total
a) thousands of pounds[5]									
1979	11	91	102	2157	2595	4752	2169	2685	4854
1980	20	118	138	3081	9493	12,574	3101	9611	12,712
1981	3	24	27	2567	6361	8928	2570	6385	8954
1982	14	<0.5	14	4225	5207	9432	4239	5207	9446
1983	7	<0.5	7	2592	5930	8521	2598	5930	8528
1984	3	<0.5	3	1942	7435	9377	1945	7435	9380
1985	10	2	12	2475	4909	7384	2485	4911	7396
1986	4	100	104	2823	5138	7961	2826	5238	8064
1987	16	58	74	3430	3724	7154	3446	3782	7228
1988[4]	14	139	153	2090	5609	7699	2104	5748	7852
b) thousands of fish									
1979	1	8	9	247	279	527	249	287	536
1980	2	16	18	314	1244	1557	316	1260	1576
1981	<0.5	2	3	297	717	1015	298	720	1017
1982	2	<0.5	2	409	508	917	411	508	919
1983	1	<0.5	1	252	669	921	252	669	922
1984	<0.5	<0.5	<0.5	186	802	988	187	802	989
1985	1	1	1	231	562	793	232	562	794
1986	<0.5	12	12	291	560	851	291	572	863
1987	2	8	10	337	503	840	338	512	850
1988[4]	2	16	17	233	662	895	235	678	913

1 Fishing year 1979 begins on 1 April 1979 and ends on 31 March 1980.

2 Includes areas north of North Carolina.

3 Includes North Carolina and areas south of North Carolina.

4 Fishing year 1988 data through October 1988 only, and should be considered preliminary.

5 1 lb. = 0.45 kg

Source: 1989 Report of the Mackerel Stock Assessment Panel (NMFS - SEFC)

Table 3. Spanish Mackerel Gulf Stock Catch Summary for weight in thousands of pounds and numbers in thousands of fish (July-June fishing year).

Fishing Year	US Gulf Com	US Gulf Rec	Total	Mexico Com	Gulf Com	Gulf Rec	Total
a) Thousands of pounds [3]							
1983[1]	1694	383	2077	-	1694	383	2077
1984	3559	1369	4928	-	3559	1369	4928
1985	3301	2597	5898	10354	13654	2597	16252
1986	2283	4474	6756	10519	12802	4474	17275
1987	2328	2875	5203	11295	13623	2875	16499
1988[2]	33	697	730	2953	2986	697	3683
b) Thousands of fish							
1983[1]	1412	353	1765	-	1412	353	1765
1984	2193	1326	3518	-	2193	1326	3518
1985	1766	2274	4040	9059	10825	2274	13099
1986	1464	3881	5345	6383	7848	3881	11728
1987	1295	1922	3217	8606	9901	1922	11823
1988[2]	18	422	440	2970	2987	422	3409

1 Fishing year 1983 includes only January - June 1984.
2 Fishing year 1988 data through October 1988 only, and should be considered preliminary.
3 1 lb. = 0.45 kg

Source: 1989 Report of the Mackerel Stock Assessment Panel (NMFS - SEFC)

Table 4. Spanish Mackerel Atlantic Stock Catch Summary for weight and numbers of fish (April - March fishing year).[1]

Fishing Year	Mid and North[2] Com	Mid and North[2] Rec	Mid and North[2] Total	South[3] Com	South[3] Rec	South[3] Total	Combined Com	Combined Rec	Combined Total
a) Thousands of pounds[5]									
1983	<0.5	<0.5	<0.5	1772	53	1825	1772	53	1825
1984	10	<0.5	10	3282	1564	4846	3292	1564	4856
1985	15	<0.5	15	4055	864	4920	4071	864	4935
1986	176	8	184	2312	993	3304	2487	1001	3488
1987	381	22	403	3306	1640	4945	3686	1662	5348
1988[4]	313	113	425	518	2283	2801	831	2396	3226
b) Thousands of fish									
1983	<0.5	<0.5	<0.5	1405	40	1445	1405	40	1445
1984	12	<0.5	12	2145	1132	3277	2157	1132	3289
1985	11	<0.5	11	2360	521	2880	2370	521	2891
1986	155	7	163	1590	722	2312	1745	729	2475
1987	327	17	344	1311	1087	2398	1638	1105	2743
1988[4]	232	88	321	323	1570	1893	556	1658	2214

1 Fishing year 1983 includes only January - June 1984.

2 Includes areas north of North Carolina.

3 Includes North Carolina and areas south of North Carolina.

4 Fishing year 1988 data through October 1988 only, and should be considered preliminary.

5 1 lb. = 0.45 kg

Source: 1989 Report of the Mackerel Stock Assessment Panel (NMFS - SEFC)

Table 5

HISTORIC ABC's, TAC's AND CATCHES (millions of pounds)*

FISHING YEAR	KING MACKEREL ATLANTIC	KING MACKEREL GULF	SPANISH MACKEREL ATLANTIC	SPANISH MACKEREL GULF
1985/86				
ABC	6.9	10.7	27	27
TAC	15.4	14.9	27	27
CATCH	11.8	14.2	27	27
	7.4	6.1	10.8	10.8
1986/87				
ABC	6.9	1.2	27	27
TAC	15.4	2.9	27	27
CATCH	9.68	2.9	27	27
	8	4.2	10.1	10.1
1987/88				
ABC	6.9	0.6	1.9	1.9
TAC	15.4	2.7	3.1	4
CATCH	9.68	2.2	3.1	2.5
	7.2	2.8	4.9	5.2
1988/89				
ABC	5.5	0.5	1.3	1.9
TAC	10.7	4.3	5.5	7.1
CATCH	7	3.4	4	5
	7.7	4.5	5.8	3.4
1989/90				
ABC	6.9	2.7	4.1	4.9
TAC	15.4	5.8	7.4	6.5
	9.0	4.25	6.0	5.25

Spanish Mackerel were separated into two groups for the 1987/88 fishing year.

* 1 lb. = 0.45 kg

Source: South Atlantic Fishery Management Council and SEFC/NMFS

Table 6

Recreational and Commercial Cobia Landings
Pounds x 1,000

Year	Recreational			Commercial			Grand Total
	Atlantic	Gulf	Total*	Atlantic	Gulf	Total	
1981	5	2,623	2,627	42	118	160	2,787
1982	336	1,106	1,443	46	111	157	1,600
1983	175	1,637	1,813	35	132	167	1,980
1984	896	778	1,674	27	142	169	1,843
1985	655	600	1,255	36	135	171	1,426
1986	536	1,190	1,726	59	123**	182	1,908

* Difference due to rounding
** Except Texas

Source: NMFS Statistics

TABLE 7 Projected effect of bag limits on catch of cobia, and the percent of total successful trips impacted assuming no change in effort and trips exceeding bag limit reduce their catch to the bag limit.

BAG LIMIT (NUMBER/PERSON)	IMPACTED TRIPS (%)	REDUCTION IN CATCH (%)
1	8	23.2
2	4	12.3
3	2	8.1
4	2	5.5
5	1	3.5
6	1	2.2
7	1	1.3
8	1	0.6
9	<1	0.3
10	<1	0.3
11	<1	0.2
12	<1	0.2
13	<1	0.1
14	<1	0.1
15	0	0.0
20	0	0.0

Source: SEFC- NMFS

Table 8

Summary of Impacts of Proposed Actions

Management Measure	Short-run Effects	Long-run Effects
1. Extension of management area	Negative	Negative or positive
2. Fishing year	Positive or negative	Positive or negative
3. Overfishing	Positive	Positive
4. Review of SAP Report	Positive	Positive
5. Separation of Gulf stocks	Unknown	Unknown
6. Bag limits	Positive or negative	Positive or negative
7. Sale of mackerel	Positive for enforcement	Positive or negative
8. Permits	Positive	Positive
9. Fishing gear	No impact	Positive or negative
10. Cobia bag limit	Negative	Positive
11. Mackerel size limit	Negative	Positive
12. Definition of conflict	Uncertain	Uncertain

Table 9

Summary of Impacts of Rejected Actions

Management Measure	Short-run Effects	Long-run Effects
1. Extension of management area	No impact	Negative or positive
2. Fishing year	No impact	Positive or negative
3. Overfishing		
Option A	Uncertain	Uncertain
Option B	Positive	Positive
4. Review of SAP Report	Negative	Negative
5. Separation of Gulf stocks	Positive or negative	Positive or negative
6. Bag limits		
Option A	No impact	Positive or negative
Option B	Negative	Negative
Option C	Positive or negative	Positive or negative
Option D	Positive	Negative
Option E	Positive	Negative
Option F	Positive or negative	Positive or negative
Option G	Negative	Negative
Option H	Negative	Negative
Option I	Positive or negative	Positive or negative
7. Sale of mackerel	No impact	Positive or negative
8. Permits	No impact	Negative
9. Fishing gear		
Option A	No impact	Positive or negative
Option B	Negative	Negative
10. Cobia bag limit	No impact	Negative
11. Mackerel size limit	No impact	Negative
12. Definition of conflict	No impact	Positive or negative