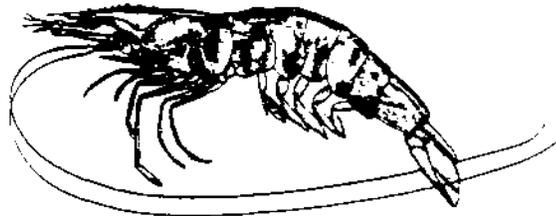


AMENDMENT NUMBER 6
TO
THE FISHERY MANAGEMENT PLAN
FOR THE
SHRIMP FISHERY OF THE GULF OF MEXICO
UNITED STATES WATERS
INCLUDES ENVIRONMENTAL ASSESSMENT
AND
REGULATORY IMPACT REVIEW



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GULF OF MEXICO FISHERY MANAGEMENT COUNCIL
LINCOLN CENTER, SUITE 331
5401 WEST KENNEDY BOULEVARD
TAMPA, FLORIDA 33609
813-228-2815

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I. INTRODUCTION

A fishery management plan for the shrimp fishery in the Gulf of Mexico (FMP) was prepared by the Gulf of Mexico Fishery Management Council and was implemented as federal regulation on May 15, 1981. The principal thrust of the plan was to enhance yield in volume and value by deferring harvest of small shrimp to provide for growth. This was achieved by establishing a cooperative Tortugas Shrimp Sanctuary with the state of Florida to close to shrimp trawling an area where small pink shrimp comprise the majority of the population most of the time. A cooperative 45-day seasonal closure was established with the state of Texas to protect small brown shrimp emigrating from bay nursery areas. An area of Florida Bay was zoned seasonally for either shrimp or stone crab fishing to avoid gear conflict.

Amendment No. 1 provided the Regional Director of the National Marine Fisheries Service (NMFS) with the authority after conferring with the Council to adjust by regulatory amendment the size of the Tortugas Sanctuary or extent of the Texas closure or to eliminate either closure for one year.

Amendment No. 2 updated catch and economic data in the FMP, and Amendment No. 3 resolved another shrimp-stone crab gear conflict on the west central Florida coast.

Amendment No. 4, partially approved in 1988, identified problems which developed in the fishery and revised the objectives of the FMP accordingly. The annual review process for the Tortugas Sanctuary was simplified, and the Council and Regional Director review for the Texas closure was extended to February 1st. Disapproved was a provision that white shrimp taken in the Exclusive Economic Zone (EEZ) were to be landed in accord with a state's size possession regulations to provide consistency and facility of enforcement with the state of Louisiana. This latter action was to have been implemented at such time when Louisiana provided for an incidental catch of undersized white shrimp in the fishery for seabobs. This proposed action was disapproved with the recommendation that it be resubmitted under the expedited 60-day Secretarial review schedule after Louisiana provided for a bycatch of undersized white shrimp in the directed fishery for seabobs. This resubmission was made in February of 1990 and applied to white shrimp taken in the EEZ and landed in Louisiana. It was approved and implemented in May of 1990.

In July 1989 NMFS published revised guidelines for fishery management plans that interpretatively address the Magnuson Act national standards (50 CFR Part 602). These guidelines require each FMP to include a scientifically measurable definition of overfishing and an action plan to arrest overfishing should it occur.

In 1990 Texas revised the period of its seasonal closure in Gulf waters from June 1 to July 15 to May 15 to July 15. The FMP did not have enough flexibility to adjust the cooperative closure of federal waters to accommodate this change.

Amendment 5 in 1991 defined overfishing for Gulf brown, pink and royal red shrimp and provided for measures to restore overfished stocks if overfishing should occur. Action on white shrimp was deferred, and seabobs and rock shrimp were deleted from the management unit. The duration of the seasonal closure to shrimping off Texas was adjusted to conform with recent changes in state regulations.

This amendment will provide a definition for overfishing for white shrimp and eliminate the annual reports and reviews of the Tortugas Shrimp Sanctuary in favor of monitoring and an annual stock assessment. Three seasonally opened areas within the sanctuary will continue to open seasonally.

II. DESCRIPTION AND CONDITION OF THE FISHERY

The shrimp fishery in the Gulf of Mexico is regulated by the federal government and the states of Texas, Louisiana, Mississippi, Alabama, and Florida. Federal waters extend from 3 to 200 nautical miles from the coastline in the Gulf of Mexico, except off Florida and Texas where the state waters extend to 9 nautical miles.

U.S. commercial landings of Gulf shrimp averaged 256 million pounds (live weight) during the period 1985 to 1989. Landings in 1990 were 249 million pounds up 8 percent from 228 million pounds in 1988. The ex-vessel value of landings was \$399 million.

Supply cannot meet the demand and imports have made up the difference. In 1990 imports of shrimp comprised 579 million pounds (tail weight) (NMFS statistics).

Gulf shrimp abundance continues to be the result of recruitment, largely controlled by environmental driving forces. In recent years the development of a strong inshore (bay) fishery for juvenile shrimp, whose growth potential has not been reached, has resulted in lower recruitment to the offshore fishery and lessened the potential for increasing yield by deferring harvest in offshore waters. Both the states of Louisiana and Texas where much of the inshore fishery occurs are currently developing and implementing plans to address this issue.

There are an estimated 6,200 vessels over 5 net tons in the Gulf fishery, most of which probably fish in the EEZ. Another 12,000 boats less than 5 net tons fish primarily in state and inside waters.

The Tortugas pink shrimp fishery was stable with annual production of about 10 million pounds until 1985. Since then, recruitment has declined, and production has been reduced to about six million pounds. The cause of the decline in recruitment is not known but is believed to be related to environmental changes in the Everglades nursery area.

Royal red shrimp are found in deep water where production costs are high. Markets for this species are very poor, and there has been little production in recent years. Annual landings of less than 275,000 pounds were recorded in past years.

Since recruitment overfishing has not been observed in any of the three major Gulf of Mexico shrimp fisheries, lowest recent parent stock number values for each species are used as the limit beyond which overfishing could occur with present environmental conditions. Parent stock is defined for brown shrimp as the number of age 7+ (months) shrimp during the November - February time frame, with a level of 125 millions shrimp set as the lower limit.

Pink shrimp parent stock is defined as the number 5+ (months) shrimp during the July - June period, with a level of 100 million shrimp set as the lower limit.

White shrimp parent stock is to be defined as the number of age 5+ (months) shrimp during the April-August time frame, with a level of 300 million shrimp set as the lower limit.

The parent number for each of the three major shrimp species was above the overfishing index level during 1991. Brown and white shrimp parent levels were well above the overfishing index, while pink shrimp parent stock estimates were closer to the index.

Besides the three major shrimp species, only royal red shrimp is also contained within the management unit of the FMP. Overfishing was defined for this species as fishing greater than optimal yield (OY) as defined in the FMP. OY was set at MSY (maximum sustainable yield), which

was estimated to be 392,000 pounds of tails at a level of 1,290 days fished. During 1991, only 89,190 pounds of royal red shrimp were caught in the Gulf of Mexico. This value is under the overfishing index level set for this shrimp species. (Nance, 1992).

While requirements to modify trawl gear, through the use of Turtle Excluder Devices (TEDs), and trawling procedures, through the use of timed tows, have caused social and economic disruptions in the fishery, their impacts have lessened over time as fishermen have adjusted to them. These disruptions manifested themselves in angry public meetings, channel blockades, and poor compliance with the regulations imposing the conservation measures required under the Endangered Species Act. Compliance with the regulations, however, has steadily improved as fishermen have learned to use TEDs more efficiently. There still remain some instances of disruption probably in part to do with localized clogging of TEDs with bottom debris and marine grasses, and other economic stresses due to imports and falling ex-vessel shrimp prices.

Studies conducted by NMFS involving observers on cooperating shrimp trawlers showed that shrimp loss from properly installed TEDs averaged about 10 percent in 1989, but only about 1 percent in 1990 (Renaud, *et. al.*, 1990; Renaud, *et. al.*, 1991). The difference between the two years was explained as being at least partially due to fishermen gaining experience with the TEDs, and advances in the gear (NMFS, 1991). NMFS concluded that while TEDs did reduce the individual fisherman's efficiency somewhat, there was no overall reduction in shrimp catch. This was because the fishery is so over capitalized. Shrimp escaping one fisherman would be caught by another one (NMFS, 1991).

III. ISSUES TO BE ADDRESSED

1. Compliance with 602 Guidelines which require a definition of "overfishing" and measures to restore overfished stocks for white shrimp.
2. Requirement for annual reviews of the Tortugas Shrimp Sanctuary is to be replaced by monitoring and an annual assessment of stocks.
3. The size of the Tortugas Sanctuary is adjusted seasonally..

IV. PURPOSE AND NEED

Problems in the Fishery

In the current FMP as amended, the Council has identified the following problems associated with the fishery and the present management regime and has prepared the plan objectives where possible to address and alleviate them.

1. Conflict among user groups as to area and size at which shrimp are to be harvested.
2. Discard of shrimp through the wasteful practice of culling.
3. The continuing decline in the quality and quantity of estuarine and associated inland habitats.

4. Conflicts with other fisheries such as gear conflict with the stone crab fishery in southern Florida, the groundfish fishery of the north central Gulf, and the Gulf's reef fish fishery.
5. Incidental capture of sea turtles.
6. Loss of gear and trawling grounds due to man-made obstructions.
7. Partial lack of basic data needed for management.
8. Increasing catch of small shrimp in inshore waters.
9. Pulse fishing resulting from seasonal closures.
10. Loss of access to productive shrimp fishing grounds off Mexico.
11. Possible loss of shrimp to Mexico through transboundary migration.
12. Competition in shrimp sizes targeted by management with prevalent sizes produced by foreign mariculture operations.
13. Inconsistency in some state and federal regulations.
14. Excessive fishing effort employed in the fishery.
15. Limited enforcement capabilities.

Specific Management Objectives

The following are the specific management objectives of the existing FMP as amended.

1. Optimize the yield from shrimp recruited to the fishery.
2. Encourage habitat protection measures to prevent undue loss of shrimp habitat.
3. Coordinate the development of shrimp management measures by the Gulf of Mexico Fishery Management Council with the shrimp management programs of the several states, where feasible.
4. Promote consistency with the Endangered Species Act and the Marine Mammal Protection Act.
5. Minimize the incidental capture of finfish by shrimpers, when appropriate.
6. Minimize conflicts between shrimp and stone crab fishermen.
7. Minimize adverse effects of obstructions to shrimp trawling.
8. Provide for a statistical reporting system.

Need For The Proposed Action

1. Overfishing of Gulf white shrimp is defined, and measures to restore overfished stocks are added. Implementation of Section 602 guidelines requires that each fishery management plan must define and contain measures to prevent overfishing. The other species in the management unit are in compliance, and this action will also include white shrimp.
2. The requirement of annual reports and review of the Tortugas Shrimp Sanctuary is to be eliminated and is to be replaced by annual assessment of the shrimp stocks. The flexibility for adjusting the closure remains. Should the stock assessment identify problems, the Council is to be advised so that it can recommend action by the Regional Director. This change would eliminate unnecessary expense and effort to NMFS and the Council. The only successful change made in recent years in the management regime was the seasonal opening of small areas of the Tortugas Shrimp Sanctuary to trawling, and this action is proposed as an annual event, again to reduce management cost.

V. ACTIONS IN THIS AMENDMENT

ACTION 1. DEFINITION AND PREVENTION OF OVERFISHING WHITE SHRIMP.

1A. Preferred Options:

(1) Section 6.2.1.1. is revised as follows (to include white shrimp):

6.2.1.1 Overfishing Brown, White, and Pink Shrimp

The definitions and rationale for overfishing shrimp were developed at a shrimp overfishing workshop (Klima, Nance, Martinez, and Leary, 1990). A minimum level of parent stock (e.g. Nance, Klima, and Czaplá, 1989) was deemed by the participants to provide the best definition of overfishing for these three species. Recruitment for these species is often a reflection of environmental driving forces and, therefore, is not the best indicator of overfishing.

The number of parents, sexually mature shrimp for each month during the spawning period for that species, was calculated by means of a virtual population analysis (VPA), (Ricker, 1975). A VPA uses catch by age, instantaneous rate of natural mortality, and instantaneous rate of fishing mortality to estimate numbers of shrimp at different ages. The indices for the parent stock varies among the species because different ages and time periods were used in the calculations. For example, the index for brown shrimp represents the number of seven month or older shrimp over a four month period while that for pink shrimp represents the number of 5+ month old shrimp over a 12 month period.

CRITERIA USED TO DETERMINE NUMBER OF INDIVIDUALS IN THE SPAWNING STOCK			
SPECIES	TIME FRAME OF MAX. SPAWNING	AGE OF PARENTS	NATURAL MORTALITY
Brown Shrimp	Nov - Feb	>7 months	.275
White Shrimp	Apr - Aug	>5 months	.275
Pink Shrimp	July - June	>5 months	.300

Discussion: Action to implement a definition of overfishing of white shrimp in Amendment 5 was deferred to determine if it would be more appropriate to remove white shrimp from the management unit of the FMP. Although only one management measure applies to white shrimp, since 1980 production of white shrimp in the U.S. Gulf has ranged from a low of about 42 million pounds to a high of 73 million pounds (Figure 1). It is the second most important shrimp species (behind the brown shrimp) in the U.S. Gulf. From 57 to 62 percent of the landings by volume and 43 to 58 percent of the value come from state waters depending on the year. However, in 1986 about 28 million pounds of white shrimp valued at 100 million dollars came from federal waters.

The fishery extends to about 20 fathoms with almost 90 percent of the landings from less than 10 fathoms (Osborn, et. al., 1969). White shrimp are heavily fished throughout their range. Brown shrimp extend to waters deeper than the fishery, while pink shrimp inhabit extensive areas of untrawable bottom.

Some Gulf states have minimum size limits to discourage growth overfishing, and Louisiana and Texas seasonally close a portion of Gulf waters to protect small overwintering white shrimp. The only management measure for this species in the FMP provides that there are to be no size restrictions on shrimp taken in the EEZ except that white shrimp transported into Louisiana must conform with that state's minimum size restriction.

White shrimp is the first Gulf shrimp species for which significant curve fits have been observed in the stock recruitment relationship through time; however, factors unrelated to fishing could be generating the relationship (Nance, Klima, and Czaplá, 1989).

NMFS currently monitors the status of the stocks and provides an annual report of the level of parent stocks with respect to the index. The Stock Assessment Fishery Evaluation report is another means of monitoring the condition of the shrimp stocks to ensure that the most current and best scientific information is used to manage the resource.

(2) Section 6.2.1.1.3 is added as follows:

6.2.1.1.3 White shrimp recruitment overfishing is indicated when parent stock level are reduced below 300 million shrimp (Figure 3). Parent stock for white shrimp is defined as the number of age 5+ (months) shrimp during the period April through August.

Discussion: The Council selected the index level of 300 million parents as a prudent level which was reached in 1961 (Figure 3) and from which the stock recovered without remedial management. In fact, the parental index was below 500 million for 3 consecutive years (1960-1962), yet recruitment was extremely high in 1963 (Figure 2). Landings in 1963 reached 47 million pounds, a level not attained again until 1978; though the parental index remained above 600 million throughout this period.

The fishery for white shrimp is near shore, and is largely within state jurisdiction. Any effective management effort must be compatible with state regulation.

(3) Section 6.2.1.1.4 is revised as follows to include white shrimp:

6.2.1.1.4 Action to be taken if recruitment overfishing on brown, white, or pink shrimp should occur.

If parent stock levels are reduced below the specified index level for a species, NMFS will advise the Council and closely monitor the stock.

If parent stock for the species remains below the index for a second consecutive year, the Council will request implementation of any of the following actions deemed appropriate to become effective in the third year.

If fishing effort needs to be reduced, there are multiple options such as reducing fishing effort at the start of the season, reducing fishing effort at the end of the season, or some combination of both, area and seasonal closures, gear restrictions, trip limits, or quotas. This action would be accomplished by regulatory amendment and would include public review, a regulatory impact review, and an environmental assessment.

Discussion: This option would implement a recovery program after two consecutive years below the parent index. It is the procedure already implemented for remedial action on brown and pink shrimp and merely includes white shrimp.

There would be little socioeconomic or environmental impact unless overfishing should occur and the stock began to decline. At that time the Council would consider a range of management actions to reduce fishing mortality and the economic and environmental impact of each such option. Specific measures for a recovery program cannot be proposed now without more specific information on the species that is "overfished" and possible causes. The area affected, seasonality, and needed coordination by one or more states would be very different depending on the species. Adoption of the overfishing definition at this time has no socioeconomic or environmental effect.

1B. Rejected Options

- (1) **Rejected Option:** 6.2.1.1.3 White shrimp recruitment overfishing is indicated when parent stock level are reduced below 600 million shrimp (Figure 3). Parent stock for white shrimp is defined as the number of age 5+ (months) shrimp during the period April through August.

Discussion: This parent stock level index of 600 million shrimp was recommended by the Workshop on Definition of Shrimp Overfishing (Klima et.al., 1990) for the following reasons:

- Parent stock is presently the best index to use in defining overfishing for white shrimp. Currently, recruitment is a reflection of environmental conditions.
- Fishing intensity and environmental conditions were different during the 1980's when compared to the 1960's and 1970's. However, since 1960, parent stocks of 615 million and above have resulted in adequate recruitment. Low recruitment levels were observed when parent stock decreased below 500 million shrimp (Figure 2).
- Catch effort (nominal days fished), and recruitment have increased from 1960-86. However, there has been a downward trend in production (catch) over the last three years (1987-89) (Figures 1,2, and 4).
- Catch per effort has fluctuated around 400 pounds per day. The decline since 1986 is similar to other declines in the 1960's and 1970's.
- Parent stock levels have increased during the 1960's-1980's.
- Habitat and environmental conditions have changed since 1960; nursery areas have gradually increased during this time span.
- If habitat/environment changes rapidly, the parent stock may be reduced. Presently, the observed stock can sustain the population.

- Since 1960, recovery of white shrimp populations was observed even after parent stock levels decreased below 500 million shrimp.
- There is no potential for an increase in white shrimp yield (pounds) with an increase in effort.

The Council felt this level was unnecessarily high since stocks have recovered naturally from lower levels in the early 1960s (Figure 3).

- (2) **Rejected Option:** 6.2.1.1.3 White shrimp recruitment overfishing is indicated when parent stock is reduced below 400 million shrimp (Figure 3).

Discussion: In the early 1960s parent stock levels fell below 500 million pounds in 3 consecutive years, and low recruitment levels were observed when this occurred. Fishing intensity and environmental conditions were different in the 1960s (Klima, et. al., 1990). The Council's stock assessment panel recommended a threshold of 600 million parents.

Representatives of the commercial fishing industry believe the 600 million parent index is excessively high and may be easily reached causing implementation of measures to restrict the fishery. This, they believe, would unnecessarily and adversely affect the economic and social structure of the participants.

- (3) **Rejected Option:** Remove white shrimp from the management unit of the FMP and delete the specification that white shrimp taken in the EEZ and transported to Louisiana must conform to that state's minimum size restriction.

Discussion: White shrimp would be retained in the fishery description of the FMP for data collection purposes. If recruitment overfishing is observed on white shrimp, management responsibility would lie with the states to manage fishing in their territorial waters and fishing elsewhere by their registered vessels. Further, Louisiana may continue to enforce its minimum size limit only for white shrimp taken in its waters and on Louisiana vessels fishing in the EEZ. (Recent action by the Supreme Court in *Southeastern Fisheries Association v. Robert Martinez* regarding Spanish mackerel trip limits, however, may not allow a state to regulate its own vessels in the EEZ.) There would be no effect on the seasonal Texas closure for brown shrimp.

A justification for removing white shrimp from the FMP would be that over the past decade a majority (57 to 62 percent) of this species was harvested in state-controlled waters; however, 1986 landings from federal Gulf waters were valued at \$100 million, a significant fishery with a value greater than the combined total Gulf commercial fisheries for reef fish and coastal pelagics for the same period. The SSC has pointed out that the majority of brown shrimp by number are also taken in state waters, and removal of white shrimp may be a poor management precedent.

If overfishing did occur and the states were unwilling or unable to adopt measures to allow recovery of the stocks, there would be a severe economic loss to the fishery in the event of a collapse. This would of course affect the participants and could change the environment of the coastal ecosystem.

- (4) **Rejected Option:** No action: (No change)

Discussion: White shrimp would remain in the management unit of the FMP, but no provisions are made for preventing overfishing or restoring overfished stocks. This option would be in violation of 50 CFR Part 602, Guidelines for FMPs.

ACTION 2. TORTUGAS SHRIMP SANCTUARY

2A. Preferred Option:

Section 8.5.1.1 Measure 1 of the FMP is revised as follows:

Measure 1: Establish a cooperative permanent closure in conjunction with the State of Florida and the U.S. Department of Commerce of the area delineated in Table 8.5.1 of the FMP to protect small pink shrimp until they have generally reached a size larger than 69 tails to the pound. The area to be closed is to be denoted as the "Tortugas Shrimp Sanctuary".

The historic Tortugas Shrimp Sanctuary as established by the State of Florida was modified slightly as the result of public hearings in 1980 to reduce its size. This modification allows shrimping in some deeper areas containing larger shrimp north of Smith and New Ground Shoals north of Key West.

The United States Department of Commerce will close that portion of the EEZ within the area defined as the Tortugas Shrimp Sanctuary to all shrimping. All shrimp which are caught in open waters of the EEZ may be retained. In 1981 Florida amended its shrimp regulations to allow the landing of shrimp of any size taken outside Florida waters.

NMFS will monitor effectiveness of the sanctuary, condition of stocks, economic, ecological, and sociological data collected through implementation of the plan and provided by other surveys and research, and advise the Regional Director (RD) and Council of any changes.

The RD shall have the authority, after consultation with the Council, to implement action to revise this management measure through the Regulatory Amendment process.

The RD may, after determining that benefits may be increased or adverse impacts be decreased, take either of the following actions to achieve the goals and objectives of the Shrimp Fishery Management Plan consistent with the National Standards and other applicable federal laws. The first action is considered to be less drastic and may be employed where a lesser degree of change is required.

1. Modify by no more than ten percent the geographical scope of the extent of the Tortugas Shrimp Sanctuary in the EEZ of the Gulf of Mexico south of latitude 26° North.
2. Eliminate the closure of the EEZ off Florida for one season.

If the proposed action is believed to be a substantial federal action likely to have a significant effect on the human environment, a supplemental environmental impact statement and regulatory impact analysis shall be prepared following public review.

The Tortugas Shrimp Sanctuary is described as follows:

That part of the EEZ shoreward of the following line (see Figure 8.5-1 in the FMP):

Begin at the intersection of the Florida territorial sea with a line drawn between point N (Coon Key Light, 25° 52.9' north latitude, 81° 37.95' west longitude) and point F (24° 50.7' north latitude, 81° 51.3' west longitude); thence proceed on a straight line to point F; thence proceed on a straight line on point G (New Grounds Shoals Light, 24° 40.1' north latitude, 82° 26.7' west longitude);

thence proceed on a straight line to point H (Rebecca Shoals Light, 24° 34.7' north latitude, 82° 35.1' west longitude); thence proceed on a straight line to the intersection of the Florida territorial sea with a line drawn from point H to point P (Marquesas Keys, 24° 35' north latitude, 82° 08' west longitude).

Three areas within the sanctuary are to be opened seasonally (Figure 5).

Area 1 TUVWT (25-square miles) open April 11 through Sept 30.

Area 2 WGVW (5-square miles) open April 11 through July 31.

Area 3 FQUTF (33-square miles) open May 26 through July 31.

The State of Florida is encouraged to continue its present restrictions on shrimping in the area and to continue to allow the retention of all shrimp which are caught in open waters of the EEZ, as well as establishing a sampling program to evaluate the effectiveness of the closed area.

Discussion: This proposed action retains the integrity of the Tortugas Shrimp Sanctuary and flexibility to adjust its size if warranted. The requirement for an annual report on the sanctuary and action by the Council and RD is eliminated. The effectiveness of the sanctuary and the condition of the shrimp stocks will continue to be monitored and adjustments to the size of the sanctuary may be made if appropriate by regulatory amendment.

The sanctuary was established originally by the State of Florida in 1957 and by 1970 had been extended essentially to be within the 10 fathom contour of Florida Bay. It was determined that smaller shrimp usually predominated on the grounds less than that depth.

Shrimp which were larger than Florida's minimum size of 69 tails to the pound were dominant outside of the 10 fathom zone of the sanctuary. Densities of small and sometimes larger shrimp within the sanctuary are high and yield a higher catch per effort than outside.

Implementation of the FMP in 1981 maintained most of the portion of the former state sanctuary in the EEZ but reduced its size somewhat. Florida repealed its minimum size possession requirement for shrimp taken beyond state waters.

It was estimated that the protection and deferred harvest provided by the Sanctuary would increase yield by about 1 million pounds annually. The Tortugas shrimp fishery had produced about 10 million pounds annually until 1986 when a substantial decline in recruitment began to occur. Current landings are about half the former level.

Since the inception of the first State of Florida sanctuary in 1957 there has been controversy between operators of vessels who prefer to take larger shrimp offshore and operators of locally-operated vessels preferring to take smaller shrimp from within the sanctuary. The reduction of the initial federal sanctuary in 1981 was made to accommodate the latter group. However, with the partial collapse of the fishery since 1986, the Council in 1988, acceded to requests of local fishermen and processors to open portions of the sanctuary temporarily where high densities of smaller shrimp occur in order to provide temporary economic relief. This quickly proved to be a mistake when lobster and crab trap fishermen reported trap losses from trawling in the newly opened area within the shrimp sanctuary. Local fishermen requested these openings, but only at times and in areas where gear conflicts between trawlers and trap fishermen were unlikely to occur. Since 1988, an agreement between shrimp and lobster trap fishermen for the rotational opening of these three areas within the Sanctuary has been in effect. In subsequent years the Council has requested the seasonal opening of three small areas of the sanctuary to conform to trap removal and again for the purpose of providing economic relief to local fishermen. Opening these three areas has enabled resident fishermen to make substantial catches of shrimp, reduce

transportation costs, and maintain overall profitability. The Southeast Fisheries Science Center concluded that opening these three small areas would not adversely affect the overall intent of the Sanctuary to allow pink shrimp to grow to a larger, more valuable size. These areas account for less than 5 percent of the federal portion and 1 percent of the total area of the Sanctuary.

This amendment would continue the seasonal opening of these areas without requiring annual regulatory action. It would continue the status quo since 1989, but eliminate a hearing and preparation and processing of appropriate documents. At such time when the openings are no longer appropriate, the RD has authority to eliminate the openings in framework action. There is no change except to reduce the costs of administration. Thus, there is no impact to the fishery or its habitat. This option is preferred because it reduces costs and maintains flexibility.

2B. Rejected Option: No change: NMFS will monitor the Tortugas shrimp fishery and submit a report to the Council and RD of the findings by July 15 of each year. The RD after consultation with the Council may modify by no more than 10 percent the geographical scope of the extent of the sanctuary in the EEZ or eliminate the closure for one year. The RD on request by the Council would continue to initiate action each year to open three areas of the sanctuary through the framework procedure.

Discussion: Currently, NMFS is required to submit a report on the sanctuary to the Council each July, though the benefits derived from protection of juvenile shrimp within the sanctuary has been well documented. The report and review is a duplication of the monitoring of the status of pink shrimp stocks. This option was rejected because administrative operating costs would continue without reduction, and the effect on the fishery and habitat remain unchanged.

VI. ENVIRONMENTAL CONSEQUENCES

Environmental consequences of proposed actions and alternatives have been discussed with each proposed action.

Physical Environment

The actions proposed in this amendment will have no impact on the physical environment.

Fishery Resources

The proposed action is intended to protect shrimp stocks from recruitment overfishing while enhancing yield from stocks recruited to the fishery.

Bycatch of other species of fish and invertebrates in shrimp trawls is recognized as a problem in the shrimp fishery. The Council has stated its intent to reduce the bycatch of red snapper, estimated to be about 12.4 million fish in the early 1980s, by 50 percent by 1993. The Southeast Fishery Center (Nichols, et. al., 1990) has estimated the total annual trawl bycatch of finfish in the U.S. Gulf to be about 400 million pounds. The ecological impacts of this kill and discard have not been fully analyzed. The 1990 reauthorization of the Magnuson Act charges the NMFS with developing a plan to reduce shrimp trawl bycatch, but measures to restrict the shrimp fishery for this purpose may not be implemented as federal regulation before 1994.

Human Environment

The management of the fishery may directly affect the human environment. A determination of the net impact on the users of the resource by the proposed action will better enable the Council and the Regional Director to establish a more responsive management regime. Should overfishing occur and remedial action be required, a socioeconomic impact assessment will be provided when such action is proposed. (See accompanying Regulatory Impact Review).

Effect on Endangered Species and Marine Mammals

Listed and protected species under the Endangered Species Act (ESA) and governed by the jurisdiction of NMFS that occur in the Gulf of Mexico include:

WHALES:

- (1) the (endangered) northern right whale - *Eubalaena glacialis*
- (2) the (endangered) humpback whale - *Megaptera novaeangliae*
- (3) the (endangered) fin whale - *Balaenoptera physalus*
- (4) the (endangered) sei whale - *Balaenoptera borealis*
- (5) the (endangered) sperm whale - *Physeter macrocephalus*

SEA TURTLES:

- (6) the (endangered) Kemp's ridley turtle - *Lepidochelys kempii*
- (7) the (endangered) leatherback turtle - *Dermochelys coriacea*
- (8) the (endangered) hawksbill turtle - *Eretmochelys imbricata*
- (9) the (endangered/threatened) green turtle - *Chelonia mydas*
- (10) the (threatened) loggerhead turtle - *Caretta caretta*

Green turtles in U.S. waters are listed as threatened except for the Florida breeding population that is listed as endangered.

FISH:

- (11) the (endangered) shortnose sturgeon - *Acipenser brevirostrum*

Additional species known to occur in the Gulf of Mexico include:

- (1) the (endangered) blue whale - *Balaenoptera musculus*

NMFS has determined that shrimp trawling activities would adversely affect only sea turtles. Two major sources of information led to this conclusion. First, during periods of high nearshore shrimp trawling, large numbers of dead sea turtles washed up on the beach. Public outcry over the number of dead sea turtles led to the organization of more and larger stranding networks. Information from these networks led to more data on the locations of where and when the dead sea turtles washed ashore. Second, NMFS obtained information from shrimp fishermen on the incidental catch of turtles while trawling for shrimp in the Canaveral ship channel in Florida. In 1978, NMFS conducted trawl surveys in this area and caught large numbers of sea turtles. Based on an increased amount of data on the incidental take of sea turtles in shrimp trawls and subsequent evaluation of this information, NMFS assessed the magnitude of the take of sea turtles within the shrimp fishery. In 1987, using data collected by observers aboard commercial trawlers from 1973 through 1984, NMFS estimated that approximately 48,000 turtles were captured annually, and 11,000 of these turtles drowned in the trawls.

On June 29, 1987, NMFS issued final regulations (52 FR 24244) under the ESA to conserve endangered and threatened sea turtles. In offshore waters, these regulations required all shrimp trawlers 25 feet and

longer to use turtle excluder devices (TEDs) in shrimp trawls and smaller trawlers to use 90-minute tow times. TEDs may be used instead of tow-times.

Implementation of these TED regulations was contentious. Several lawsuits were filed by different entities over the TED regulations. These lawsuits, associated agency responses, and Congress, delayed full implementation of the TED regulations to May 1, 1989, for offshore waters and May 1, 1990, for inshore waters. TEDs are required in offshore waters and 90-minute tow times may be used in inshore waters. Vessels, less than 25 feet, may use the tow-time option in offshore waters. Larger vessels may use either the TEDs or tow-time options in inshore waters.

The National Academy of Sciences (NAS) (1990) reviewed the information on the incidental take of sea turtles in shrimp trawls and the biology of sea turtles and concluded that all life stages of sea turtles are susceptible to human-induced mortality. The most important human-associated source of mortality for juveniles, subadults, and breeders in coastal waters is the incidental capture in shrimp trawls. This source accounted for more than the combined totals for other sources, such as other fisheries, dredging, oil and gas platform removals, collisions, and other human-related factors. Annual estimated mortality from incidental captures in shrimp trawls lies between 5,000 to 50,000 loggerheads, 500 to 5,000 Kemp's ridleys, and varying amounts of other species. The actual kill of sea turtles may be four times greater than the NMFS estimate.

In 1992, NMFS evaluated shrimp trawling under current TED regulations in the southeastern United States. NMFS concluded that current TED regulations, assuming 100 percent compliance, have resulted in a 67 percent reduction in sea turtle mortalities by shrimp trawlers in U.S. waters. However, under current regulations, an estimated 23,376 turtles are captured annually by shrimp trawlers and 4,360 turtles drown. Based on the above study by NAS, these estimates may understate true mortality by a factor of four (Henwood, *et al.*, 1991).

In August of 1992, the ESA Section 7 Biological Opinion (BO) on this Amendment stated:

"NMFS concludes that shrimp trawling in the southeastern United States in compliance with the 1992 Revised Sea Turtle Conservation Regulations and the proposed management actions under the South Atlantic Shrimp FMP and Amendment 6 to the Gulf of Mexico Shrimp FMP are not likely to jeopardize the continued existence of threatened or endangered species under NMFS jurisdiction."

The opinion also provided the following summary of the 1992 Revised Sea Turtle Conservation Regulations:

1. Starting January 1, 1993, turtle excluder devices (TEDs) must be used by shrimp trawlers in all offshore waters. Starting January 1, 1993, TEDs must be used in inshore waters by shrimp trawlers using a headrope length less than 35 feet or longer, or that trawl with more than one net. For shrimp trawlers in inshore waters using trawls with a headrope length less than 35 feet, TEDs must be in use by December 1, 1994. In the interim, NMFS will conduct research to develop TEDs suitable for use in these smaller nets.
2. If limited tow times are substituted for TED requirements under any circumstances, tows must be limited to 40 minutes (bottom time) in warm water months (April 1 through October 31) and 60 minutes (bottom time) in cold water months (November 1 through March 31). This translates to 55 minute tows (doors in - doors out) during warm water months and 75 minute tows (doors in - doors out) in cold water months.

3. Episodic take of leatherback turtles by shrimp trawlers during periods of high jellyfish abundance must be eliminated. This may be accomplished by temporary area closures, by requiring an increase in size of TED openings to allow leatherbacks to escape at times when their abundance is high, by limiting tow times, or by implementing some other protective measure. A contingency plan to deal with these periodic events should be developed and implemented.

In 1980, a Section 7 Consultation on the Shrimp FMP was initially conducted with the U.S. Fish and Wildlife Service. The BO indicated that the management actions to be implemented through this plan were not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The BO was based on an evaluation of the FMP, the Environmental Impact Statement, and other data available at that time.

Since then, NMFS has conducted Section 7 Consultations on: (1) modifications to the closure of federal waters off Texas (1986) and the Tortugas Shrimp Sanctuary from 1988 through 1991; (2) Amendment 4 (1990); (3) Amendment 5 (1990); and (4) the shrimp fishery (1991). Generally, these consultations resulted in opinions that management actions were not likely to jeopardize the continued existence of any endangered species. Instead, these actions provide an additional layer of protection to the marine turtles by prohibiting trawling for shrimp in certain areas such as off Texas during periods of rapid shrimp growth. This generally coincides with the period when turtles may be in the adjacent coastal waters or nesting on the adjacent beaches.

Effect on Wetlands

The proposed action has no effect on any flood plains, wetlands, trails, or rivers.

Vessel Safety

The proposed actions do not impose requirements for use of unsafe (or other) gear nor do they direct fishing effort to periods of adverse weather conditions.

Data Collection

This amendment requires no additional data collection subject to the Paperwork Reduction Act.

Scientific Data Needs

To monitor shrimp stocks to determine whether overfishing occurs, the SEFC of NMFS currently monitors shrimp catch by size (age) to estimate recruitment and parent stock.

Federalism

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

Coastal Zone Management Consistency

The Assistant Administrator has determined that this proposed action will be implemented in a manner that is consistent to the maximum extent practicable with the approved coastal zone management program of Florida, Alabama, Mississippi, and Louisiana. This determination has been admitted for review by these states under Section 307 of the Coastal Zone Management Act.

VII. CONCLUSION

Mitigating measures related to the proposed action: no significant environmental impacts are expected; therefore, no mitigating actions are proposed.

Unavoidable adverse effects with implementation of the proposed action negative net economic benefits are discussed in the Regulatory Impact Review.

Irreversible and irretrievable commitment of resources involved with the proposed action government costs are not expected to change significantly, if at all, as a result of this action.

Recommendation

Finding of No Significant Environmental Impact

In view of the analysis presented in this document, I have determined that the proposed action in this amendment to the Fishery Management Plan for Gulf Shrimp would not significantly affect the quality of the human environment with specific reference to the criteria contained in NAO 216-6 implementing the National Environmental Policy Act. Accordingly, the preparation of a Supplemental Environmental Impact Statement for this proposed action is not necessary.

Approved: _____
Assistant Administrator for Fisheries

Date

Responsible Agencies

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

List of Agencies and Persons Consulted

Gulf of Mexico Fishery Management Council's

- Scientific and Statistical Committee
- Shrimp Advisory Panel
- Shrimp Stock Assessment Panel

Coastal Zone Management Programs

- Louisiana
- Mississippi
- Alabama
- Florida

National Marine Fisheries Service

- Southeast Fisheries Center
- Fisheries Operations Branch - Southeast Regional Office

Trade Associations:

- Texas Shrimp Association
- Louisiana Shrimp Association
- Concerned Shrimpers of America
- American Shrimp Processors Association
- Southeastern Fisheries Association

List of Preparers

Gulf of Mexico Fishery Management Council

- Terrance R. Leary, Biologist
- Antonio B. Lamberte, Ph.D., Economist

Much of the analysis on overfishing and Figures 1 through 4 are from the report of the Workshop on Shrimp Recruitment Overfishing (Klima, Nance, Martinez, and Leary, 1990). Other data have been provided in reports by the Southeast Fisheries Center of NMFS.

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Figure 1. White Shrimp Landings

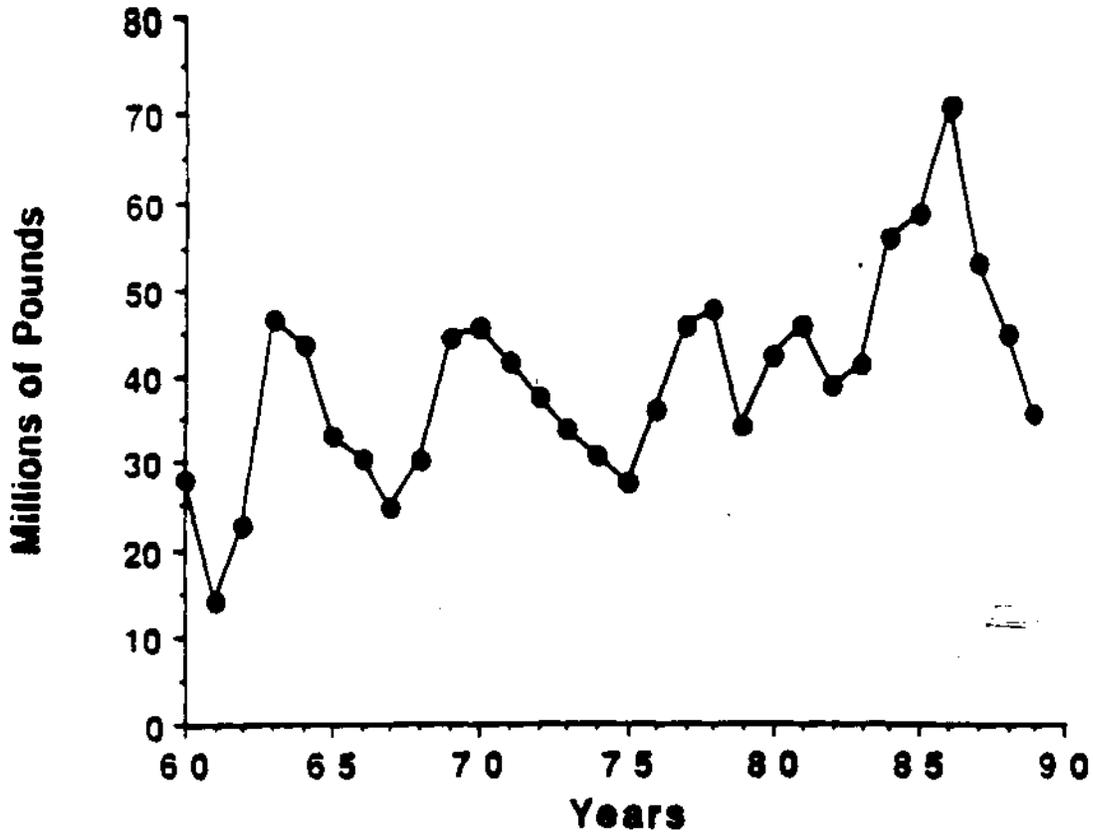


Figure 2. White Shrimp Recruitment

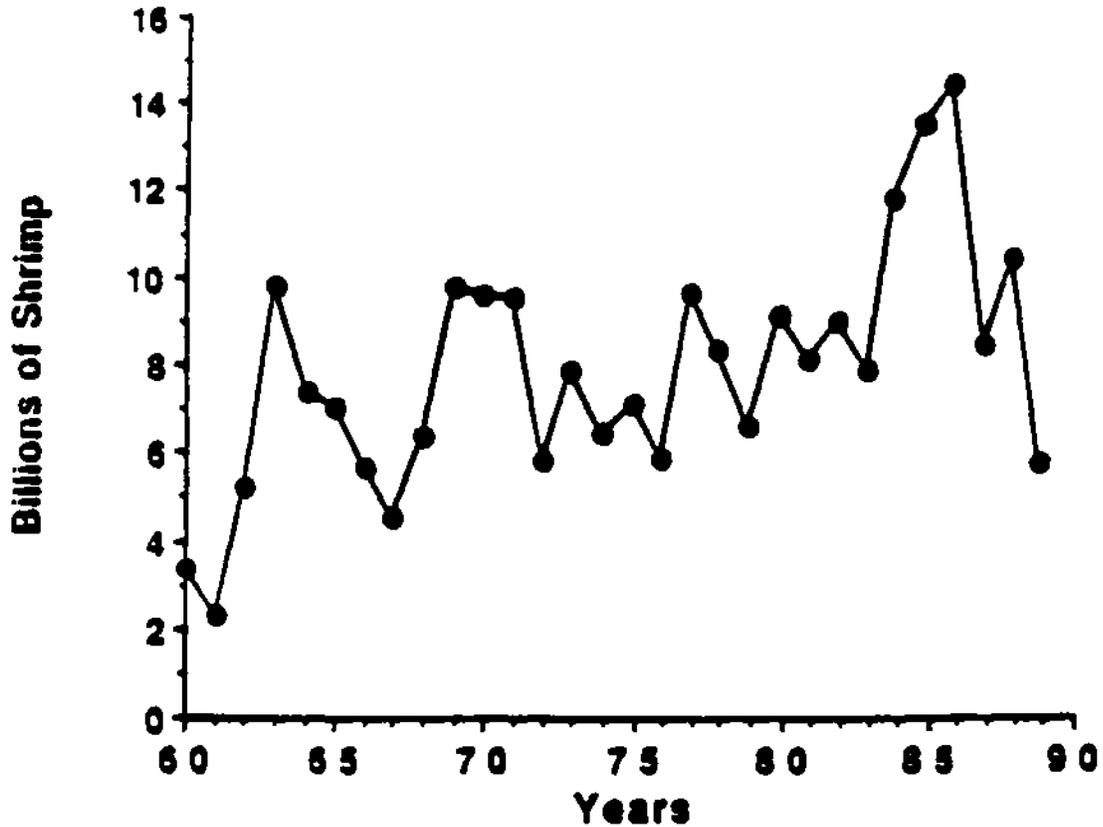


Figure 3. White Shrimp Parents (Age 5+ months, April-August)

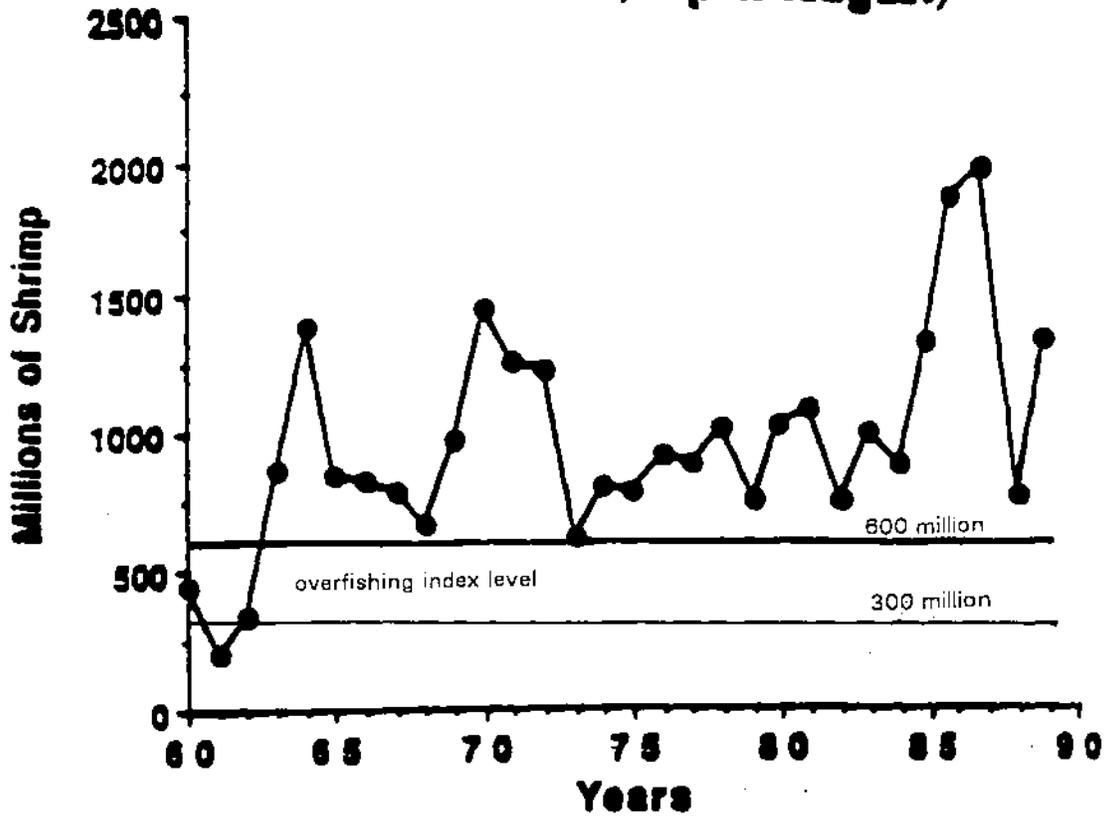
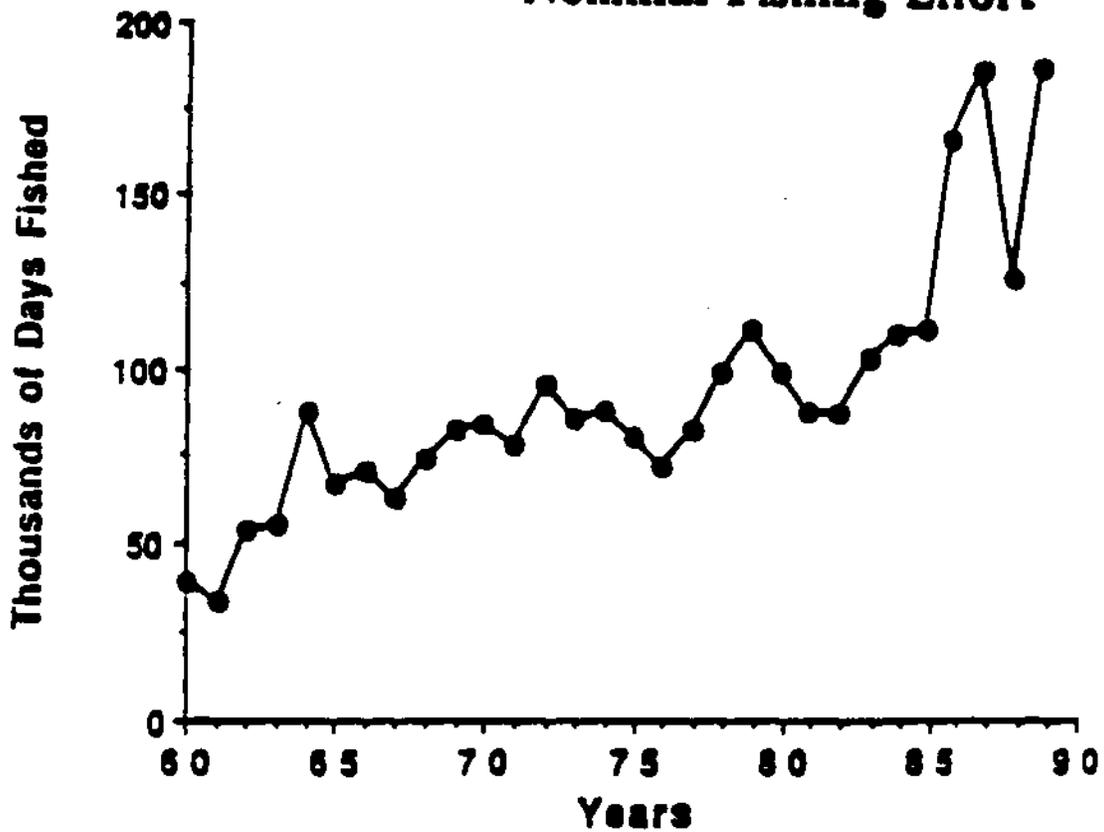


Figure 4. White Shrimp Directed Nominal Fishing Effort



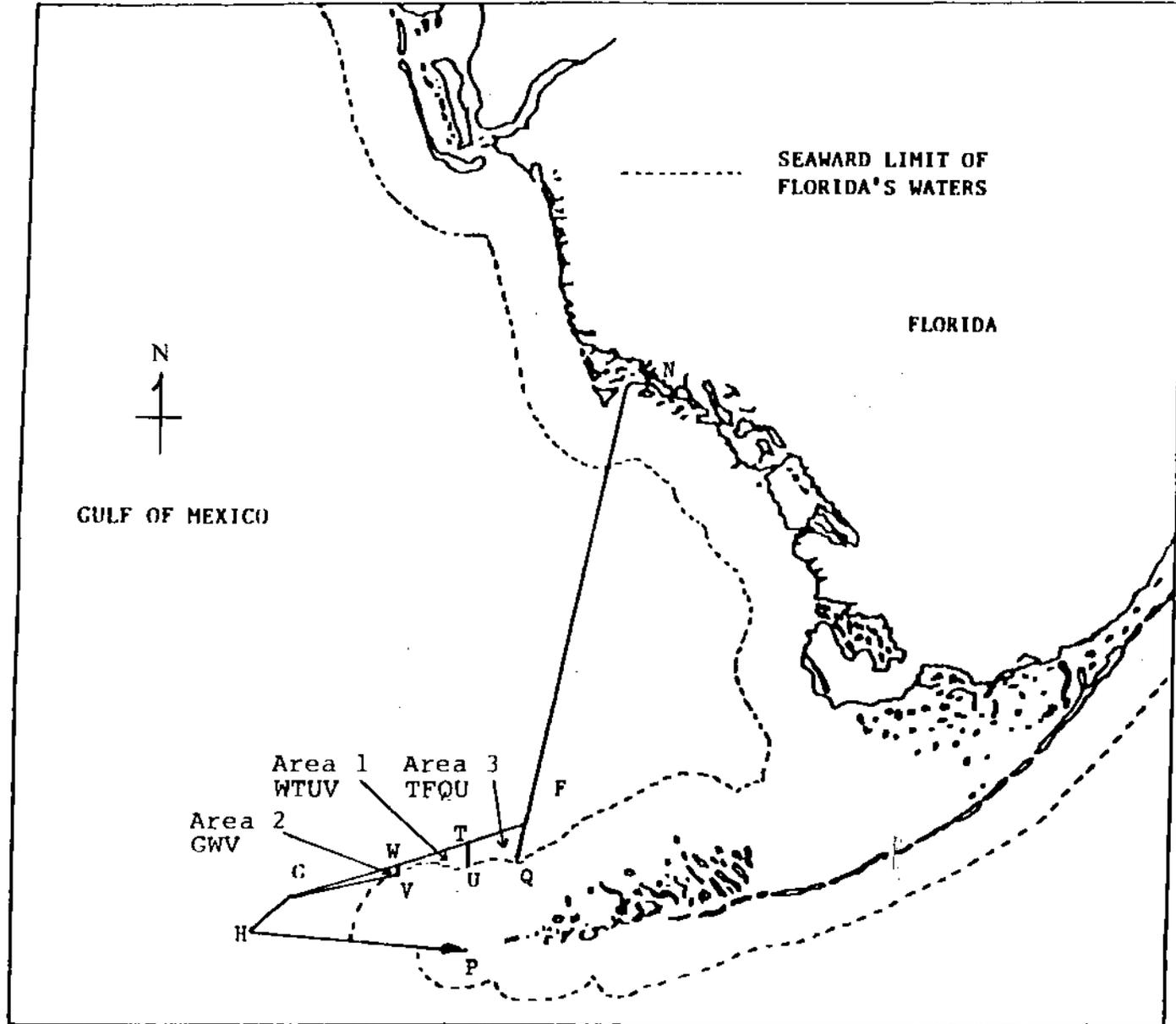


FIGURE 5. TORTUGAS SHRIMP SANCTUARY

REGULATORY IMPACT REVIEW

FOR

AMENDMENT 6

TO THE

SHRIMP FISHERY MANAGEMENT PLAN

OCTOBER 1992

**GULF OF MEXICO FISHERY MANAGEMENT COUNCIL
LINCOLN CENTER, SUITE 331
5401 WEST KENNEDY BOULEVARD
TAMPA, FLORIDA 33609
813-228-2815**

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INTRODUCTION

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

The RIR also serves as the basis for determining whether any proposed regulations are major under criteria provided in Executive Order 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. The RFA requires that if regulatory and recordkeeping requirements are not burdensome, then the head of a Federal agency must certify that the requirement, if promulgated, will not have a significant effect on a substantial number of small entities.

This RIR analyzes the probable impacts that the proposed alternatives for the Shrimp FMP would have on the shrimp industry.

PROBLEMS AND ISSUES IN THE FISHERY

The problems in the shrimp fishery are enumerated in Section V of the amendment text. The specific issues addressed by the proposed management change are enumerated in Section III of the amendment text, and these are: 1) overfishing definition for white shrimp with concomitant rebuilding measures should overfishing occur; and, 2) seasonal opening of certain areas of the Tortugas Shrimp Sanctuary and annual reviews of the sanctuary. Amendment 5 provided for overfishing definitions for brown, pink, and royal red shrimp but did not consider a similar action on white shrimp pending Council decision regarding the deletion or retention of this species from the management plan. In the July 1991 meetings, the Council decided to retain white shrimp in the management plan, and thus an overfishing definition for the species is required to comply with the 602 Guidelines. The issue regarding the Tortugas Shrimp Sanctuary concerns replacing the annual reviews thereof with an annual assessment of stocks. In addition, certain areas in the Tortugas Shrimp Sanctuary which are seasonally opened for shrimping through an annual regulatory action is proposed to become a permanent feature of the fishery plan.

OBJECTIVES

The general management objectives are enumerated in Section VI of the amendment text. This amendment is intended to address the major problems and issues earlier identified for the shrimp fishery.

MANAGEMENT MEASURES

The full discussions of the proposed management alternatives are set down in Section VII of the amendment text. There are two sets of management actions considered corresponding to the two issues identified. These are re-stated or described in the following section.

ECONOMIC ANALYSIS OF IMPACTS OF ALL MEASURES

A. Action 1. Definition and Prevention of Overfishing White Shrimp

Preferred Options:

1. White shrimp recruitment overfishing is indicated when parent stock is reduced below 300 million shrimp. Parent stock for white shrimp is defined as the number of age 5+ (months) shrimp during the period April through August.
2. If parent stock for the species remains below the index for a second consecutive year, the Council will request implementation of appropriate regulatory measures to become effective in the third year, including fishing effort reduction, area/seasonal closures, gear restrictions, trip limit, or quotas.

As a consequence of the Council's decision to retain white shrimp in the management unit, an overfishing definition for white shrimp is required under the 602 Guidelines. Although an overfishing definition does not have direct impacts on resource users, it nevertheless serves as a benchmark for restrictive measures to be imposed on the fishery. If overfishing occurs, the nature and magnitude of impacts on the fishery participants due to management actions would depend partly on the type of restrictions imposed and partly on the specific conditions chosen to trigger the imposition of restrictive measures.

As currently proposed, regulatory measures will be implemented by the NMFS upon advice from Council if the parent stock for white shrimp remains below the index for overfishing for a second consecutive year. Within this context, the proposed overfishing definition is expected to have no immediate impacts on the fishery participants despite the rather wide fluctuations in estimated parent stock in the last five years (see Figure 3 in the amendment document). To gain further insight into the potential short-term costs of this measure, there must be at least an estimate of the probability of the parent stock falling below the chosen overfishing index. Currently, this information is not available, but some general likelihood levels may be deduced from the estimated level and pattern of change of the white shrimp parent stock (see Figure 3 of the amendment document). In the last five years, the parent stock has remained well above the proposed overfishing index. In fact, the stock shows increases in the last three years. The 1991 level almost approximates the highest level reached in 1987. Relatively apparent in this situation is that the overfishing index is very unlikely to be reached in the near future. Hence, it is quite safe to state that the measure will not likely adversely impact the shrimp industry, particularly that segment of the industry targeting white shrimp in the foreseeable future.

Since there is no information regarding future projections for the level of parent stock for white shrimp, the implications of this definition in the medium- and long-term are not determinable. It may be noted that in 1961 white shrimp parent stock fell below the 300 million shrimp index for overfishing, but the stock was able to rebound in succeeding years, first at still a low level in 1962 then at a significantly high level in years thereafter. If this situation ever occurs and a management change is effected to reduce fishing effort and catch below the potentials for the period, it will be extremely difficult to measure the costs and benefits of the measure because of the observed possibility for the stock to recover by itself. On the other hand, the Council's stock assessment group has determined that an overfishing index of 600 million parents is most appropriate for the species (Klima et al., 1990). Since the stock is in jeopardy when below this index and more so when below the proposed index, actions

undertaken to arrest further stock decline can be expected to yield future benefits with short term costs to the industry.

Once management action is necessitated however, the Council is faced with the decision to balance the short-term adverse impacts of such action on resource users with the long-term status of the stock and the industry. In the Gulf shrimp fishery, white shrimp is second only to brown shrimp in terms of volume and ex-vessel value generated. This could imply that a more restrictive regulation on this segment of the Gulf shrimp fishery would likely result in large short-term losses to the entire shrimp industry. Given the relatively unknown behavior of the parent stock below the overfishing index, the tradeoff between short-term and long-term impacts is not straightforward. If two consecutive years of the parent stocks falling below the index indicate an actual decline in shrimp stocks, restrictive measures on the third year could arrest this decline. While the measures would negatively impact the resource users in the short run, the long-term status of the stock would be protected and the long-term viability of the industry would be enhanced. On the other hand, if the stock could rebound in the third year without regulations, imposing restrictions would result in some current benefits foregone by fishery participants without necessarily generating future benefits. Noting that an even higher index has been determined by biologists to provide adequate protection to the stock, restrictive measures imposed within the context of the proposed overfishing index may be expected to generate future benefits. In actuality, the tradeoff between short- and long-term impacts would depend on the type of management actions adopted. Among the possible management measures, only direct methods of reducing fishing effort have the potential to maintain or enhance the profitability of the shrimp industry. Measures other than effective effort limitation could preserve the long-term viability of the stocks but may not protect the long-term economic viability of the fishery. Worth mentioning in this regard is a recently completed study of an ITQ system for the shrimp fishery (Griffin et al., 1992). The study described the Gulf shrimp fishery as less than ideal for an ITQ system, but delineated certain pre-conditions for adopting the system as a management tool for the fishery.

Potentially affected by any management measure adopted to prevent overfishing are many fishermen dependent on the shrimp fishery. There is currently no accurate count of the number of vessels and boats engaged in the shrimp fishery. The absence of a full census of boats and vessels in the shrimp fishery has led to differing views regarding the level of and direction of change in the total number of fishing crafts shrimping in the Gulf. Members of the industry claimed that the number of offshore shrimping vessels throughout the Gulf had decreased dramatically during the decade of the 1980s. NMFS has been maintaining two sets of files on vessels and boats in the shrimp fishery, namely, the vessel operating units file (VOUF) and shore and boat data (SBD). Both data sets are not current and contain information on fishing crafts only up to 1989. For 1989, VOUF lists 6,205 vessels (greater than 5 gross tons) while SBD lists 9,676 boats (5 gross tons or less) as comprising the shrimp fleet in the Gulf (Snell, 1992). State license records indicate different vessel and boat numbers (see Griffin et al., 1992). Although mainly those targeting white shrimp would be directly affected by any restrictive measures adopted under the overfishing rule as proposed in this amendment, all these fishing crafts may experience adverse impacts.

Monitoring the parent stock for determining an overfishing condition entails certain costs at least to the administering agency. This cost, however, may be regarded as minimal considering that the necessary research investment cost, in terms of data needed and analytical capability, has already been incurred. The data necessary to assess the white shrimp stock relative to the overfishing index are part of the general information routinely collected by the National Marine Fisheries Service.

Rejected Options:

1. **White shrimp overfishing is indicated when parent stock is reduced below 600 million shrimp.**
2. **White shrimp overfishing is indicated when parent stock is reduced below 400 million shrimp.**
3. **Remove white shrimp from the management unit of the FMP and delete the specification that white shrimp taken in the EEZ and transported to Louisiana must conform to that state's minimum size restriction.**
4. **Status quo: no action.**

The first two rejected options differ from the preferred one only in the proposed level of parent stock as an overfishing index. The first one considers 600 million shrimp and the second 400 million shrimp as an overfishing index; both levels are higher than that of the preferred alternative. In this connection the analysis done for the preferred option also applies in general to these two rejected options. The only major differences would be in the probability of reaching the overfishing index and the restrictiveness of the measure that might be adopted once overfishing occurs for two consecutive years.

The 600 million shrimp index is evidently more likely to be reached than either the 300 million or 400 million shrimp. It may be noted that for three consecutive years (1960, 1961 and 1962), white shrimp parent stock fell below the 600 million shrimp level but recovered to relatively high levels in subsequent years. Under this scenario, the likelihood of adopting restrictive measures for the fishery is higher for this option, and the possibility that short run costs may not be recovered in terms of higher benefits in the long run is also higher. Considering, on the other hand, that 600 million shrimp is substantially higher than the proposed alternative, it is likely that measures adopted to prevent further stock depletion would not as restrictive as with lower levels of overfishing index. Hence, short run costs may be considered less under this option than under any of the lower levels for an overfishing index. In addition, the fact that scientists consider this level to be the most appropriate overfishing index, the long run stability of the stock is rendered more likely.

The alternative recruitment overfishing level of 400 million parent white shrimp takes into account of the possibility that white shrimp parents fell below 500 (or 600) million for three consecutive years in the 1960s but subsequently recovered in the succeeding years. Given such a possibility of stock recovery, this option may prevent pre-mature management actions that potentially have adverse impacts on the industry. It may be noted though that in two of those three years the parent stock for white shrimp fell below 400 million. The 400 million option would still be too high in this case and possibly would not differ significantly from the preferred option of 600 million shrimp in terms of adversely impacting the industry. However, from the standpoint of the industry, this option provides less uncertainty as to the type of regulatory measures that might be imposed by management.

Deletion of white shrimp from the management unit implies that management of the species is left to individual states. However, states have effective management control only with respect to shrimp harvest in state waters. Harvest in EEZ may not be regulated by states, but may be effectively controlled if all states adopt similar regulations with respect to the harvest of white shrimp in the EEZ.

With the deletion of white shrimp from the management unit, the Louisiana count laws currently enhanced by Federal regulations may not be effectively enforced.

White shrimp may be subject to recruitment overfishing, and being an annual stock needs to be monitored on a yearly basis. This annual monitoring of the stock is currently undertaken by NMFS and will be continued even if white shrimp is deleted from the management unit. However, if there is a threat of recruitment overfishing, the Council or NMFS may not be able to do much, except to aid the various Gulf states in developing appropriate regulatory measures to address the overfishing problem. If there is a white shrimp management plan developed and approved by all Gulf states, the process of addressing the overfishing problem for white shrimp may be simplified.

Over the past decade 57 percent to 62 percent of total pounds of white shrimp landings has been harvested in state waters. About similar ratio holds when pounds landed are converted to ex-vessel values. In absolute terms however, the volume and value of white shrimp landings harvested in the EEZ are relatively large. Over the past decade, white shrimp harvested in the EEZ have never fallen below 10 million pounds or \$40 million in ex-vessel values. In the peak year of 1986, slightly below 30 million pounds were harvested in the EEZ, and these were valued at about \$100 million in 1986 prices. These numbers are larger than some of the fisheries currently managed by the Federal agencies. The deletion of white shrimp would thus mean the Federal agencies losing direct management control over a very important fishery.

The impacts of this option on the fishery participants depend on the management measures that will be adopted and effectively implemented by the states. In the absence of a management plan for white shrimp, these impacts cannot be appropriately assessed.

Maintaining the status quo, i.e., retaining white shrimp in the management unit but without an accompanying overfishing definition, is not consistent with the general requirements for an overfishing definition under the 602 Guidelines. In principle, this option does not have any impacts on fishery participants in the short run. The long run impacts would depend largely on other measures that may be imposed on the fishing industry.

B. Action 2. Tortugas Shrimp Sanctuary

Preferred Options:

- 1. Eliminate the annual report on the Tortugas Sanctuary and action by the Council and Regional Director.**
- 2. Open certain areas in the sanctuary to commercial shrimping at designated times of the year. (Areas and opening/closing times are defined in the amendment document).**

The preferred option to eliminate the annual report on the Tortugas Sanctuary and action by the Council and Regional Director has essentially no direct impacts on the participants of the fishery. The data and analysis that have been generated for the fishery in the past years will still be available to the Council and interested persons. Problems in the fishery are addressed only when they arise. The major impact then of this option is a reduction in government costs attributed to the preparation and review of the annual report.

Elimination of the annual report and actions on the Tortugas Sanctuary partly implies the importance of maintaining the integrity of the sanctuary, although the Regional Director after consultation with the Council may still modify the geographical scope of the sanctuary. It was previously estimated that the Sanctuary would enable an increase in annual yield of pink shrimp of about 1 million pounds. In recent years however, harvest of pink shrimp in traditional grounds has substantially declined from historical average. Although this decline in harvest has become a major issue, analysis of the factors contributing to such decline is not part of the current analysis done that is annually presented to the Council. Thus, the elimination of such annual report is not expected to worsen the informational requirement needed to adequately address this recent problem in the fishery.

Every year since 1989, the Council has decided to seasonally open certain areas in the Tortugas Sanctuary to shrimping. This action has been consistently found to have minimal effects on the protection afforded by the sanctuary on juvenile shrimp presumably because there are other factors, mostly non-fishing related, that have continued to adversely affect the pink shrimp resource. **Making this seasonal opening a permanent feature of the fishery plan** is not expected to have short-term effects on the fishery participants. To some extent, however, it eliminates the uncertainty on the part of the fishermen regarding shrimp production in the designated areas arising from regulatory measures. On the part of the fishery agencies, this action will eliminate the cost associated with an annual regulatory amendment to open or close the mentioned areas in the sanctuary.

Rejected Option: Status Quo.

The rejected option of continuing the annual report and actions by the Council and Regional Director on the Tortugas Sanctuary does not have any impacts on the fishery participants. Having **an annual regulatory action on the seasonal opening of certain areas in the sanctuary** provides an opportunity for the Council to formally monitor the annual effects of such action. In the years that these areas have been opened, no major concern over the pink shrimp resource has been found, and the Council has continued to open the designated areas mainly in consideration of the dire economic conditions of the pink shrimp fishery in the Florida keys. Considering the possibility that the pink shrimp stock would continue to worsen, the Council will likely consent to the opening of the designated areas of the sanctuary. However, these actions would require incurring the government costs.

SOCIAL IMPACT ASSESSMENT

A. Introduction

The proposed amendments have some social impacts on the various constituencies in the shrimp fishery. Recent issues on the regulatory climate of the Gulf of Mexico shrimp fishery have been well documented by a variety of investigators (Durrenberger, 1988; Kittner, 1987; Maril, 1982; Dyer and Moberg, 1992; Moberg and Dyer, m.s.; Nance et al, 1991; White, 1977, 1989; Margavio et al., 1992; Picou, Dyer and Moberg, 1992; McGuire, 1991; Thomas and Formichella, 1987). Along with the information available in the Gulf shrimp FMP and its appendices, there is sufficient information to make some fairly concrete suggestions as to the impacts of the proposed measures. However, specific actions generated from the generic proposals will require more extensive and specific social and economic information to assess the potential impacts on various user groups. In the case of authority to amend closures, for example, it is the specific amendment to the closure itself whose social impact should be assessed (for an example of such an analysis, see Nance et al., 1991).

The most comprehensive assessment of the social and cultural characteristics of the Gulf of Mexico shrimp fishery is contained in the Gulf shrimp FMP and its appendices. Unfortunately, that comprehensive assessment is now somewhat dated, and the above references each address only a geographically-limited segment of the Gulf shrimping populations. However, there are some recent socio-cultural studies conducted for certain shrimping communities in the Gulf in addition to those referenced above (see Johnson et al., 1992; Thomas, 1991; Riordan et al., 1991; Kline et al., 1989; Thomas et al., 1989; Forbus et al., 1989; Formichella and Thomas, 1987, 1989; Jepson et al., 1987). Drawing from the FMP documents and the above references we may offer the following general comments on the people and their communities in the fishery.

First, as is the case with most other fisheries in the U.S., occupational alternatives are limited by such factors as generally low formal educational levels among shrimp fishermen and the rural locations of many commercial and subsistence shrimp fishing communities. For example, Dyer and Moberg (1992) found that the mean and median years of formal education among a sample of 108 shrimpers in Bayou La Batre, Alabama and Biloxi, Mississippi were 10.8 and 12 years, respectively. In these rural areas, where employment opportunities exist they tend to be in relatively volatile industries such as petrochemicals or leisure-tourism.

Second, there are major divisions in the user categories among full- and part-time fishermen, recreational fishermen, subsistence fishermen, and among full-time fishermen between large (offshore) vessel and small (inshore) boat fishermen. Each of these user groups derives a different package of benefits and satisfactions from the fishery.

Third, there are major differences among the different areas of the Gulf of Mexico with respect to socio-economic and cultural context. In the southwest, the area is dominated by Mexican-American cultural influences. In south Louisiana the area is characterized by more long-term, fishing-related populations. All along the Gulf coast, but especially in larger metropolitan areas such as Tampa-St. Petersburg, the population and economy is increasingly dominated by retirement and leisure-tourism. In several locations from north Texas to the Florida panhandle there are relatively recent immigrant Indochinese fishing populations.

Fourth, for many in the shrimp fishery, shrimp fishing is either seasonal or "casual" employment, and yearly income is dependent on a variety of fishing and non-fishing activities.

Based on a review of the recent material cited above, which is the best available information on the present social and economic status of the Gulf shrimp fishery, there has been a severe decline in the economic viability of shrimping operations. For example, in a study of economic and social conditions of Bayou La Batre, Alabama, a significant decline in the number of vessel operators has occurred over the last two years (Dyer and Moberg, 1992). This can be attributed to depression of shrimp prices due to imports, decline in shrimp profits due to TEDs, increasing fuel and operation costs, and a general decline in the economy. The negative community impacts of this downturn have been highly significant (Picou et al., 1992). In the study conducted by Picou et al. (1992), substantial community impacts have negatively affected the household economics of a statistically significant number of residents of Bayou La Batre, Alabama. A summary of the social impacts of the downturn in the industry are noted by McPhail (1992) in a recent article, and the impacts of TEDs regulations as real and perceived social and economic impacts are included as the summary of the Bayou La Batre report (see Picou et al., 1992). This represents an important impact for Bayou La Batre lands over 90 percent of all shrimp catch for the state of Alabama. In other parts of the Gulf, contact with key respondents in telephone interviews

and at various organizational meeting indicates that the conditions prevalent in Bayou la Batre are fairly indicative of coastal communities throughout the Gulf. Given the present situation in the shrimp fishery, which impacts families, support businesses, and communities, careful consideration should be given to any recommendations that further add to the economic and social difficulties that are now being experienced by the industry.

However, many of the major social impacts are not direct in the sense of directly altering behavior. Rather, they may affect attitudes, perceptions and other circumstances in the fishery that are important for future relationships among fishery constituents, and among those constituents and fishery managers.

The general suspicion and lack of trust exhibited by fishermen for the regulatory and management structure has long been noted. This ranges from lack of understanding or involvement in the regulatory process under the MFCMA (Smith, 1982) to reactions to specific regulatory processes such as those associated with TED requirements (Dyer and Moberg, 1992; Kittner, 1987; Margavio et al, 1992). To the extent that these situations can be alleviated, perhaps through more interaction or better communication between fishermen and managers, the social impacts of new regulations may be minimized.

In the specific social impact analysis below we will focus on these more general social impacts involving perceptions, beliefs and attitudes rather than the specific behavioral alterations, which must be assessed in the context of the actual specific proposed regulatory changes.

B. Definition of Overfishing

As in all of the other proposed amendments, to the extent that the fishermen perceive the resource levels specified in the overfishing definitions to be fair and accurate, their reaction may be positive. To the extent that the fishermen perceive those levels to be unfair, inaccurate or undocumented, their reaction may be negative.

C. Tortugas Sanctuary

For both of these amendments the social impacts concern the information available to fishery constituents upon which they can base decisions in planning for future fishing activity, and the flexibility afforded them by the regulatory process. Under the present process in both instances, the annual report preparation and review requirements allow the fishermen access to potential changes in the closures as they are considered. To the extent that this access allows them to better plan their fishing activity, their uncertainty is reduced. If the proposed new procedure were to reduce the fishermen's access to the unfolding regulatory process, their uncertainty would be increased.

On the other hand, the present process, while relatively accessible, results in outcomes that may be less flexible than those under the proposed amendment in that the process must be repeated annually in a lengthy administrative process in order to change the closure periods. To the extent that the proposed amendment introduces more flexibility to respond to the needs of the resource and the industry, the social impact could be positive.

In general, if the proposed amendments introduce more flexibility for the fishermen, the social impact may be positive. To the extent that they might reduce fishermen's access to the regulatory process, they may be negative.

PRIVATE AND PUBLIC COSTS

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

Council costs of document preparation, meetings, public hearings, and information dissemination.....	\$ 25,000
NMFS administrative costs of document preparation, meetings and review.....	\$ 5,000
Law enforcement costs.....	\$ none
Public burden associated with permits.....	\$ none
NMFS costs associated with permits.....	\$ none
TOTAL.....	\$30,000

The Council and Federal costs of document preparation are based on staff time, travel, printing and any other relevant items where funds were expended directly for this specific action. There are no other costs associated with this amendment.

SUMMARY OF REGULATORY IMPACTS

Action 1, which provides for an overfishing definition for white shrimp to ensure sufficient biological protection to the respective stocks, would have no short-term social and economic impacts on resource users. It mainly serves to fulfill the requirement for an overfishing definition pursuant to 602 regulations. The long-term impacts of this action cannot be determined due to lack of information particularly on the future levels of parent stock for white shrimp. It may only be noted that the lower the level of overfishing index as currently proposed, the more restrictive the measures can be expected once management actions are necessitated to arrest overfishing. Action 2 is also expected to have no direct impacts on fishery participants. This action would mainly result in cost reductions to both the government and the general public due to the elimination of certain government activities. However, this action reduces public input in fishery management.

DETERMINATION OF A MAJOR RULE

Pursuant to E.O. 12291, a regulation is considered a "major rule" if it is likely to result in: a) an annual effect on the economy of \$100 million or more; b) a major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions; or c) significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets. The proposed measures by themselves whether taken individually or collectively are not expected to have a \$100 million effect per year on the economy. Impacts of such magnitude, if ever they arise, may only come from separate specific measures enacted under the overfishing action.

Adoption of such specific measures, however, are deemed to be remote. None of the measures is expected to cause an increase in the price of shrimp to consumers. Cost increases to the shrimp industry and the federal government are not likely to be effected by any of the proposed measures. Competition and innovation as well as employment and investment are unlikely to be adversely impacted by any of the measures proposed. The domestic shrimp industry is currently faced with strong competition from foreign suppliers. The measure that has the potential of affecting the relative competitive status of the domestic shrimp industry is the overfishing measure but only with respect to future actions under this measure.

On balance, therefore, this regulation if enacted is deemed not to constitute a "major rule" under any of the mentioned criteria.

DETERMINATION OF SIGNIFICANT ECONOMIC IMPACT ON A SUBSTANTIAL NUMBER OF SMALL ENTITIES

In general, a "substantial number" of small entities is more than 20 percent of those small entities engaged in the fishery (NMFS, 1992). In 1989, a total of 6,205 vessels and 9,676 boats were recorded in the vessel operating units file of NMFS as comprising the shrimping fleet in the U.S. Gulf of Mexico. State licenses reveal varying numbers of vessels and boats. The Small Business Administration (SBA) defines a small business in the commercial fishing activity as a firm with receipts of up to \$2.0 million annually. Many of the current participants of the shrimp fishery readily fall within such definition of small business. Since the proposed action will affect practically all the current participants, the "substantial number" criterion will be met.

Economic impacts on small business entities are considered to be "significant" if the proposed action would result in any of the following: a) reduction in annual gross revenues by more than 5 percent; b) increase in total costs of production by more than 5 percent as a result of an increase in compliance costs; c) compliance costs as a percent of sales for small entities are at least 10 percent higher than compliance costs as a percent of sales for large entities; d) capital costs of compliance represent a significant portion of capital available to small entities, considering internal cash flow and external financing capabilities; or e) as a rule of thumb, 2 percent of small business entities being forced to cease business operations (NMFS, 1992). Each of the proposed measures does not directly affect the gross revenues or production costs of the shrimp harvest industry although later specific measures, particularly under the overfishing action, may result in substantial reduction in gross revenues or increase in production costs. By themselves, the proposed measures do not demand a significant increase in compliance or capital costs. From this discussion, it can be concluded that the proposed regulation would not have a significant impact on small business entities in the shrimp fishery.

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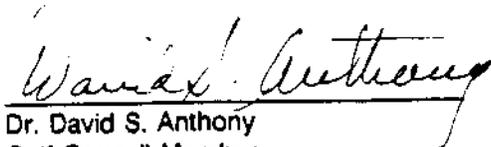
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Dr. Andrew J. Kemmerer
September 22, 1992
Page Two

The other important action eliminated after the hearing draft is the requirement that selected shrimp vessels be required to carry an observer to record bycatch. This Council has gone on record that shrimp vessel bycatch of juvenile red snapper must be reduced by 50 percent in 1994. In fact, at our September meeting we adopted a TAC for red snapper and a schedule for stock restoration which is dependent on this bycatch reduction. NMFS, however, advises us that it is unable to find sufficient voluntary shrimp vessel owners willing to carry observers. Peer pressure from persons objecting to the study has made willing captains reluctant to participate. As you know, NMFS has identified the need for 1,600 more observer days in the next year to complete the study, but was able to deploy observers on volunteer vessels for only 131 days in a 4-month period this spring. It appears obvious that the only way we as a Council are going to be able to meet our commitment of determining if bycatch reduction has been attained is through the requirement that selected vessels carry an observer. Without this information, we will lack scientific protocol on which to base decisions.

We, therefore, respectfully request that Amendment 6 be rejected for the reasons stated above.

Sincerely,



Dr. David S. Anthony
Gulf Council Member



Dr. Russell S. Nelson
Gulf Council Member



Mr. James H. Jenkins, Jr.
Gulf Council Member



Dr. Robert L. Shipp
Gulf Council Member

DSA:RSN:JHJ:RLS:TRL:kjs

cc: Gulf Council
Staff

GULF OF MEXICO FISHERY MANAGEMENT COUNCIL

Lincoln Center, Suite 331 • 5401 W. Kennedy Blvd.
Tampa, Florida 33609-2486 • 813/228-2815 • Fax 813/225-7015

September 22, 1992

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Dr. Andrew J. Kemmerer
Regional Director
National Marine Fisheries Service
9450 Koger Boulevard
St. Petersburg, Florida 33702

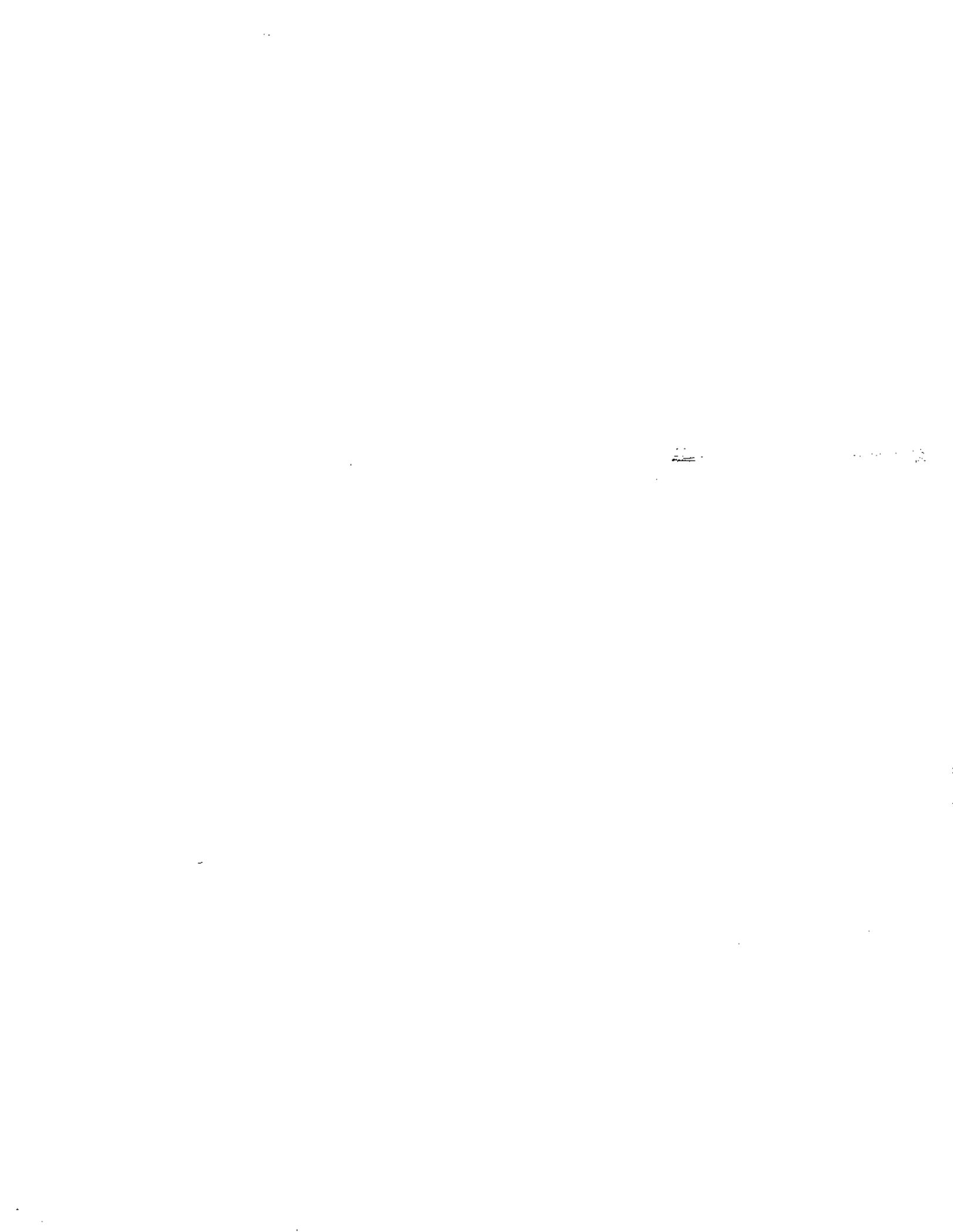
Dear Andy:

We the undersigned Council members wish to submit this letter as a minority report on Amendment 6 to the Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters. We believe that one proposed action clearly violates two National Standards while two actions needed for management of Gulf of Mexico fisheries were eliminated from the amendment.

Action 1, the definition and prevention of overfishing of white shrimp, utilizes as an index of overfishing a parent stock level of 300 million parents or fewer (the number of age 5 + month shrimp during the period April through August). If parent stock remains below the index for two consecutive years, the Council is to implement action to restore the stock. The definition was developed at a workshop composed of state, federal, and university fishery scientists, called together at the Council's request. The index for white shrimp, unanimously recommended by the group, was 600 million parents, not the 300 million proposed in Amendment 6. In only one year since 1960 (1961) has the parent index level fallen below 300 million. The report of that workshop and the amendment state that low recruitment levels have been observed when parent levels decreased below 500 million and that trawling effort has increased since the 1960s. The amendment also states that the white shrimp fishery extends to about 20 fathoms, and the species is heavily fished throughout its range. The range of brown shrimp extends to waters deeper than the fishery, while pink shrimp inhabit extensive areas of untrawlable bottom providing these two species a measure of protection. The arbitrary selection of an overfishing index of 300 million for white shrimp, half the level recommended by the Council's own workshop and its Scientific and Statistical Committee, subjects the stock to the risk of overfishing (National Standard 1) and is certainly not founded on the best scientific information available (National Standard 2).

The public hearing draft of Amendment 6 contained two additional actions which we feel are vital to sound fishery management. One, a proposal to require permits for vessels shrimping in the EEZ, would allow managers to know the number of vessels participating in the fishery, to develop a better estimate of effort, and "to identify the universe" for other sampling purposes. Shrimp industry members hotly contest current estimates of effort developed by NMFS and cite various local statistics which indicate a decline in fleet size, yet they oppose a permit program that would provide the information. The issue remains debatable.

The Council has previously authorized mandatory reporting of catch and landings by selected shrimp fishermen and dealers, the selection to be made by NMFS. There is, however, no file of vessel owners. The NMFS vessel operating unit file does not have these data, and state license records are not comparable.



GULF OF MEXICO FISHERY MANAGEMENT COUNCIL

Lincoln Center, Suite 331 • 5401 W. Kennedy Blvd.
Tampa, Florida 33609-2486 • 813/228-2815 • Fax 813/225-7015

October 30, 1992

30.OCT.92*004430

Dr. Andrew J. Kemmerer
Regional Director
National Marine Fisheries Service
9450 Koger Boulevard
St. Petersburg, Florida 33702

ORIGINALS

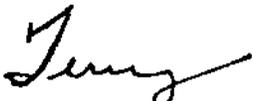
Dear Andy:

Enclosed is Amendment 6 to the Shrimp Fishery Management Plan for the Gulf of Mexico as recently adopted by this Council. The document includes an environmental assessment and regulatory impact review. Also enclosed is a minority report submitted by four members, and responses received from affected Coastal Zone Management Programs.

We have previously provided a diskette with the proposed rule, and your staff has worked with us in preparing the draft regulations.

This package is being submitted for Secretarial review and approval. Fifty copies of the amendment are enclosed.

Sincerely,



Terrance R. Leary
Fishery Biologist

TRL:ccm

Enclosure: 50 Copies of Amendment 6
Minority Report
CZM Letters

cc: Council, with Shrimp Amendment 6 and Minority Report
Staff, with Shrimp Amendment 6 and Minority Report

shrimp/am.6-kem.ltr