

OPTION PAPER

**AMENDMENT NUMBER 1 TO THE FISHERY MANAGEMENT PLAN
FOR THE SHALLOW-WATER REEF FISH FISHERY, PRELIMINARY
ENVIRONMENTAL ASSESSMENT AND REGULATORY IMPACT REVIEW**

MARCH 1989

CARIBBEAN FISHERY MANAGEMENT COUNCIL

I Introduction

The Fishery Management Plan for the Shallow-water Reeffish Fishery of Puerto Rico and the U.S. Virgin Islands (FMP) became effective September 22, 1985. The FMP was prepared by the Caribbean Fishery Management Council to establish a management system for the shallow-water reefish resources within the Exclusive Economic Zone (EEZ) and the waters under the authority of the Commonwealth of Puerto Rico and the Territory of the U.S. Virgin Islands, from the shoreline to the edge of the insular platform.

Of some 350 species of shallow-water reefish in the Caribbean, about 180 are landed and used in quantity throughout the region and collectively comprise the most important fishery in the islands. The FMP's management unit includes the 64 most commonly landed species (distributed among 14 families) which compose the bulk of the catch from Puerto Rico and the U.S. Virgin Islands.

The FMP established regulations to rebuild declining reefish species in the fishery and reduce conflicts among fishermen. It established criteria for the construction of fish traps; required owner identification and marking of gear and boats; prohibited the hauling of or tampering with another person's traps without the owner's written consent; prohibited the use of poisons, drugs, other chemicals and explosives for the taking of reefish; established a minimum size limit on the harvest of yellowtail snapper and Nassau grouper; and established a closed season for the taking of Nassau grouper.

II Statement of the Problem

Since the implementation of the FMP, new information has arisen that indicates that more stringent management measures are needed to accomplish the objectives of the FMP. Data from CODREMAR's Fishery Statistical Project shows a downward trend in these fisheries indicated by a shift in species composition of the landings, and decrease in volume of these landings. For example, the parrotfish which was considered second and third class in most sectors of this fishery is now sold as first class and is one of the most frequently landed species displacing the snappers and groupers which are no longer abundant. This is occurring in spite of the management measures implemented so far.

The red hind size frequency distribution shows a decline in the average size in Puerto Rico. The situation in the U.S. Virgin Islands regarding this species is such that the fishermen themselves have requested a closure of the specific sites during the spawning season (December - February) of the red hind. They have identified a "spawning hot spot" as crucial to the survival of the fishery. This area is important not only for the fishermen in the U.S. Virgin Islands, but also for the fishermen in Puerto Rico who might benefit from the larvae carried by the currents.

A task team was established by the Council to examine the available data. Recommendations were made and accepted by the Council to amend the plan in order to increase the minimum mesh size in fish traps and to protect the spawning aggregations of the red hind, especially those spawning areas identified around St. Thomas and St. John.

The Nassau grouper is so scarce that its capture is considered as a rare event. Therefore the Council has decided to close this fishery until stocks are recovered.

These measures are responsive to the objectives of the plan which are: restore and maintain adult stocks at levels that ensure adequate spawning and recruitment to replenish the population; prevent the harvest of individuals of species of high value that are less than the optimum size; and obtain the necessary data for stock assessment and for monitoring the fishery.

III Proposed Action

The actions proposed in this Amendment consist of the following revisions of existing measures or sections.

Management measure 10.2.1 is modified to allow a larger dimension for the minimum mesh size for fish traps.

Management measure 10.2.2 is modified to specify the material to be used in the self-destruct panel so as to allow a maximum time for self-destruction.

Management measure 10.2.7 is modified to establish a total closure for the Nassau grouper fishery.

Management measure 10.2.9 is modified to include socio-economic information.

Management measure 10.2.10 is added to establish an area closure for the red hind spawning season in the area which covers from Ram Head to Sail Rock, south of St. Thomas.

ACTION 1: MANAGEMENT MEASURE

Section 10.2.1 is revised by modifying the minimum mesh size for fish traps (change underlined):

10.2.1 Establish 2 inches (in the smallest dimension) as the minimum mesh size for fish traps.

Rationale: The 1½" mesh size was found too small for achieving the objectives of the plan, which imply the reduction of bycatch of immature individuals and those herbivorous adults essential to the maintenance of the reef ecosystem balance. Two inches minimum

size will allow the escapement of these fishes.

In a study by Bohnsack (1988) comparing different mesh sizes in fish traps, he found that a mesh size 2" by 3" or larger tended to catch larger fish, but fewer species and individuals. Also, when comparing this mesh size with those currently legally specified in the Gulf area (1.5" X 1.5", and 1.5" hexagonal) the results show that "the presently legal minimum mesh appear to do little to reduce bycatch." This statement agrees with the Council's rationale to increase the present legal minimum mesh size from 1½" (hexagonal) to 2".

This measure might reduce the number of part-time fishermen. It has been argued that larger mesh would discourage the use of traps by part-time fishermen because average number of fishes per trap will decrease. However, it will provide better economic return to the full-time fisherman because the catch of larger fish, with the escapement of a greater number of juveniles, will bring higher market values. If 2" mesh size wire is readily available, no significant economic hardship is foreseen.

Delaying implementation should offset any economic impacts associated with this measure. Since the life expectancy of fish traps is about one year, the management measure will have a moratorium of one year after the First Amendment is implemented.

The council considers this measure as one of the most important for this fishery due to the complex assemblage of species. At the same time it is conscious of the need for an inventory of traps by mesh size and the consequent economic analysis.

Although there are still juveniles of some species that would not be able to escape with a 2" mesh size, such as some groupers; additional protection is afforded to those species by requiring a biodegradable panel and/or door fasteners in the traps.

Rejected Alternatives to Action 1

- a. Retain the minimum mesh size of 1½" (no action).

Rationale: Current minimum mesh size is not allowing the escapement of a significant number of juveniles which are important to the fishery. Bohnsack (1988) found that the size of retained fish in traps are directly related to mesh size and shape. He found that mesh sizes such as 2" by 3", or larger, tend to catch larger fish, but fewer species and individuals; and that the larger mesh size is more efficient in reducing bycatch of immature individuals and small adults of certain species.

- b. Establish the minimum mesh size at 1½".

Rationale:

There is no significant difference in catch sizes between the 1½" and 1¾" minimum mesh size. In addition, studies have found that the Gulf's current legal size for mesh appears to do little to reduce bycatch.

Regarding the economic impact of this measure, some fishermen from St. Croix believe that if the minimum mesh size is established at 2", approximately 50% of their catch will be lost. This seems to be unique to St. Croix, because of their particular cultural eating habits. This community consumes species (e.g. doctorfish and butterflyfish) which are smaller than those consumed in Puerto Rico, St. Thomas and St. John. The St. Croix fishermen would therefore, prefer the 1½" minimum mesh size.

Representatives from the U.S. Virgin Islands Division of Fish and Wildlife believe that the available data indicate that this 50% loss is overstated and that the loss is closer to 20%.

The Council cannot corroborate any of these figures for lack of adequate scientific data. The scientific data available (Bohnsack, 1988) indicate that the 2" minimum size is a better alternative for the recovery of the resource so this measure is rejected.

ACTION 2: MANAGEMENT MEASURE

Section 10.2.2 is modified to specify the material to be used in the self-destruct panel and/or door fastener so as to allow a maximum time for self-destruction (change underlined):

10.2.2 Require a self-destruct panel (not smaller than the funnel opening of the trap) and/or self-destruct door fastening in fish traps that should be made of [Reserved]¹ which will allow a maximum of 10 days for degradation.

Rationale: As presently stated, the management measure assures the escapement of some fish from the traps that are lost, nonetheless, considering that only about 50 percent escape in 7 to 10 days (Munro, 1974b), the Council considers it of great importance that this measure protects the greatest number of fish. By establishing the materials that should be used for the degradable panel and door fastening devices, which comply with the new maximum allowable time, the Council expects to increase the number of fish that escape from lost traps; therefore increasing the probability that they could increase the yield per effort for the fishermen.

¹ The determination of which material will be recommended is pending literature research and/or experimentation.

The self-destruct panel and material must be inexpensive, locally available, simple to replace and must have predictable durability. Some alternative materials which have been identified are uncoiled jute, parcel post sisal twine, 16 and 22 gauge galvanized wire, and galvanic couplings with a life span of up to 14 days (Kumpf, 1979). Except for the couplings most of these materials do not comply with the 10 day degradation requirement of the management measure, and some with the inexpensive variable. The Council is in the process of researching additional information.

Rejected Alternative to Action 2

- a. Retain management measure as presently stated (no action).

Rationale: Although the management measure presently provides a mechanism that permits the escapement of fish from lost traps, the materials being used for the degradable panel and door fastening devices do not degrade fast enough to ensure the escapement of a significant number of fish.

ACTION 3: MANAGEMENT MEASURE

Section 10.2.7 is modified to establish a smaller maximum size for Nassau grouper (change underlined):

10.2.7 A total closure of the Nassau grouper is established, until the stocks are rebuilt to exploitable levels.

Rationale: The Council's decision to adopt a minimum size of 24 inches total length for Nassau grouper (Epinephelus striatus) to ensure spawning, was based on the best available information at the time. Due to the taxonomic relationships of the species with the red grouper (E. morio), whose first spawning age occurs approximately at 19 inches total length, and its maximum yield is obtained at 24 inches, the assumption was that, the same parameters could be used for the Nassau grouper.

The measure was implemented with a phase-in schedule starting with a base line of 12 inches total length for the minimum size and adding a one-inch increase per year, until reaching 24 inches. This phase-in would allow sufficient time for the development of scientific research which would provide the age-length at first spawning.

The age-length at maturity of Nassau grouper has been determined to be at least 17 inches standard length (22 total length) in a study conducted in the Bahamas during 1988 (Ivonne Sadovy, personal communication). Therefore, the Council would have to modify the minimum size limit of Nassau grouper to 22 inches total length following the original rationale for the size limit measure for this fish. However, the information on landings shows that the capture of Nassau grouper is a rare event. This crisis can only

be solved with a total closure until the stocks are recovered.

Rejected Alternative to Action 3

- a. Retain management measure as presently stated (no action).

Rationale: The present size limit management measure was selected based on studies by the South Atlantic Fishery Management Council because the Caribbean Council lacked information of its own regarding the species in local waters. However, the information now available indicates that a more drastic measure is needed to save the resource.

ACTION 4: MANAGEMENT MEASURE

Section 10.2.9 is revised as follows (change underlined):

10.2.9 Data Collection: Gather catch/effort, length/frequency, as well as any necessary biological and socio-economic information, through the improvement of the existing state-federal agreements formulated by NMFS/PR/USVI and/or Council's own data gathering program.

Rationale: The current provisions of the data collection effort are limited to the collection of biological data. The reef fishery is very complex and in order to appropriately manage it the Council needs the most complete amount of information available. Thus, the need to collect socio-economic data.

Rejected Alternative to Action 4

- a. Retain measure as is currently stated (no action).

Rationale: The Council would be managing a very complex fishery. Requiring only biological data would not provide the necessary information to manage this fishery.

ACTION 5: AREA CLOSURE FOR RED HIND DURING BREEDING SEASON

Section 10.2.10 is added to the FMP and will read:

10.2.10 Establish a total closure of the fisheries from mid December through February of each calendar year; in all waters south of St. Thomas to the edge of the shelf, from Ram Head to Sail Rock. (Appendix 1)

Rationale:

Red hind is so prevalent in the fishery that it is impossible to set a trap and not catch red hind. At present it constitutes the backbone of, not only the trap fishery, but also the hook and line fishery.

This particular area has been identified by the fishermen as containing "the hottest spots for spawning aggregations." The fishermen are concerned that the fish are getting smaller. They know they are taking too many juveniles and they are trying to protect the resource "so they will have something to keep going back to."

Conscious of the importance of protecting spawning aggregations, fishermen are trying to save the resource for continuous use, requesting from the Council a management measure that will ensure the survival of the species in federal waters. There are pending regulations in the U.S. Virgin Islands government to close spawning areas in the territorial waters. Presently they have no way to regulate outside fishermen, they are therefore interested in seeing federal regulations that protect the species.

Red hind in the U.S. Virgin Islands spawn during the full moon cycle in January, which may occur to some degree during the last weeks of December. The spawning season peaks during January but may extend itself into February. Protecting reproductive stages of species is one of the major problems of fishery management as well as one of the most important management measures that can be implemented. During this stage the species become extremely vulnerable to fishing pressure, protecting them is sound management.

However, it is very difficult to enforce a closure of a very small area for only one species; therefore, the need for the total closure and the size of the area covered under this measure.

Rejected Alternative to Action 5

- a. To keep the identified spawning area open to fishing.

Rationale: Leaving the identified area unprotected from the intensive fishing pressure it is subject to, would most probably eliminate this spawning aggregation in a short period of time. Fishermen have identified spawning areas of the red hind around St. Croix which were not adequately managed and which no longer exist. It is their belief that once a species is fished out of a spawning area it does not return.

- b. To close all areas identified as possible or actual spawning grounds of red hind during the period of mid December through February each year.

Rationale: The disruption in the economic returns from the shallow-water reef fish fishery and the impossibility of enforcing compliance in all areas, makes this management measure impractical and unnecessary at this time.

There is little information with respect to the areas (location and dimension) that serve as spawning grounds for the red hind through the year. Although it is known that several areas considered spawning grounds occur around Puerto Rico and the U.S. Virgin Islands, the precise locations have not been identified.

The Council has decided to accept the recommendation of closing the indicated area (management measure 10.2.10) as the first step to assess the usefulness of this measure. It is expected that after proper monitoring and evaluation of the closed area proposed in this FMP, other areas could be closed if this measure proves to be effective.

ACTION 6: DESCRIPTION OF HABITAT OF STOCKS

Section 8.2 of the FMP is updated and editorially revised to provide descriptions and analyses required by amendment of the Magnuson Act. The revised text is appended to this document.

IV Environmental Consequences

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

The effects of these actions is to permit a greater degree of escapement of juveniles in the reefish fishery and adults of small size species; to reduce mortality of red hind while they are spawning at a particular site; and to decrease mortality of reefishes captured in lost traps. The actions are geared towards promoting, maintaining and restoring the spawning stocks.

The actions will have short-term and, long-term benefits on the resources, because statistics for both the reefish and the red hind fisheries, show a decrease in catch per unit of effort. The proposed actions are directed towards reversing this trend.

There will be a short-term adverse impact on the human environment, especially on the part-time fishermen and the trap fishermen who fish in the identified spawning area of the red hind. This activity will be eliminated or limited during two and a half months of the year. This negative impact is, nonetheless, overshadowed by the long-term benefit which assures that the stock will not collapse and will result in increased productivity and yield from the resource, with the associated economic benefits.

V Conclusions

Mitigating Measures Related to the Proposed Action

No significant environmental impacts are expected, therefore, no mitigating actions are proposed.

Unavoidable Adverse Effects

Some adults of the smaller, less valuable species as well as some juveniles of the larger species will continue to be killed, because even the 2" mesh size will be too small for their escapement.

Relationship Between Local, Short-term Use of the Resources and Enhancement of Long-term Productivity

The 2" mesh size will permit the escapement of some fish presently caught in fish traps with smaller mesh size which will have a short-term negative impact on the yield per trap, in terms of number of fish. However, on a long-term basis, the fishermen will benefit from larger fish with greater market value.

Irreversible or Irretrievable Commitment of Resources

None.

RECOMMENDATIONS

Having reviewed the environmental assessment and available information relating to the proposed action, I have determined that there will be no significant environmental impact resulting from the proposed actions.

Approved: _____
Title

Date

RESPONSIBLE AGENCIES

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LOCATIONS AND DATES OF PUBLIC HEARINGS

(To be designated in 1989 by the Council.)