

AMENDMENT 3

to

The Fishery Management Plan

for

Spiny Lobster

in

The Gulf of Mexico

and

South Atlantic

including

Environmental Assessment

and

Regulatory Impact Review

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## **I. Introduction**

The Fishery Management Plan for Spiny Lobster in the Gulf of Mexico and South Atlantic (FMP) was implemented on July 26, 1982 (47 FR 29203). The FMP largely extended Florida's rules regulating the fishery to the EEZ throughout the range of the fishery, i.e. North Carolina to Texas. The FMP has been amended twice. Amendment 1 was implemented on July 15, 1987 (52 FR 22659) with certain rules deferred and implemented on May 11, 1988 (53 FR 17196) and on July 30, 1990 (55 FR 26448). This amendment updated the FMP rules to be more compatible with that of Florida. Amendment 2 was approved on October 27, 1989 (54 FR 48059) and provided a regulatory amendment procedure for instituting future compatible state and federal rules without amending the FMP.

This amendment contains provisions for adding a scientifically measurable definition of overfishing, an action plan to prevent overfishing, should it occur, as required by the Magnuson Act National Standards (50 CFR Part 602), and the requirement for collection of fees for the administrative cost of issuing permits.

## **II. Description of the Fishery and Utilization Patterns**

The FMP, as amended, provides for management of the fishery throughout its range from North Carolina through Texas. However, the commercial fishery and, to a very large extent, the recreational fishery, occur off South Florida and principally off Monroe County, Florida in the Florida Keys (96 percent of landings in 1984).

The FMP (1981), Amendment 1 (1987), and Amendment 2 (1989) adequately describe the fishery, changes in the fishery and utilization patterns and the condition of the stock. In summary, this information indicates that (1) the fishery is heavily overcapitalized with excess fishing capacity (traps) well beyond that needed to harvest the resource; (2) although landings have been stable and no recruitment overfishing is occurring, growth

overfishing is occurring partially as a result of mortality of sublegal lobsters from fishing practices; (3) the fishery landings are dependent on recruitment of small lobster each year, i.e. no multiple age class structure; (4) source of larval recruitment to the fishery has not been resolved, i.e., pan-Caribbean or Gulf or local or a combination of sources; and (5) an effort reduction limited entry system has been developed by industry, the state of Florida, and the Gulf of Mexico and South Atlantic Councils for future implementation.

### **III. Statement of the Problem**

In July 1989, NMFS published revised guidelines for fishery management plans that interpreted the Magnuson Act National Standards (50 CFR, Part 602). These guidelines require each plan to include a scientifically measurable definition of overfishing and an action plan to prevent overfishing should it occur. The FMP for spiny lobster is being revised by this Amendment to comply with the guidelines and to include a section on issuance of permits.

### **IV. Proposed Action**

The actions proposed in this amendment to the FMP are as follows:

- o inclusion of a FMP section on Overfishing
- o inclusion of a FMP section on Issuance of Permits

## **Action 1: Overfishing**

### **Proposed Alternatives**

1. **Definition of Overfishing:** "Overfishing exists when the eggs per recruit ratio of the exploited population to the unexploited population is reduced below five percent and recruitment of small lobsters into the fishery has declined for three consecutive fishing years. Overfishing will be avoided when the eggs per recruit ratio of exploited to unexploited populations is maintained above five percent.

2. **Management Measure to Prevent Overfishing:** Should overfishing occur, the Councils and state of Florida will take one or more of the following actions by regulatory amendment as authorized under this measure:

- o modify season length
- o increase minimum carapace length
- o limits on use of shorts
- o require escape gaps
- o reduce number of traps

**Discussion:** The eggs per recruit ratio should be empirically determined by sampling populations in exploited areas and the Tortugas Fort Jefferson sanctuary following the methods of Gregory, et. al. (1982), rather than being calculated as by Powers and Sutherland (1989). The average number of eggs produced over its lifetime by a lobster recruited to the fishery is defined as eggs per recruit. The ratio of the number of eggs per recruit at present exploitation rate relative to the number with no fishing is the eggs per recruit ratio. Recruitment into the fishery of small lobsters should be monitored annually through catch statistics.

The stock status and fishery for south Florida spiny lobster under the jurisdiction of the Gulf of Mexico and South Atlantic Fishery Management Councils have been recently described by Powers and Sutherland (1989). The major

conclusions of their analyses were: 1) fishing mortality rates on lobsters recruited to the fishery are very high, on the order of  $F=2/\text{year}$ ; 2) the magnitude of annual landings relies almost exclusively on the recruitment of small lobsters that year, fluctuations in recruitment are not buffered by multiple year-classes in the fishery; 3) the fishery is fully exploited under present fishery practices, additional effort will not lead to additional yield; whereas, alternative practices that reduced mortality on sub-legal lobsters could increase yield significantly; and 4) the source of recruitment to the fishery has not been resolved, i.e. it is unknown what proportion of recruitment comes from within the south Florida area and what proportion comes from outside (perhaps from other areas in the Caribbean); however, there are no indications of recruitment decline in south Florida; recruitment indices have fluctuated without trend through the 1980s.

The minimum size of female reproductive maturity is about 70 mm carapace length (CL). However, reproductive activity is greatest among females in the 80-85 mm size class (Gregory et al. 1982). The present legal minimum size is 76 mm CL, but the effective minimum size is less due to short mortality resulting from baiting practices. It takes approximately one year for a lobster to grow from 48 mm CL to the legal size of 76 mm (Hunt and Lyons 1986). Growth rates and subsequent maturity may be retarded by fishery induced injury rates (Lyons 1986).

Reproductive potential of recruited spiny lobsters is severely reduced at present fishing mortality rates. Gregory et al. (1982) empirically examined size frequency samples to estimate eggs per recruit from the Florida Keys in 1976. They compared this to the Tortugas samples (Tortugas Sanctuary where no fishing is allowed). Estimated eggs/recruit from the exploited area was 18.24 percent of that from the unexploited area. Effort has likely increased since these data were collected. The yield-per-recruit analyses conducted by Powers and Sutherland (1989) were modified for this discussion to include equilibrium egg per recruit calculations based upon the fecundity versus CL relationship and percent breeding females at size data in Gregory et al. (1982). These analyses indicate that eggs per recruit ratios (ratio of the number of eggs per recruit at present exploitation rates relative to the eggs per recruit with no fishing) are six percent or less, depending on uncertainties in present fishing mortality rates and the mortality rate of sub-legal lobsters used for

baiting. Presently, we have no indication whether this reduction in reproductive potential is excessively large, since there has been no evidence of recruitment declines.

Lyons (1986) reviewed the evidence for hypotheses about the source of recruitment to the south Florida spiny lobster fishery. Presently, neither the pan-Caribbean, localized south Florida, Gulf of Mexico hypotheses, nor combination of the three can be rejected. However, under present intense levels of fishing, the fishery yields to south Florida appear to be vulnerable. If the south Florida spiny lobster are self-reproducing (recruitment coming from local reproduction), then the reproductive potential of the stock is low (six percent of unexploited levels and perhaps less). Whereas, if recruitment comes from outside the south Florida area then the viability of the south Florida fishery depends upon uncertain recruitment levels from unknown areas and human and environmental events that occur there. Hence, in this instance, the local reduction in reproductive potential does not indicate the change in potential for the larger population of south Florida lobsters and lobsters from outside south Florida. In either case the south Florida fishery and the abundance of south Florida lobsters is vulnerable. However, the benefit to the south Florida fishery of actions taken to increase the reproductive potential of south Florida lobsters will be different depending upon the recruitment hypothesis. If there is solely localized recruitment, then benefits of local actions to increase the reproductive potential would be accrued to the local fishery. If "outside" recruitment is dominant, then benefits of local actions would most likely be lost to the local abundance of lobsters. At this point we cannot determine which of these recruitment scenarios is correct or the proportion of recruitment that comes from inside and outside the south Florida area.

However, one should note that even if recruitment comes solely from outside the south Florida area and actions to increase reproductive potential are not accrued to the local abundance of lobsters, there may still be benefit to the local fishery. This will occur because many of the actions that increase eggs per recruit will also increase yield per recruit.

It is recommended that the reproductive potential of the south Florida spiny lobster be measured using the ratio of eggs per recruit under exploitation relative to the egg per recruit under no exploitation (Powers and Sutherland 1989). It is

quite feasible and preferable that this be measured empirically using size and egg samples from the fished area compared to a relatively unexploited situation (Tortugas sanctuary), as was done by Gregory et al. (1982). Recognizing the above uncertainty in the sources of recruitment and the exact levels of present fishing mortality rates. It is recommended that the eggs per recruit ratio of south Florida spiny lobsters be maintained above five percent. This level is approximately equal to that which presently occurs; there have not been any indications of recruitment declines, as of yet. If recruitment were to decline for three or more years in a row, then this would be indicative of larger problems that would manifest themselves in reductions in egg production. Therefore, if the eggs per recruit ratio is reduced below five percent and recruitment has declined for three or more consecutive years, then actions should be taken to increase the eggs per recruit ratio.

Recruitment trends can be measured in a variety of ways including trends in catch (if effort remains constant) or trends in beginning season catch per trap as noted by Powers and Sutherland (1989).

**Ecological Impacts:** Annual landings of spiny lobster, Panulirus argus, have been very stable over the last decade suggesting that recruitment overfishing is not occurring. The eggs per recruit ratio proposed as a standard to prevent overfishing coupled with monitoring annual recruitment to the fishery should assure that overfishing does not occur resulting in a beneficial long-term impact. The more recent trends in management actions which have reduced short (sublegal lobsters) mortality through a requirement for live wells aboard vessels and an industry-derived effort limitation system using individual transferable trap certificates that will be discounted annually and which should be implemented before 1992, should both increase the eggs per recruit ratio. The definition provides a scientific basis for monitoring the fishery for overfishing and the proposed management measure allows adjustment to prevent overfishing or reverse overfishing should it occur.

The FMP also manages the slipper lobsters, Scyllarides Spp. which are incidental catch in bottom trawl fisheries. These species are such a minor component of the catch and are so broadly and sparsely distributed over the range of the

management unit that insufficient information is available to either monitor their abundance or assess their status relative to overfishing. In general, it appears their principal or preferred habitat are areas of rough and irregular bottom where trawling is not possible. This probably affords them adequate protection against overfishing.

**Socioeconomic Impact:**

Spiny lobster is currently not "overfished" under the proposed overfishing definition. Thus, none of the proposed measures to prevent overfishing is required. Consequently, no immediate impacts on current users of the resource are expected. In the event that any actions are taken by regulatory amendment under the proposed measure the impacts of those actions will be included in the Regulatory Impact Review as part of that regulatory amendment.

Harvests in the fishery have remained relatively stable over a long period. Although in the 1980s there has been a trend toward fewer boats, the number of traps fished per craft has increased (Waters 1989). There are indications that the fishery is fully exploited, and additional effort is not expected to increase harvests in the same proportion. Under this scenario, the proposed measure has the potential to maintain a stable harvest level from the fishery.

Stability of the fishery is also conditioned by market forces and not solely by the biological status of the fishery. In a recent economic assessment of the spiny lobster fishery (Waters 1989), it was determined that Florida's spiny lobster fishery is practically a price taker. This implies that Florida harvests react more to prevailing market prices (ex-vessel and wholesale) rather than the other way around. It was also determined that prices may increase if imports and cold storage holdings of spiny lobster tails remain at current low levels. These conditions suggest a near-term likelihood for an increase in domestic harvest, and possibly further investment in the harvest and processing sectors of the fishery. This investment may not be economically justified over a sufficiently long period when imports adjust to higher levels and domestic fishery stocks diminish. To an important degree, the adoption of an overfishing rule with accompanying measures that would restrict harvest should overfishing occur would temper that decision to further invest in the fishery. A more stable condition in the fishery would then be promoted.



### **Rejected Alternative**

No action - Status Quo.

**Discussion:** Under the current rules under status quo established by FDNR, FMFC, and the Councils recruitment overfishing is not currently occurring. However, based on the discussion of the proposed alternative it is likely that additional rules increasing reproductive potential may be necessary. The proposed alternative is superior to status quo by providing a method of monitoring the reproductive potential and condition of the stock and instituting the corrective actions necessary to prevent recruitment overfishing.

### **Ecological Impacts**

Currently the effects are essentially the same as the proposed alternative with the exception that the proposed alternative provides a method to measure the stock reproductive potential and condition and to take corrective action.

### **Socioeconomic Impacts:**

The status quo has no impacts in the short-run. Its long-run effects hinge crucially on market conditions and industry expectations as those expectations affect investment decision. If imports are expected to dominate the spiny lobster market, current levels of fishery exploitation are likely to be maintained or at most increased minimally. This condition would generate similar investment scenario as that of the proposal to adopt an overfishing rule with accompanying measures to prevent overfishing. If, on the other hand, imports and lobster tail inventories are expected to decline further in the future, a more intense exploitation of the fishery would ensue with consequent commitment of more economic resources into the fishery. Considering that the fishery is now fully exploited, further harvests have the

tendency to impinge on the capability of the stock to replenish itself. But even if further harvest can be sustained, imports might increase so as to render uneconomical further investments in the fishery, unless demand for the species would absorb any additional harvest from domestic stock. In any case, long-term stability in the fishery is not likely to be promoted under the status quo.

## **ACTION 2: ISSUANCE OF PERMITS**

### **Proposed Alternative**

National Marine Fisheries Service (NMFS) may charge the administrative cost of issuing permits in the fishery.

**Discussion:** Amendment 1 provided for a federal commercial vessel permit to sell lobsters taken from the EEZ or possess more than the bag limit. To be eligible for such a permit the vessel owner or operator must be able to demonstrate that at least ten percent of his earned income was derived from commercial fishing. In requiring this permit it was the intent of the Councils that corporations actively engaged in the fishery not be denied a permit based on the income requirement and that other persons not be able to use a corporate structure to circumvent the income requirement. The FMP, as amended, did not address the issue of collection of fees for permits. The proposed alternative provides that authority to NMFS.

### **Ecological Impacts:**

None

### **Socioeconomic Impacts:**

Currently, the administrative cost of issuing a permit by NMFS is \$23. NMFS estimates there are 600 commercial fishermen in the fishery; therefore, the current annual cost to the industry would be \$13,800. Inasmuch as this amount represents a mere shift in cost from the regulating agency to the users of the resource, this is not an additional cost attributable to the proposed measure from the national standpoint. Although the amount is minuscule to be considered

a user fee, the act of exacting it from the users partly conveys the idea that what is being exploited is a common resource, and the cost of managing the resource has to be partially borne by its direct users.

**Rejected Alternative:**

No action - status quo.

**Ecological Impacts:**

None.

**Socioeconomic Impacts:**

The federal government would be unable to receive compensation for the administrative cost of issuing permits.

**V. Environmental consequences**

The actions proposed in the amendment have no adverse impact on the physical environment. The effect of these actions is to amend the FMP to include a measurable definition of overfishing that allows monitoring of the fishery and a management measure to prevent or reverse overfishing should it occur, which have significant environmental benefits.

The proposed actions of the amendment have no anticipated impact on threatened or endangered species or marine mammals. A Section (7) consultation was held for the fishery with a no jeopardy opinion being rendered.

The Councils have concluded the proposed actions are consistent to the maximum extent practical with the coastal zone management plans of the affected states. The consistency determination has been submitted to the states for their review.

## **VI. Conclusions**

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

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

The analyses of the impacts of alternative measures considered under this amendment have been done in previous sections and are deemed to satisfy the basic elements for RIR/IRFA. A summary of impacts follow. Action 1 is expected to have no impacts in the short-run. Its long-run impacts are deemed to be beneficial to the

industry as well as to the stock. While the status quo, which is the rejected option, has no short-run impacts, its adoption would not effectively promote long-run stability in the fishery. Action 2 merely shifts the cost of issuing permits from the regulatory agency to the users of the resource. Total industry cost is estimated to be \$13,800.

**Mitigating Measures Related to the Proposed Action**

None.

**Unavoidable Adverse Impacts**

None.

**Relationship Between Local Short-Term Use of the Resource and Enhancement of Long-Term Productivity**

No impacts on short-term use are anticipated. Long-term productivity should be enhanced by implementation of a system that will prevent overfishing.

**Irreversible or ir retrievable Commitment of Resources**

The federal management commitment will be slightly increased by analyses associated with monitoring of condition of the stock.

**Finding of No Significant Environmental Impact**

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

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Assistant Administrator for Fisheries

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Date

**RESPONSIBLE AGENCIES**

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## **LIST OF AGENCIES AND PERSONS CONSULTED**

Gulf of Mexico Fishery Management Council

- Spiny Lobster Advisory Panel
- Scientific and Statistical Committee

South Atlantic Fishery Management Council

- Spiny Lobster Advisory Panel
- Scientific and Statistical Committee

Florida Marine Fisheries Commission

National Oceanic and Atmospheric Administration (NOAA)

- General Counsel's Office (SERO)

National Marine Fisheries Service

- Division of Fisheries Management
- Southeast Fisheries Center

## **LIST OF PREPARERS**

Gulf of Mexico Fishery Management Council

- Wayne Swingle, Biologist
- Douglas Gregory, Biologist/Statistician
- Anthony Lamberte, Economist

National Marine Fisheries Service

- Joseph E. Powers, Populations Dynamics

## **LOCATION AND DATES OF PUBLIC HEARINGS**

The Council accepted written comment on the amendment through November 9, 1990.

Public hearings were held as follows:

### **October 25, 1990**

**Marathon High School Cafeteria**

**350 Sombrero Beach Road**

**Marathon, Florida**

**7:00 - 9:00 p.m.**

### **November 14, 1990**

**Omni Hotel at Westshore**

**700 North Westshore Boulevard**

**Tampa, Florida**

**9:00 - 10:00 a.m.**

## LITERATURE CITED

Gregory, D.R., R.F. Labisky and C. L. Combs. 1982. Reproductive dynamics of the spiny lobster, Panulirus argus in south Florida. Trans. Amer. Fish. Society. 111:575-584.

Hunt, J.H. and W.G. Lyons, 1986. Factors affecting growth and maturation of spiny lobsters, Panulirus argus, in the Florida Keys. Can. J. Aquat. Sci. 43:2243-2247.

Lyons, W.G. 1986. Problems and perspective regarding recruitment of spiny lobster, Panulirus argus, to the south Florida fishery. Can J. Aquat. Sci. 43:2099-2106.

Powers, J.E. and D.L. Sutherland. 1989. Spiny lobster assessment, CPUE, size frequency, yield per recruit and escape gap analysis. Southeast Fisheries Center. Coastal Resources Contribution No. CRD-88/89-24. 73p.

Waters, J.R. 1989. Review of Florida's commercial trap fishery for spiny lobster. NMFS, SEFC. Memo. file rpt. 19p.

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