AMENDMENT 2

TO THE

FISHERY MANAGEMENT PLAN

FOR

CORAL AND CORAL REEFS OF THE GULF OF MEXICO

AND

SOUTH ATLANTIC

INCLUDING A FINAL SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT
REGULATORY IMPACT REVIEW
AND
INITIAL REGULATORY FLEXIBILITY ANALYSIS

JULY 1994

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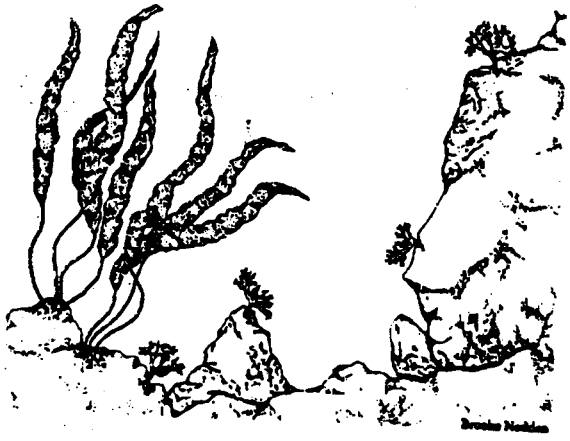

prepared by the
South Atlantic Fishery Management Council
in cooperation with the
Gulf of Mexico Fishery Management Council

JULY 1994

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ABBREVIATIONS AND ACRONYMS

CFMC	Caribbean Fishery Management Council
COE	Army Corps of Engineers
CVM	Contingent Valuation Method
DSEIS	Draft Supplemental Environmental Impact Statement
EEZ	Exclusive Economic Zone
FDEP (=FDNR)	Florida Department of Environmental Protection (successor to Florida Department of Natural Resources)
FMFC	Florida Marine Fisheries Commission
FMP	Fishery Management Plan
FMRI	Florida Marine Research Institute
GMFMC	Gulf of Mexico Fishery Management Council
IRFA	Intial Regulatory Flexibility Analysis
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OCS	Outer Continental Shelf
OY	Optimum Yield
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SAFMC	South Atlantic Fishery Management Council
SPL	(Florida) Saltwater Products License
TCM	Travel Cost Method

LIST OF ACTIONS IN AMENDMENT #2 TO THE FISHERY MANAGEMENT PLAN FOR CORAL AND CORAL REEFS OF THE GULF OF MEXICO AND SOUTH ATLANTIC

SAFMC ACTIONS: **PAGE**

SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (COVER SHEET)

( ) Draft (X) Final

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Abstract:
The proposed management program for live rock in the South Atlantic region involves the following actions: (1) Define live rock and add it to the Coral FMP management unit. Live rock is defined as living marine organisms or an assemblage thereof attached to a hard substrate (including dead coral or rock); (2) Redefine allowable octocorals to mean erect, non-encrusting species of the subclass Octocorallia, except the prohibited sea fans *Gorgonia flabellum* and *G. ventalina*, including only the substrate covered by and within one inch of the holdfast; (3) Provide for different management in the jurisdictional areas of the two Councils by promulgating a separate set of management measures and regulations for the South Atlantic; (4) Prohibit all wild live rock harvest north of Dade County Florida, and prohibit chipping throughout the jurisdiction of the South Atlantic Council immediately. Cap wild harvest at 485,000 pounds annually until January 1, 1996 when all wild harvest will end; (5) Allow and facilitate aquaculture in the Exclusive Economic Zone; (6) Require harvest permits. In addition to any applicable state license or permit, a federal permit is required for the harvest and possession of wild live rock in the Exclusive Economic Zone during the phaseout period. Permits shall be limited to persons who have commercially landed and, where required, reported wild live rock landings prior to the control date of February 3, 1994; (7) Require a permit for the possession or harvest from aquaculture operations in the Exclusive Economic Zone. Such a permit will be required in order to harvest or possess live rock from an aquaculture site. Harvest from the area may only be done by the permittee or his written designee and an administrative fee will be authorized for the permit; (8) Require a federal permit for harvest and possession of prohibited corals and prohibited live rock from the Exclusive Economic Zone for scientific, educational, and restoration purposes; and (9) Establish an optimum yield (OY) for wild live rock which is to be 485,000 pounds annually for the South Atlantic region where harvest is allowed during 1994 and 1995, after which it is to be zero except for that which may be allowed by permit.

The notice of public hearings and request for comments on draft Amendment #2, which included a Supplemental Environmental Impact Statement, Regulatory Impact Review, and Initial Regulatory Flexibility Analysis, was published on December 14, 1993 in the Federal Register (FR Doc. 93-30474). A formal notice of intent to prepare a DSEIS was published in the Federal Register on January 14, 1994 (FR Doc. 94-946). An emergency interim rule implementing some of the measures contained in this document was published in the Federal Register on, and had an effective date of June 27, 1994 (FR Doc. 94-15467) (Appendix K).

Comments requested by: OCTOBER 21, 1994

SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

This integrated document contains all elements of the Plan Amendment, Supplemental Environmental Impact Statement (SEIS), Regulatory Impact Review (RIR), and Initial Regulatory Flexibility Analysis (IRFA). The table of contents for the SEIS is provided separately to aid the reviewer in referencing corresponding sections of the Amendment.

SUMMARY

Live rock is a calcareous material containing an assemblage of living marine organisms. It is harvested by hand from the substrate by divers and is sold for use in marine aquaria. The level of harvest accelerated in the 1980s, with almost all production harvested off Florida. Resource managers in Florida became concerned with the removal of hard bottom habitat and the resulting impacts on other marine species. The State of Florida prohibited harvest in state waters in 1989. The SAFMC has determined that the removal of wild live rock constitutes removal of essential hard bottom fishery habitat and is in violation of existing SAFMC habitat policies. The Council is proposing management of this resource by prohibiting wild harvest, encouraging aquaculture, and allowing a phaseout of wild harvest to moderate socioeconomic impacts. Issues and concerns to be addressed in the Supplemental Environmental Impact Statement (SEIS) are: what are the direct and indirect effects of live rock harvests on substrate availability and reef fish productivity? (Habitat Loss); how will restrictions on live rock harvests affect the aquarium trade? (Aquarium Sales); how can we ensure the viability of the entire coral reef ecosystem? (Ecosystem Management); how does the continued collection of live rock affect non-consumptive users/divers? (Aesthetic Values); and what is the most consistent management regime for live rock in the Exclusive Economic Zone, state waters, within protected zones such as National Marine Sanctuaries, state, and federal parks? (Consistent Regulations).

DRAFT STATEMENT TO EPA: MAY 20, 1994
FINAL STATEMENT TO EPA: OCTOBER 14, 1994

1.0 INTRODUCTION

This document is organized to track the November 1993 public hearing draft so the public and reviewers may easily compare information between the two documents. This amendment includes management measures for the South Atlantic Council's area of jurisdiction only. The Gulf Council will be submitting an amendment addressing management of live rock within their area of jurisdiction later in 1994.

A. Description of the Fishery

Live rock is harvested by divers who selectively pick up loose rubble from the bottom or chip portions of limestone outcrops or reef structure which does not have corals or the prohibited sea fans. Many collectors concentrate their efforts in the rubble zone but a component of the industry chisels live rock from coral reef substrates to capture the non-coral component (George Schmahl, Manager, Looe Key National Marine Sanctuary, pers. comm. 1994). Harvesters maintain that they do not remove large quantities from a single site, but range over wide areas of hard bottoms choosing aesthetically pleasing pieces that would beautify aquaria.

Live rock was first marketed in the 1970s, but the fishery expanded greatly in the 1980s and early 1990s to meet increasing demand for public and private marine aquaria. Technical advances in saltwater aquarium filtration systems during the mid-1980s led to the feasibility of so-called "mini-reef" systems dominated by invertebrates. These organisms and nitrogen-fixing bacteria serve as a form of filtration to reduce toxins and filter out excess organics as they feed (Blackburn, 1988). Demand for ornamental fish began to include "live rock," consisting generally of calcareous substrates encrusted with a variety of living marine organisms. Rubble rock is used as a base in saltwater aquaria to improve filtration. The filtration capabilities of coral rubble depend on the presence of a complex assemblage of micro-organisms, bacteria, larval forms of coral, and other macro-invertebrates.

Before the mid-1980s, marine aquarium hobbyists concentrated on tropical fish rather than invertebrates. In recent years, however, experienced hobbyists have been able to establish "mini-reef " aquarium systems using live rock and associated invertebrates. By the late 1980s, the Florida Marine Patrol estimated that about 6,000 pounds of live rock left Miami International Airport daily (Wheaton, 1989; FMFC, 1991).

The SAFMC at their June 1989 meeting received a briefing and testimony on the occurrence of removal of hard bottom structure ("live rock") from the sea floor for the aquarium trade. Subsequent to that meeting the Council requested NMFS Southeast Regional Director to provide the Council with a report on the details of live rock removal activities (NMFS, 1989). The NMFS Southeast Fisheries Center provided the Council with a preliminary report on the live rock harvest industry in August 1989. According to the report, approximately 300,000 pounds of rubble rock and 160,000 pounds of decorative rock were landed in Florida in 1988 by 25 to 30 persons holding U.S. Army Corps of Engineers dredge permits.

The Council convened a joint snapper grouper and habitat committee meeting during the June 1990 meeting in Key West, Florida, to receive additional testimony on live rock harvests and to determine which committee would review the issue. In conjunction with the meeting, Council members accompanied live rock harvesters on a field trip to dive on a harvest area. The SAFMC, after receiving the NMFS report and additional input from harvesters at the December 1989 and June 1990 meetings, determined live rock was a habitat issue to be addressed by the habitat and environmental protection committee. The Council requested the State of Florida clarify their position regarding live rock harvest. The intent was to determine if the localized activity could be addressed at the state level without having to develop an amendment under an existing plan or development of a new fishery management plan which would take a great deal longer.

In April 1990, Florida began a licensing and reporting system for live rock landings from the Exclusive Economic Zone. In the first year, landings increased 68 percent, but this is likely an artifact of the new reporting system. Some commercial live rock is encrusted with "showy" macro-organisms to form a "mini-reef" system. These include categories such as sea mat, serpulid rock, gorgonian rock, and false coral. Between 1991 and 1992, reported landings in Florida increased by one-third (FDEP, 1993). Florida landings of live rock in 1991 were composed of 41 percent rubble rock, 35 percent algae rock (or rubble rock with algae), and 9 percent serpulid (worm tube) rock with sea mat, false coral, and gorgonian rock comprising the remainder.

Harvesters who testified at SAFMC public hearings or submitted written comments to the Council during informal review, reported that live rock is extremely important to the "mini reef " component of the marine aquarium industry of Florida. Harvesters and dealers estimated that, without the sale of live rock, companies and individuals could lose a large percentage of gross revenue, since live rock is very important in stimulating sales of related marine life products. In testimony at the SAFMC public hearing in Duck Key, Florida, dealers and harvesters indicated that there are presently other sources of live rock entering the aquarium market including imports and aquacultured rock.

Live rock removals are concentrated in only a few areas, primarily off South Florida (Figures 1 and 2, and Appendix F). About 40 percent of the 1992 landings were recorded along a 40 mile stretch of reef in the Florida Keys between Tavernier and Duck Key (FDEP, 1993).

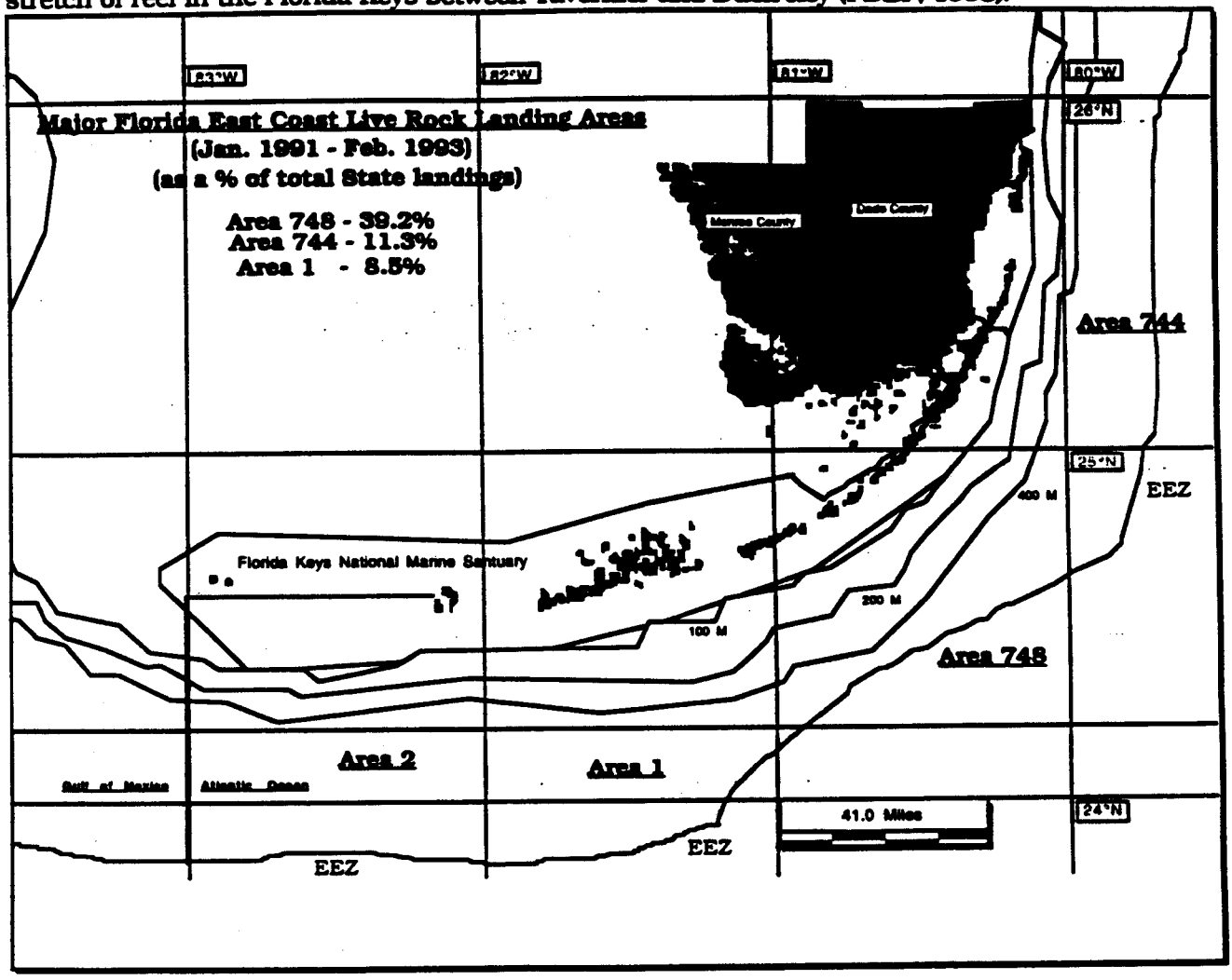


Figure 1. Major Florida east coast live rock landing areas (Source: FDEP, 1994).

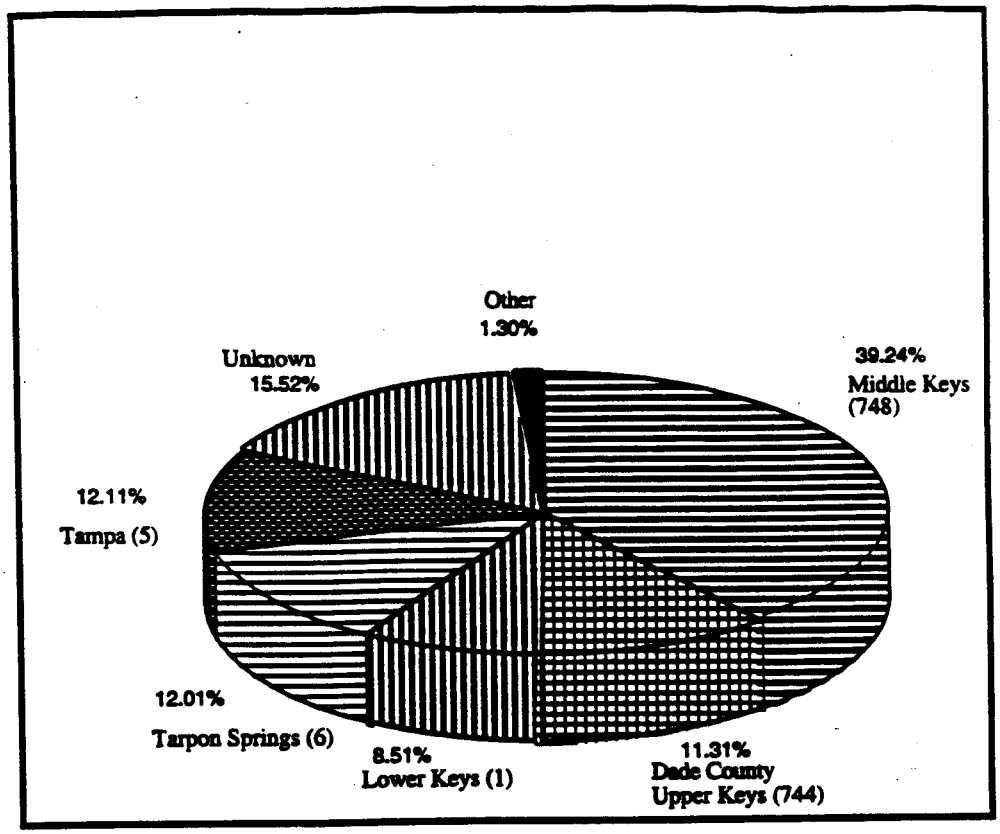


Figure 2. Landings of live rock by collection area from the Exclusive Economic Zone off Florida (Jan. 1991-Feb. 1993)(Source: FDEP, 1993).

Most of the live rock collectors are in the marine life fishery, which also harvests tropicals, invertebrates, and algae for the aquarium trade. The collection of live rock is only a part of the commercial marine life fishery in the Florida Keys which between 1990 and 1992 annually harvested an average of 260,000 fish, 797,000 invertebrates, and 27,000 units of algae in addition to live rock in Monroe County, Florida(Bohnsack et al., 1994) (Appendix F). Florida Department of Environmental Protection records show about 102 harvesters were permitted and reported landings in 1993.

By 1992, harvest levels had increased from a reported 600,000 pounds to about 800,000 pounds. In the period January through November of 1993, with no harvest allowed in March, 825,000 pounds were landed (FDEP, 1994). Monthly landings have continually increased in 1993 over 1990 (Figure 3).

Collectors, dealers, and hobbyists, testifying at the SAFMC scoping meeting in Duck Key, Florida on June 23, 1993 stated that the presence of live rock is necessary to maintain a balanced marine aquarium.

Live rock has been cultured in closed systems. Mike McMaster, a member of the SAFMC coral advisory panel, indicated that he has cultured what is known as decorator rock or the more showy live rock. During an advisory panel meeting in January 1994 he indicated that he has been experimenting with culturing those specific types of rock.

Decorator rock requires more time to produce compared to base or rubble rock but the value is much greater. "EcoActivity", a company based out of Virginia, which submitted a letter to the SAFMC, is exclusively raising live rock in closed systems along with tropical fish and marketing the system as a franchise.

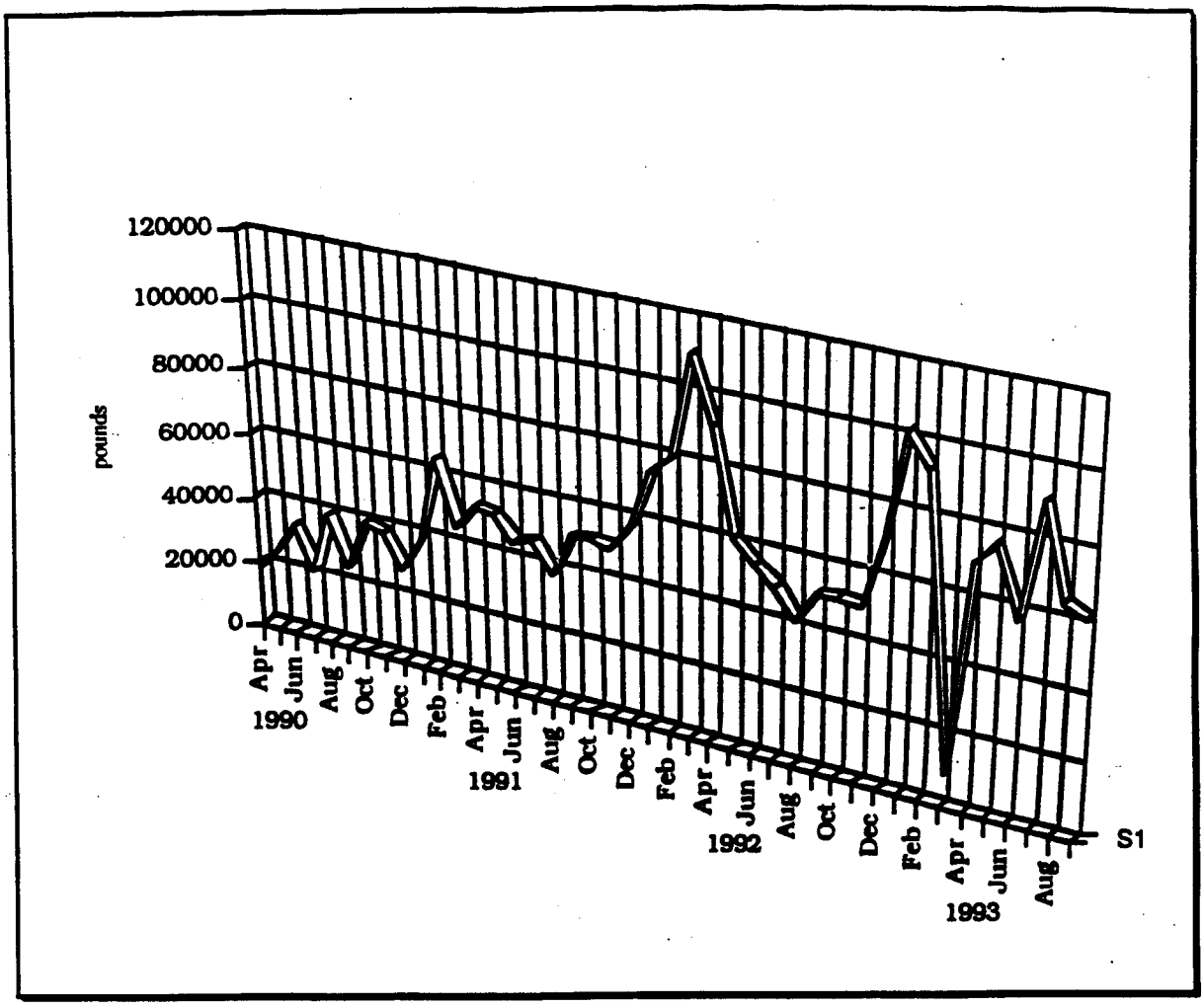


Figure 3. Monthly landings of live rock from the Exclusive Economic Zone off Florida (Source: FDEP, 1994).

Testimony at public scoping meetings and hearings from members of the industry and dealers indicate that live rock is now being air shipped throughout the United States,and to Canada and England. The marine aquarium hobby at first concentrated on fishes because neither the equipment nor the technology allowed keeping other organisms. Gradually, as technology and equipment improved, more and more invertebrates were kept alive successfully. In recent years, the development of "Living Reef" aquarium systems that are able to maintain stable environments in closed-system aquaria has enabled aquarists to set up and maintain mini reefs. Florida's live rock landings in 1992 reached almost 800,000 pounds (FDEP, 1994). During 1992, 50% of the landings were reported by 11 collectors and 75% of all landings were reported by only 24 collectors (Martha Norris, FDEP, pers. comm., 1994). Landings in the South Atlantic exceeded 548,000 pounds in 1992 with the majority coming from the Florida Keys. Monthly landings of live rubble rock from Dade and Monroe Counties, Florida, showed a significant increase between 1992 and 1993 (Figure 4).

About 76 percent of the 1992, and 93 percent of 1993 live rock landings for Dade and Monroe Counties, Florida was rubble or algae rock (Figure 5). Rubble rock and algae rock are similar according to many live rock dealers (Martha Norris, FDEP, pers. comm.,1994).

The wholesale (exvessel) value of live rock, as reported in the Florida trip ticket system, varies by location and with encrusting organisms. For 1992, average price per pound was $0.98 for algae rock, $1.52 for false coral, $1.44 for gorgonian rock, $1.00 for rubble rock, $1.48 for sea mat, and $1.50 for serpulid rock (FDEP, 1994).

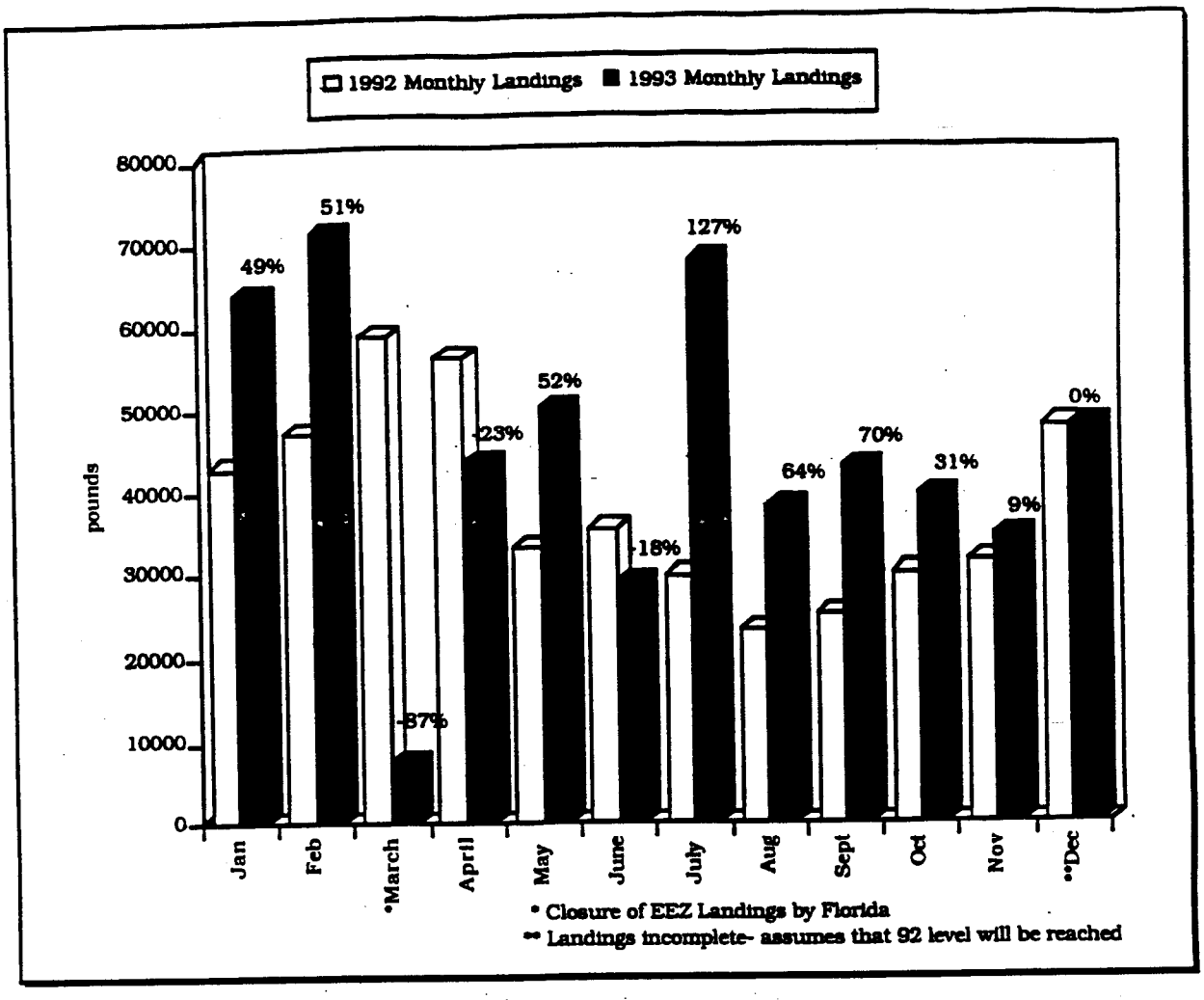


Figure 4. South Atlantic (Dade and Monroe Counties, Florida) rubble live rock landings, percent change by month 1992/1993 (Source: FDEP, 1994).

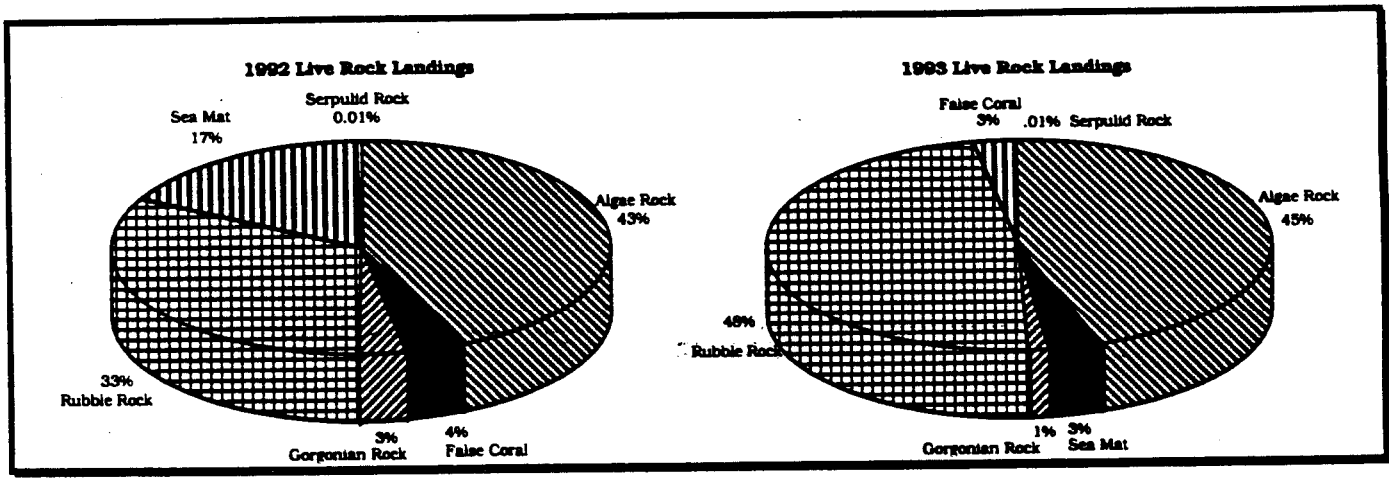


Figure 5. Live rock landings for Dade and Monroe Counties, Florida, by category (1992 and 1993) (Source: FDEP, 1994).

The following is an excerpt from the minutes of a presentation on the Status of Live Rock Harvest given by Jennifer Wheaton, staff biologist with the Florida Department of Environmental Protection, to the SAFMC Habitat and Environmental Protection Committee in Duck Key, Florida on June 23, 1993. It is included to provide additional detail on the fishery as prosecuted in Federal waters off Florida.

"She wants to give brief background information on the fishery itself. Some of what she is going to talk about was presented in her 1989 assessment of the fishery; that was based on input from the fishermen at a meeting in Tallahassee. This particular fishery evolved with the use of marine rocks for natural systems in the burgeoning aquarium industry, in what they call the mini reef systems. ..... Most of the home aquariums that people have live rock in are not nearly this size. Live rock is a broad term that was coined mostly by marine life fishermen, and a lot of them were based in the Florida Keys, for several types of substrate that is colonized by marine organisms. Any time we want to manage anything we have to break it down into parts and look at it in a different way. The first four types of live rock shown, rubble rock, algae rock, sea mat, and false coral, were basically the first four types that were identified by the fishery. Rubble rock is also called base rock; algae rock is also called plant rock; sea mat rock is sometimes called anemone rock; false coral rock is also sometimes called anemone rock. Gorgonian rock was lumped in a category called decorator rock, and this was more associated with what used to be the chipped portion. Serpulid rock is also called worm rock. She wants you to understand that all these types of rocks have a whole association of other organisms that are associated with it, and that the name of the rock, because there are so many other things on it or in it, really is just an artificial grouping or way of reporting what is happening in the landings. She showed codes that are used by the Florida Trip Ticket System. The rocks are then categorized by the reporting codes, and that is how the landings are developed. The main thing she wants you to understand, whether it is a scientific name or a common name, these types are interchanged by the fishermen, they are interchanged by managers. The main categories are the base and rubble rock, which is one major category, but it is also different between the West Coast and the East Coast. ...

She explained that rubble rock is a totally different "animal" than the rubble rock collected in the Florida Keys as far as how the two systems work. A great deal of the habitat in the Gulf consists of very low lying hard bottoms, and a large portion of the West Coast fishery is chipped rocks or it is excavated. It does not exist lying in rubble piles as it does in the Florida Keys. She has done studies on the meter square bottom where the coral species does not occur and this is one of the problems on the West Coast because the majority of rubble rock contains live coral. There has been a good deal of contention over this because it grows in single coral polyps and it is a violation according to the Magnuson Act to collect it with live rock. She said it is very difficult to harvest live rock in this area without getting the single coral polyp as well. They grow on the underside of the rock down in crevices where they may be hidden by algae or sponge. She pointed out that in the Gulf there are gorgonians that are attached by nothing more than a piece of shell hash. Ms. Wheaton said Christmas Tree worms grow on old relic shoreline that has a carbonate veneer. They encrust and grow over the limestone on the West Florida shelf. In order to collect the Christmas Tree rock, it is necessary to collect the entire rock; they cannot be collected separately. Christmas Tree rock is in great demand in the aquarium industry.

She said in 1988 and 1989 the Army Corps of Engineers received a permit request in Miami to excavate live rock. It was referred to the District Office and it was decided it could be regulated under a nationwide permit for excavation that allowed dredging of up to 10 cubic yards. The marine life fishermen began requesting multiple permits for excavation. The marine patrol officers were called by Miami International Airport to look at shipping crates that were labeled tropical fish; however, the crates were too heavy to be tropical fish. When they investigated they found large quantities of live rock with live coral attached. This incident prompted the State of Florida to look into what the live rock fishery really is and what is really going on there. In March 1989, the state began a formal inquiry and held a scoping meeting. The marine life fishermen brought examples of what types of rock they harvested and reported on where they had collected them. They also identified other fishermen in the fishery and what they projected the increase in their harvest to be. It was anticipated that landings would only increase about 15% per year. On the basis of that information and that the state considered it as mining of state submerged lands, they banned the activity in state waters in May of 1989. They did not do any extensive research, but they arbitrarily decided it was mining state lands and banned the activity. Immediately the harvest shifted to the EEZ and it was considered a civil violation if rock containing coral was harvested. At the end of 1989, the Army Corps of Engineers revised their permit policy so that it became a federal issue and they did not issue any more permits. In 1990 the issue of live rock fishery management was relegated to the Florida Marine Fisheries Commission and they began tracking the landings through the Florida trip ticket system. The Gulf Council and the South Atlantic Council waited to see what the decision was of the Marine Fisheries Commission regarding live rock harvest. In March 1991, the Marine Fishery Commission held public hearings and the public presented their testimonies and evidence. The state landings were inaccurate

and they were under reported. She said the landings of 1990 did not take into account the peak winter season that the fishery has. Another problem was that a lot of the wholesale dealers did not report the landings and some trips went unreported. The state's system of landings could only be as good as the people who report to it, and the state has tried to track down landings the best they could. Prior to 1991 the monthly landings never exceeded 40,000 pounds, which is notable if you are looking at the increase in the fishery since 1991.

She said rubble rock and algae rock make up 75% of what the fishery takes under normal conditions. She said in February 1992, they had a final public hearing on the matter and in April 1992, the Florida Marine Fisheries Commission voted for a phase-out, but they made an exception for aquaculture. When the rule was published in July 1992, the live rock harvest in state waters was prohibited with a 500 pound daily landing limit and season limits for the three years before total prohibition. These figures were based on 25% reduction in landings per year assuming the reported landings were accurate. The annual quota of 225 tons was reached in February, which is the peak collecting month for the fishery. In March 1993, the marine life fishermen gained an injunction against the enforcement of the phaseout.

...She referred to a previous table she had displayed to the committee; in April of 1990, landings never exceeded 40,000 pounds. However, since 1991, they have never been less than 40,000 pounds, which depicts a constant increase in the monthly landings. She said there were more landings during the winter months and they were in their peak again when they reached the quota four months early. She said they needed to realize that if 40,000 pounds is the maximum monthly landings in 1990 it has more than doubled. The landings reflect that the fishery consistently harvests more than 15%, which is what has been maintained. The areas of collection have not changed. She referred to an area north of Marathon to Tavernier and she said 40% of the landings are coming specifically from that area. Collections have historically been harvested by small boats of less than 30 feet. It stands to reason that based on the weight they carry and the gas consumption, these boats will not go very far south to Key Largo National Marine Sanctuary, where it is prohibited to land live rock. The fishery is divided into two major areas and the harvest is concentrated there. She said the majority of the landings are coming from an area of 40 miles off the outer reef system in the Florida Keys. The most landed marine life organisms are live rock algae, live rock rubble, live rock sea mat, live rock false coral, and live rock serpulid rock. If the fishermen contend they are not fish collectors they are telling the truth because they are not targeting fish species. They are targeting invertebrates and rock substrate. The two biggest categories collected in 1992 were algae rock and rubble rock that weighed approximately 277 tons."

B. Purpose and Need

With the recent development of technology to maintain marine aquaria, a market developed for calcareous material to decorate the tanks and to maintain the proper water chemistry. This material, composed mostly of calcium carbonate and the attached marine life, occurs naturally off the South Atlantic and Gulf coasts and consists of coral reef rubble and limestone. Coral reefs and hard corals are protected by federal and Florida regulations; taking or damaging coral and coral reefs is prohibited. The Council has determined that the removal of wild live rock, although being prosecuted as a fishery now, constitutes removal of fishery habitat, is in violation of the approved Council habitat policy (Appendix B), and must end. Subsequently, the Council voted to prohibit removal of wild live rock to protect coral, coral reefs, and hard bottom habitats in the South Atlantic region.

This amendment will provide additional protection to coral reefs and hard bottoms by prohibiting the removal of wild live rock by a date certain and allowing an additional transitional period for harvesters to convert production to aquaculture thereby moderating socioeconomic impacts. The Council has determined that live rock, whether it is broken off of reefs or limestone outcrops, or whether it is collected as loose rubble associated with mainly coral reef tracts, is removal of fishery habitat. Live rock is at least as useful in the reef and live bottom ecosystems as it is in marine aquaria, acting as a substrate essential for colonization of sessile organisms including prohibited coral (FMFC, 1991). It also serves as habitat for motile species of reef fish and invertebrates. The Council's Habitat and Environmental Protection Advisory Panel, scientific representatives on the Coral Advisory Panel, and National Marine Fisheries Service have noted that wild live rock is a nonrenewable resource. Thus, adverse impacts can be expected on hard bottom habitat from a continuation of live rock

harvests at current levels. The FMFC estimated that the 1991 harvest resulted in the loss of at least 0.39 acre of hard bottom surface (4 inches deep). Based on estimated growth rates for coral reefs, these mini-reefs probably grow extremely slowly, if at all (FMFC, 1991; CFMC, 1994).

In 1989, the Florida Department of Natural Resources (FDNR) (now Department of Environmental Protection) determined that live rock harvest (i.e., the collection of rocks with marine organisms attached for use in home aquaria) was detrimental to the Florida reef tract and other hard bottom habitat areas (Wheaton, 1989). Accordingly, Florida prohibited live rock landings from state waters in May, 1989. However, effort shifted to the Exclusive Economic Zone off Florida (FMFC, 1991).

The Council deferred to state action at that time because state management achieved the desired result. The Florida Marine Fisheries Commission (FMFC) had decided to begin rulemaking regarding live rock landings from the Exclusive Economic Zone off Florida (FMFC, 1991). During the course of its rulemaking in 1991, the FMFC noted that approximately 35 individuals were reporting landings of about 600,000 pounds of live rock from waters adjacent to the Florida reef tract, Florida's east coast reefs, and the west central coast (FMFC, 1992). Reported landings in 1992 totaled about 800,000 pounds (FDEP, 1994).

Beginning in March 1991, FMFC held five public hearings and two workshops throughout the state regarding the impacts of live rock harvests on coral conservation, habitat preservation, and the effects of harvest restrictions on the marine aquarium industry. During its rulemaking the FMFC noted that the only current net production of carbonate substrate underlying live rock occurs on living coral reefs. In Florida, these areas are either in equilibrium or eroding. FDNR personnel testified that more than 90 percent of live rock examined at the request of enforcement agents contained visible colonies of prohibited corals. The FMFC concluded that live rock removal (1) can violate state and Federal laws that prohibit the taking of corals, (2) reduces the surface area and topographic complexity of Florida's coral reefs and other live bottom areas, and (3) removes entire micro-communities along with targeted aquarium species.

The Councils, along with other state and Federal agencies, also received a petition in June of 1991 from Project ReefKeeper requesting rulemaking action to prohibit the taking and landing of live rock within the Councils' areas of jurisdiction. The purpose of the request was to protect coral reefs and their associated marine life (Stone, 1991). The Council and NMFS advised Project ReefKeeper that they were deferring action to obtain additional data and that the State of Florida action (prohibition after phase out) would address their concern.

In April 1992 at a joint Habitat and Environmental Protection Committee and Advisory Panel Meeting, Roy Williams (FMFC) presented the FMFC position on live rock harvest and is included in Appendix H.

In June 1992, the Florida Governor and Cabinet approved the FMFC rule to phase out live rock landings from the Exclusive Economic Zone over a 3-year period, ending on June 30, 1995. The phase-out period was designed to allow development of live rock aquaculture which would be exempt from the harvest ban. The phase-out was to be accomplished by a 25 percent annual reduction in landings (based on the 1991 reported landings of 600,000 pounds accompanied by a 500 pound daily vessel limit. The quotas set were 450,000 pounds for 1993, 300,000 pounds in 1994, and 150,000 pounds in 1995. A July 1- June 30 season was established, and the 1993 quota was filled by February 12, 1993 when the fishery was closed and landings or possession of live rock was prohibited.

On March 31, 1993, a U.S. District Court Judge issued a preliminary injunction to prevent enforcement of the state's quota or vessel landing limits relating to possession or landing of live rock taken in the Exclusive Economic Zone. Florida live rock fishermen argued that the Magnuson Act supersedes state landing laws and that the Council had made "an affirmative

and conscious decision" not to prohibit the taking of live rock in the Exclusive Economic Zone. The Council had deferred action because implementation of a phaseout of live rock landings by the State of Florida addressed what appeared to be a localized management issue. Subsequently, the South Atlantic Council became concerned that the removal of live rock from the Exclusive Economic Zone was now unregulated, and there was now interest in the harvest of live rock from North Carolina through Florida.

In April 1993 the Council approved a motion to include live rock in the Coral Fishery Management Plan and reactivate the South Atlantic Coral Advisory Panel. In June 1993 the SAFMC held a public scoping meeting in Duck Key, Florida to solicit input from the harvesters and general public on management of live rock. In addition, the Council published notice of a February 3, 1994, control date to accomplish two things. First, it would put all active harvesters and people interested in entering the fisheryon notice that the Councils were developing regulations to manage live rock in the Exclusive Economic Zone. Second, that the Council would consider all options from total prohibition to a limited entry system. Persons entering the commercial fishery for live rock in the Exclusive Economic Zone after that date were not assured of future access to the fishery if a limited access regime was implemented in the future.

Live rock landings for states other than Florida are not available. However, live rock landings are believed to occur in Alabama, North Carolina, and South Carolina. In addition, during the Council's deliberations on live rock, it was noted that a request had been made to the Georgia Department of Natural Resources for information on the distribution of live rock or hard bottom off Georgia with the intent of identifying possible harvest locations. NMFS recently received a request for licensing information for a new business planning to land live rock in North Carolina (R. Schmied, NMFS Southeast Regional office, personal communication). Live rock harvest is currently allowed in the Florida Keys National Marine Sanctuary, but... eventually may be restricted to only allow aquaculture in specific areas.

The SAFMC continues to be concerned over the uncontrolled nature of harvest activities in the Exclusive Economic Zone. In addition to monthly increases in landings of rubble rock in both Dade and Monroe Counties, Florida, the average pounds landed per trip has increased between 1992 and 1993 (Figure 6). For example, the average pounds of rubble rock landed per trip increased 79% in Monroe County between 1992 and 1993.

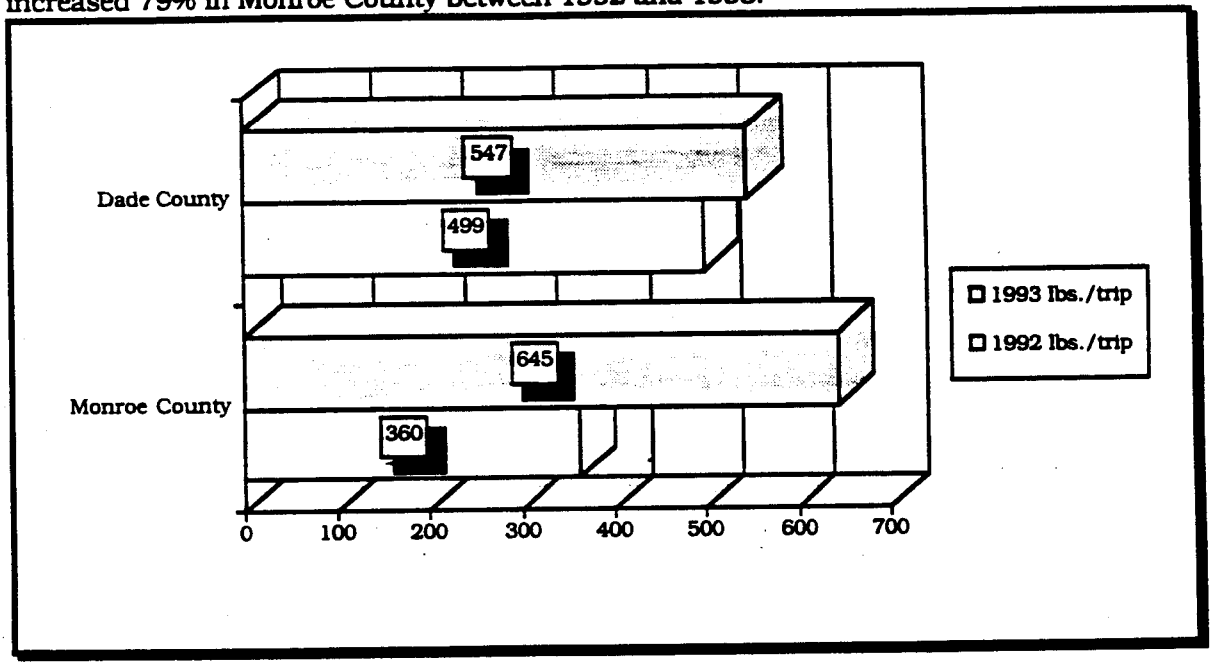


Figure 6. Change in average pounds per trip of rubble rock landed in Dade and Monroe Counties from 1992 to 1993.(Source: FDEP, 1994).

Coral Fishery Management Plan

The fishery management plan for Coral and Coral Reefs of the Gulf of Mexico and South Atlantic (GMFMC and SAFMC, 1982) was implemented in 1982 and amended in 1990 (GMFMC and SAFMC, 1990). The Coral and Coral Reefs FMP (GMFMC and SAFMC, 1982) identified the following (taken directly from the FMP):

The Fishery

The fishery for coral and coral reefs as addressed in this plan is located in the Gulf of Mexico, and the waters of the Atlantic Ocean from the Texas-Mexican border through North Carolina.

The Management Unit

The management unit consists of the coral and coral reefs of the fishery conservation zone (FCZ) of the Gulf of Mexico and South Atlantic Fishery Management Councils. Management measures in this plan will be recommended to adjacent states where appropriate.

The Species Included

A. Corals: the corals of the class Hydrozoa (stinging and hydrocorals) and the class Anthozoa (sea fans, whips, precious corals, sea pen and stony corals).
B. Coral Reefs: the hard bottoms, deepwater banks, patch reefs and outer bank reefs as defined in this plan.

Problems in The Fishery

1. Degradation of the stocks through natural and man-made impacts.
2. Limited scientific information on many species and many sections of the management unit, which includes the inability to assess the impact of coral harvest.
3. Susceptibility to stress because of corals being located at the northern limit of their distribution.
4. Inability of corals to escape stress because of their sedentary nature.
5. Complexity and inconsistency of management regimes.
6. Lack of adequate public understanding of the importance of coral and coral reefs.
7. Present lack of jurisdiction over most coral and coral reefs by a federal agency which has traditionally executed authority and jurisdiction.

Primary Management Objective

Optimize the benefits generated from the coral resource while conserving the coral and coral reefs.

Specific Management Objectives

1. Develop scientific information necessary to determine feasibility and advisability of harvest of coral.
2. Minimize, as appropriate, adverse human impacts on coral and coral reefs.
3. Provide, where appropriate, special management for coral habitat areas of particular concern (HAPCs).
4. Increase public awareness of the importance and sensitivity of coral and coral reefs.

5. Provide a coordinated management regime for the conservation of coral and coral reefs.

In this Amendment, the Council proposes to add one additional problem and modify objective number 2 as follows:

New Problem Number 8. The removal of live rock violates the SAFMC habitat policy by allowing the removal of essential hard bottom habitat or microcommunities which are important components of coral reefs or hard bottom habitats. These non-renewable habitats form the base of the food chain for commercially and recreationally important crustacean and finfish species under SAFMC management.

Revised Objective Number 2. Minimize, as appropriate, adverse human impacts on coral, coral reefs, live rock, and live bottom habitat.

THE FOLLOWING ISSUES ARE ADDRESSED IN THIS AMENDMENT
HABITAT LOSS - What are the direct and indirect effects of live rock harvests on substrate availability and reef fish productivity?
AQUARIUM SALES - How will restrictions on live rock harvests affect the aquarium trade?
ECOSYSTEM MANAGEMENT - How can we ensure the viability of the entire coral reef ecosystem and live hard bottom habitats in the South Atlantic region?
AESTHETIC VALUES - How does the continued collection or expansion of live rock affect non-consumptive users/divers?
CONSISTENT REGULATIONS - What is the most consistent management regime for live rock harvests in the Exclusive Economic Zone, state waters, and the National Marine Sanctuary?

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTIONS

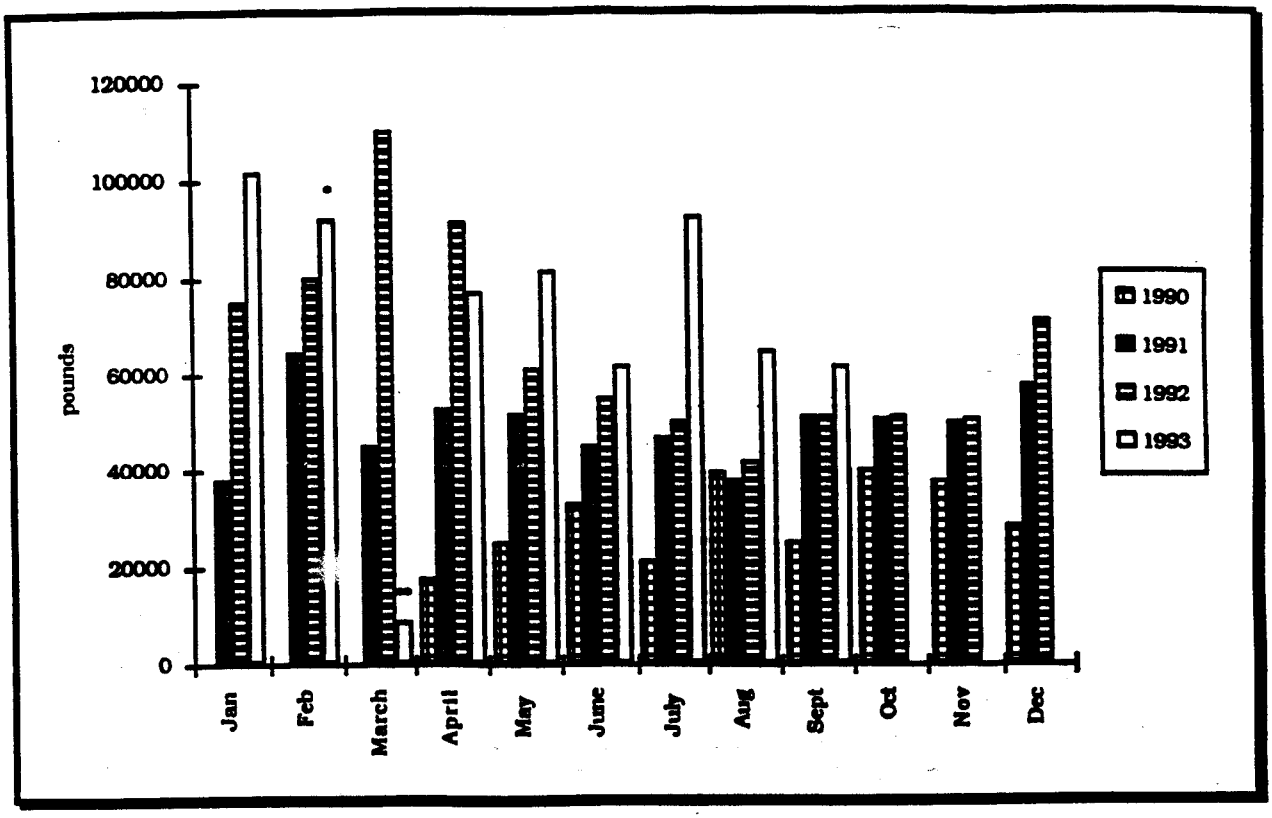
A. NO ACTION - STATUS QUO, NO MANAGEMENT OF LIVE ROCK; HARVEST IS UNREGULATED.

Discussion:
No action would continue the uncontrolled removal and inevitable expansion of the removal of wild live rock throughout the area of jurisdiction of the SAFMC. Taking no action at this time would jeopardize the State of Florida's prohibition and continue to complicate enforcement of state regulations. Based on activities in the Gulf of Mexico there is a demand for chipped hard bottom as live rock and there is a real possibility for expansion through federal waters off northeast Florida, Georgia, South Carolina, and North Carolina.

Expert testimony at meetings of the FMFC (FMFC, 1991 and 1992), the South Atlantic Council (June 1993 meeting), and Wheaton (1989) indicate that live rock harvests represent a consumptive use of an essentially non-renewable resource. In addition, live rock removals are concentrated in only a few areas, primarily off south Florida (Figures 1 and 2). About 40 percent of the 1992 landings were recorded along a 40 mile stretch of reef in the Florida Keys between Tavernier and Duck Key (FDEP, 1993). Thus, adverse impacts can be expected on hard bottom habitat from a continuation of live rock harvests at reported levels.

The FMFC estimated that the 1991 harvest resulted in the loss of at least 0.39 acre of hard bottom surface (4 inches deep). By 1992, harvest levels had increased from a reported 600,000 pounds to about 800,000 pounds. During the period January through July of 1993, with no harvest allowed in March, 500,000 pounds were landed (FDEP, 1993). Both monthly landings and average pounds per trip landed have increased in the major harvest areas of Dade and

Monroe Counties between 1992 and 1993 (Figure 6). Monthly landings on average have continually increased in 1993 over previous years (Figures 3, 4, and 7).



* State quota filled February 12, 1993
** March 31, 1993 Preliminary injunction preventing enforcement of state quota issued.

Figure 7. Trends in Monthly Live Rock Landings from the Exclusive Economic Zone off Florida (Source: FDEP, 1993).

The SAFMC's Habitat and Environmental Protection Advisory Panel developed a position statement which concluded: "It is the opinion of the majority of scientists familiar with the ecology of live rock habitats that continued harvest of 'wild rock' is resulting in a net loss of this important resource..." In addition, they referred to live rock as "... habitat of at least high value and, to a larger extent, critical value for a number of managed species including spiny lobster, reef fishes including the snapper/grouper complex, and state managed species such as "tropical species" for the aquarium trade."

No action may have the long term consequence of negatively impacting habitat and compromising management measures implemented in other federal fishery management plans.

The Council rejected this alternative because it was determined that live rock harvest constituted the removal of a non-renewable resource. The chipping of hard bottom and reef areas without corals or prohibited sea fans is unacceptable and in direct violation of the South Atlantic Council, NMFS, and NOAA habitat policies. The continued removal of microcommunities of rubble rock also represents habitat removal and violates the SAFMC policy directing a net gain of habitat (Appendix B).

B. DEFINITION OF THE MANAGEMENT UNIT

The management unit already consists of the coral and coral reefs of the Exclusive Economic Zone within the jurisdiction of the Councils. The species already included in the management unit are:

a. Corals: the corals of the Class Hydrozoa (stinging and hydrocorals) and the Class Anthozoa (sea fans, whips, precious corals, sea pens, and stony corals).

b. Coral Reefs: The hard bottoms, deep-water banks, patch reefs, and outer bank reefs.

B.1. Definition of Live Rock and Addition to the Coral FMP's Management Unit

Additions to the management unit:

B.1.a. ACTION 1 Live rock: Living marine organisms or an assemblage thereof attached to a hard substrate (including dead coral or rock). For example, such living marine organisms associated with hard bottoms, banks, reefs, and live rock may include, but are not limited to:

- **Sea Anemones (Phylum CNIDARIA: Class Anthozoa: Order Actinaria)**
- **Sponges (Phylum PORIFERA)**
- **Tube Worms (Phylum ANNELIDA)**
  - **Fan worms**
  - **Feather duster worms**
  - **Christmas tree worms**
- **Bryozoans (Phylum BRYOZOA)**
- **Sea Squirts (Phylum CHORDATA)**
- **Marine Algae**
  - **Mermaid's fan and cups (*Udotea* spp.)**
  - **Corraline algae**
  - **Green feather, green grape algae (*Caulerpa* spp.)**
  - **Watercress (*Halimeda* spp.)**

Discussion:
Live rock must be defined in order to be included in the management unit, . The Councils are authorized to develop management plans for fisheries (composed of stocks of finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds). This definition aptly describes live rock and conforms to those animals and marine life forms subject to management under the Magnuson Act. Individual mollusc shells (scallops, clams, oysters, etc.) are not intended to be included in the definition as hard substrate.

Live rock is included in the management unit in order to provide additional protection to coral reefs in the Florida reef tract and rock ledges and hard bottoms elsewhere. Although damaging coral reefs is currently prohibited, enforcement has been difficult in the absence of possession of living coral.

B.1.b. Rejected Alternative: Live Rock: Certain living marine organisms or an assemblage thereof attached to a hard substrate (including dead coral or rock). Such Living Marine Organisms associated with Hard Bottoms, Banks, Reefs, and Live Rock may include:

- Sea Anemones (Phylum CNIDARIA: Class Anthozoa: Order Actinaria)
- Sponges (Phylum PORIFERA)
- Tube Worms (Phylum ANNELIDA)
  - Fan worms
  - Feather duster worms
  - Christmas tree worms
- Crustaceans (Phylum ARTHROPODA: Class Crustacea)
  - Cleaner shrimp

Decorator and hermit crabs
Molluscs (Phylum MOLLUSCA)
Snails
Nudibranchs
Bivalves: scallops, oysters, clams, mussels
Echinoderms (Phylum ECHINODERMATA)
Starfish
Brittlestars and feather stars
Crinoids
Sea Urchins
Bryozoans (Phylum BRYOZOA)
Sea Squirts (Phylum CHORDATA)
Marine Algae
Mermaid's fan and cups (*Udotea* spp.)
Corraline algae
Green feather, green grape algae (*Caulerpa* spp.)
Watercress (*Halimeda* spp.)

Discussion:
The definition is similar to Action 1 but includes, as examples, some crustaceans, molluscs, and echinoderms which may be present on the live rock but are not attached to it. These species comprise the bycatch of live rock. The Coral Advisory Panel recommended that the definition be limited to organisms attached to the rock for purposes of defining material that is harvested. The Council in their deliberations had originally intended the list to represent a sample of benthic organisms that may be found associated with the live rock habitat.

The Council rejected this alternative because the revised definition limited the description to actual organisms that were removed with the rock.

B.1.c. Rejected Alternative: Live Rock: Biogenic rock attached to or in close association with hard bottom communities on or in which marine organisms (sessile attached benthos) or an assemblage thereof are growing.

Discussion:
The Council was provided this alternative definition developed at the January meeting of the Coral Advisory Panel. NMFS staff indicated that this alternative did not adequately describe material removed because not all live rock removed at this time is considered biogenic, or originating from previously living organisms (e.g., chipped rock outcrops).

The Council rejected this alternative because the approved definition B.1.a encompassed all material harvested and was more legally defensible according to NOAA General Counsel.

B.2. Redefinition of Allowable Octocorals

B.2.a. ACTION 2: Allowable octocorals means erect, non-encrusting species of the subclass Octocorallia, except the prohibited sea fans *Gorgonia flabellum* and *G. ventalina*, including only the substrate covered by and within one inch of the holdfast.

Discussion:
Any restrictions on live rock harvests will affect harvest of octocorals allowed under the FMP since most octocorals taken for the marine aquarium trade are removed with some attached substrate. A redefinition of "allowable octocorals" clarifies that only individual colonies, and not whole rocks, may be taken under the octocoral quota. A small portion of the rock (within one inch) is allowed to provide a suitable anchor for the octocoral. Harvest of encrusting octocorals (i.e., primarily *Briareum* and *Erythropodium spp.* or "gorgonian live rock") involves removal of the entire substrate and thus is defined as harvest of live rock rather than allowable octocorals. It is the Council's intent that only small hand tools be used for harvest.

B.2.b. Rejected Alternative: No change.

Discussion:
When the harvest of live rock is prohibited, the possession of a small portion of the substrate around the holdfast would cause enforcement problems. The substrate provides an anchor for the octocoral in the aquarium.

The Council rejected this alternative because removal of entire live rocks with attached octocorals would compromise enforcement of the State of Florida's and Federal prohibition of live rock removal, and complicate tracking of the existing octocoral quota.

B.2.c. Deferred Alternative: Prohibit all octocoral harvest in areas north of Florida.

Discussion:
The Council received comment from the South Carolina Wildlife and Marine Resources Department requesting the Council consider, in the redefinition of allowable octocorals, prohibiting any octocoral harvest because it constitutes removal of limited live bottom habitat. Dr. Robert Van Dolah and other members of the coral advisory panel, during the panel meeting in January 1994, voiced opposition to the allowance of octocoral harvest offshore of South Carolina and areas north of Florida because the octocorals and associated sponges attached to the limestone outcrops constitute the majority of essential live hard bottom in the region.

The Council deferred action at this time because NOAA General Counsel noted that the measure was more stringent than what was being proposed and did not go to public hearing. Hence, the issue would require additional public hearings or need to be addressed in a subsequent amendment. The SAFMC will address this issue in the development of a future amendment.

C. MANAGE LIVE ROCK HARVESTS

C.1. ACTION 3: Provide for different management in the jurisdictional areas of the two Councils by promulgating a separate set of management measures and regulations for the South Atlantic.

Discussion:
The two Councils selected different preferred options for public hearings, in part because the issues are different in the two areas. Most of the Florida reef tract where much of live rock is produced lies within the jurisdiction of the South Atlantic Council. Most live rock in the Gulf comes from live bottom areas on the Florida shelf where there are fewer live coral reefs. The Councils opted for different approaches to management because of the differences in bottom types and their need for protection.

The South Atlantic Council on February 11, 1994, approved promulgating of a separate set of management measures and regulations for the South Atlantic area. The Gulf Council on March 17, 1994 concurred with the South Atlantic Council's position. The following issues serve as a basis for separate management. The Gulf Council will hold additional public hearings to address measures that were not previously taken to public hearing. The South Atlantic Council approved a position in February and was ready to submit Amendment #2 for approval but had to wait for approval of the Gulf Council. Now that the Gulf Council is going back to public hearings on Gulf issues, the South Atlantic Council is severing the South Atlantic Council's preferred management actions into a separate amendment for Secretarial review. Other justification for establishing separate regulations for the South Atlantic is that the South Atlantic Council's area of jurisdiction already includes the Florida Keys and the Florida reef tract, the continental United State's most extensive coral habitat. The coral, coral reefs, and hard bottom habitats in the South Atlantic are not mobile or migratory and will remain in South Atlantic jurisdiction. The South Atlantic Council has a vested interest in taking all possible actions to protect and restore (SAFMC Habitat Policy-Appendix B) coral, coral reefs, and hard bottom habitat in the South Atlantic region because most recreational and commercial fisheries under management depend on these resources. The South Atlantic

Council has taken extensive action under other plans/amendments to protect coral and hard bottom habitats, and delay will allow the continued harvest in Florida and expansion of live rock harvest to other South Atlantic areas.

The present live rock removal patterns differ in the Gulf of Mexico and South Atlantic regions with individuals in the Gulf almost exclusively chipping and individuals in the South Atlantic collecting mostly rubble. There are different preferred management regimes in the Gulf and South Atlantic regions with the South Atlantic Council preferring a more conservative approach in addressing the harvesting of live rock.

In light of the increase in landings in Dade and Monroe Counties, Florida, the quota for 1994 will most likely be exceeded prior to implementation of regulations contained in this Amendment #2. Both monthly landings and pounds per trip landed have increased in the highest harvest areas of Dade and Monroe Counties between 1992 and 1993. In a conservative projected estimate of 1994 landings, the quota will be exceeded in November (Figure 8).

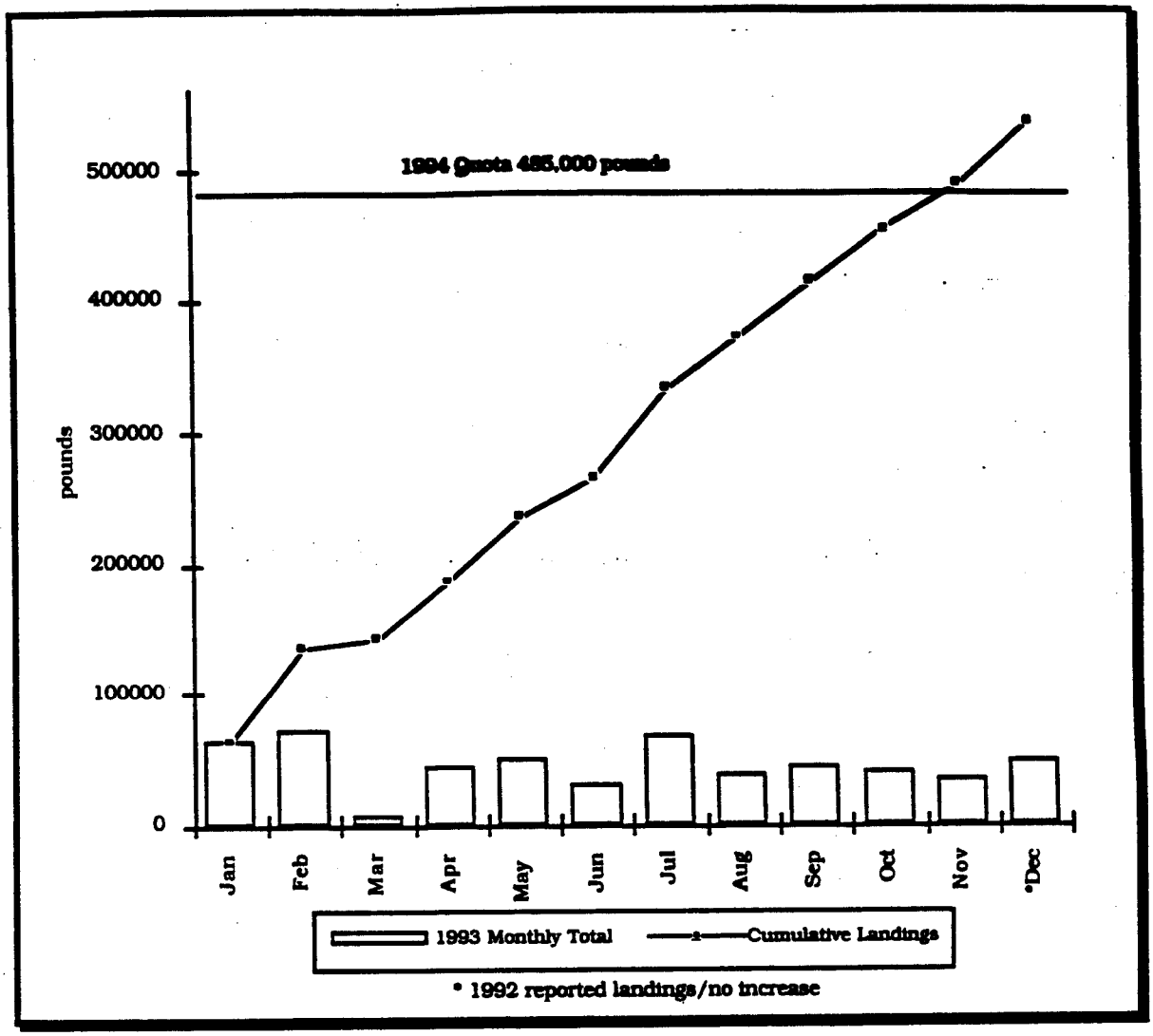


Figure 8. Projected 1994 Rubble Live Rock Landings from the Exclusive Economic Zone off Dade and Monroe Counties, Florida.

If an increase in landings occurs in 1994 similar to the increase which occurred between 1992 and 1993, the 1994 quota could be filled by July. If live rock removals from South Atlantic federal waters are allowed to continue unregulated to the end of 1994 the quota could be exceeded by over 300,000 pounds (Figure 9).

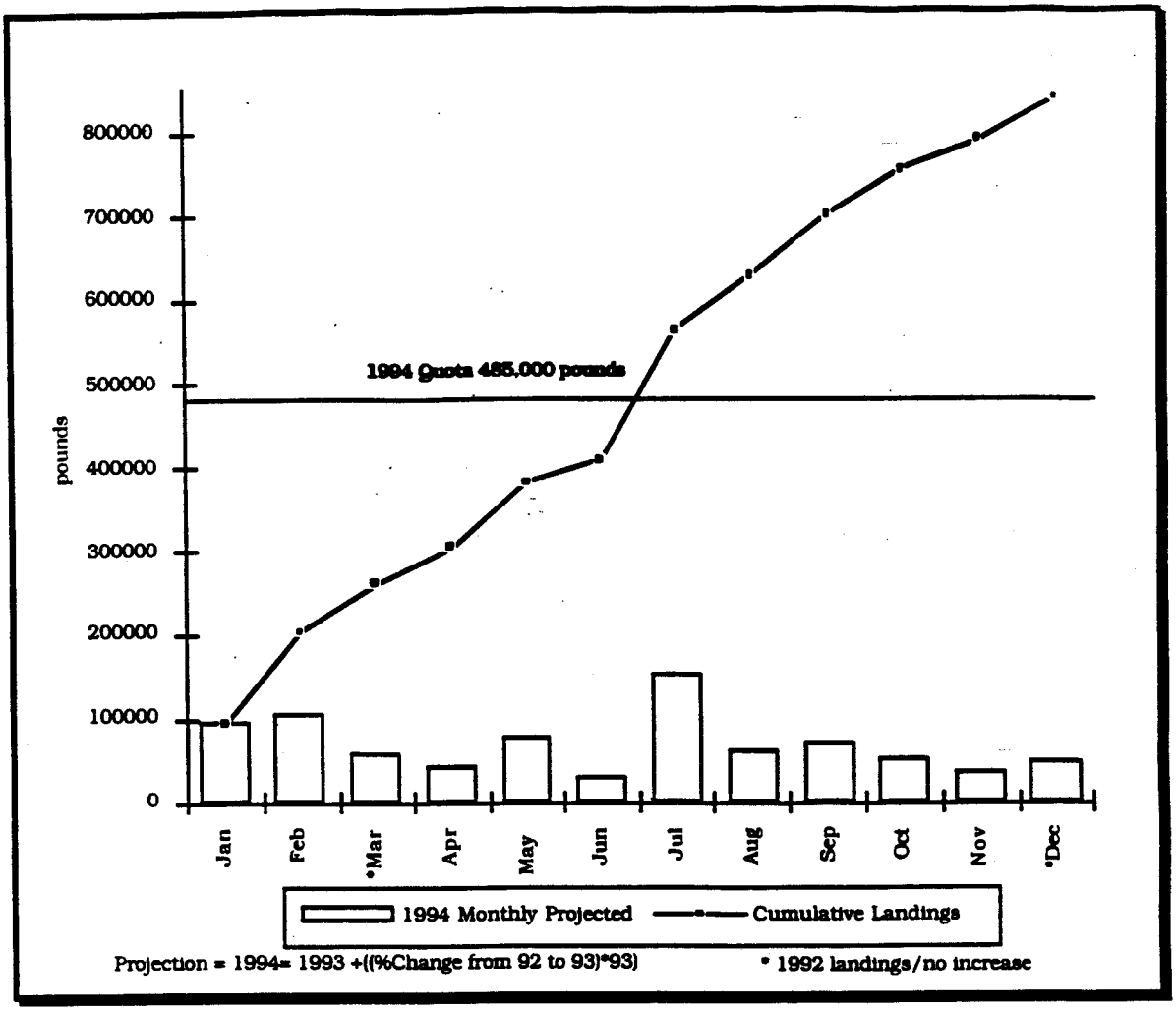


Figure 9. Projected 1994 Rubble Live Rock Landings from the Exclusive Economic Zone off Dade and Monroe Counties, Florida.

The intent of finalizing a separate amendment for submission to the Secretary of Commerce is to facilitate the rapid implementation of the South Atlantic Council approved actions. On March 17 the Gulf Council concurred with the South Atlantic Council establishing the management regime for the South Atlantic region. Approval of these actions will assure that regulations will be implemented during 1994 and reduce the probability of exceeding the quota established in the South Atlantic for 1994 .

C.2. PROHIBIT HARVEST OF LIVE ROCK

C.2.a. <u>ACTION 4:</u> Prohibit all wild live rock harvest north of Dade County, Florida, and prohibit chipping throughout the jurisdiction of the South Atlantic Council immediately. Cap wild harvest at 485,000 pounds annually until January 1, 1996 when all wild harvest will end.

<u>Discussion:</u>
The current Coral Fishery Management Plan prohibits damaging, harming, killing, or possessing prohibited coral or coral reefs. The NMFS Southeast Regional Office has, in correspondence to the Council (Informal review comments, January 1994), indicated that wild live rock is a non-renewable resource. The importance of live rock to the reef ecosystem is threefold. First, the sessile invertebrate communities that comprise live rock provide important habitat for fisheries of commercial and recreational importance. Second, the

physical and topographical complexity of the hard substrate and attached living communities provides critical shelter and habitat to a wide range of organisms. Limestone ledges, outcroppings, and serpulid rocks which occur in the South Atlantic from North Carolina through the east coast of Florida also provide habitat for invertebrate reef dwelling organisms as well as reef fish assemblages. Indeed, many studies show a positive correlation between increased habitat complexity and increased fish abundance and diversity (e.g., Carpenter et al., 1981; Roberts and Ormond, 1987; Hixon and Beets, 1993). Third, rock and dead coral surfaces are vital substrates for settlement of larval phases of benthic organisms. Suitability of substrate is one of the major factors controlling the distribution of many species (Kinzie, 1971; Wheaton, 1989). There is little known of the generation rates of live rock complexes. In terms of some hard substrate, replacement is likely to be in the order of geological time and harvest is expected to result in net loss of this substrate (Dr. Walter Jaap, Correspondence to SAFMC, 1993).

In addition, Amendment #1 to the Snapper/Grouper Fishery Management Plan in the South Atlantic (SAFMC, 1988) prohibits the use of trawl gear to harvest fish in the snapper grouper fishery between Cape Canaveral, Florida and Cape Hatteras, North Carolina. The Council considered disturbance, let alone removal, of essential reef fish habitat unacceptable considering the limited distribution of limestone ledges and outcroppings which constitute the majority of hard bottom in the South Atlantic north of Cape Canaveral, Florida (Appendix F). Additional actions taken under the Snapper/Grouper Fishery Management Plan in part to protect live bottom and reef habitat, include the restriction of bottom longlines to waters deeper than 50 fathoms and the prohibition of fish traps in the South Atlantic Exclusive Economic Zone in Amendment #4 (SAFMC, 1991).

Wheaton, in a presentation to the South Atlantic Council's Habitat Committee, stated that the rubble zone of a reef tract promotes the highest carbonate production from coral and algae which sustains the living coral reef. She noted that 75 percent of the rubble live rock has come from Area 748, a 40-mile section of the Florida reef tract (Figures 1 and 2).

Studies have shown that coral rubble communities are extremely rich in terms of species diversity, provide refuge for species that are not found in other habitats, and contribute a substantial amount of the total coral reef biomass (Meesters et al., 1991). Reported landings indicate that only about 30 percent of the 1991 live rock harvest was so-called "rubble rock" used as a base in saltwater aquaria to improve filtration (FMFC, 1992). Based on estimated growth rates for coral reefs (maximum sustainable growth of about 10 mm/yr [Buddemeier and Smith, 1988]), these "mini-reefs" grow extremely slowly. Serpulid rock, composed of calcareous worm tubes, accretes more rapidly. Dr. Walter C. Jaap, Associate Research Scientist with FDEP and member of the Gulf Council Coral Special Scientific and Statistical Committee, in correspondence to the South Atlantic Council (November, 1993), noted that: "The concept that coral rubble represents a surplus production is not factual. The rubble habitat is important to many species for recruitment and refuge. It is obvious if you examine a rubble area; if you turn over the rocks, you discover a cryptic assemblage of algae, worms, mollusks, echinoderms, crustaceans, and fish. Removal of the rubble disrupts biological processes and reduces the available habitat." In addition Dr. Jaap, during deliberations of the Special Scientific and Statistical Committee in November 1993, indicated: "That the current gross regrowth was about 16 millimeters per year of carbonate production on a coral reef in the Caribbean or Western Pacific. The net regrowth was quite negligible since numerous conditions simultaneously in force often caused this growth to dissolve or erode. This was most critical in Florida where there was a marginal amount of reef development, as compared to Honduras or Belize. ... Additionally, the rubble that was harvested had a great deal of habitat value (refuge and food) to many animals and plants." Dr. Jaap, in correspondence to the South Atlantic Council (November, 1993) emphasized that erosion rates in the Florida reef tract are variable reaching a high of 67 mm a year with negligible accretion (Hein and Risk, 1975).

Florida's live rock harvest in 1992 was about 800,000 pounds as compared with about 590,000 pounds in 1991. With increasing sophistication of marine aquarium facilities there is a

potential for increasing the number of participants in the fishery and hence the harvest of live rock. The FMRI reports the exvessel value of the 1992 live rock harvest at about $628,000.

The Council proposes to address concerns about harvesting live rock by restricting live rock harvest in the Florida reef tract to collection of rubble rock during the phaseout period (1994 and 1995) and by eventually terminating harvest of wild live rock beginning January 1, 1996. Aquacultured live rock from state waters, and eventually federal waters, would replace wild live rock in the market.

This alternative allows the harvest of loose rubble rock along the Florida reef tract only through 1995 at the approximate level of harvest of loose rock in that area in 1992. Of the 548,000 pounds landed in that year, 485,000 pounds were reported as being rubble and algae rock (FDEP, 1994). The basis for the quota is to restrict harvest to the level of loose material that was harvested during 1992 (485,000 pounds). This is intended to protect the fragile coral reefs as defined in the Fishery Management Plan in the Florida reef tract, which lies south of the Broward-Dade County line near Hollywood, Florida. The immediate prohibition of all chipping of live rock will provide the intended protection of essential and limited hard live bottom habitats throughout the South Atlantic Exclusive Economic Zone. No harvest of rubble is provided north of Dade County, Florida because very little, if any, is currently taken there, rubble rock is not abundant beyond the reef tract, and there is a desire for an immediate and total prohibition of live rock harvest in all other South Atlantic areas to prevent expansion of harvesting.

Wanda Prentis with FDEP, reviewed the state aquaculture lease program for the Council in November 1993 and indicated that state aquaculture leasing and permitting systems have already been established in Florida and individuals desiring to acquire a state lease can already apply to the Bureau of State Lands (Appendix D). A final permit which provides for removal is scheduled to be available in mid-1994. In testimony received at public hearing, one million pounds of rock have already been deposited in one state aquaculture lease off Tampa, Florida with another two million pounds scheduled to be deposited in the near future. In addition, the Council received correspondence from "ecoActivity" a company in the process of establishing additional upland aquaculture facilities for both marine tropical fish and live rock designed to produce $500,000 of fish and live rock annually. Live rock culture has been conducted by "ecoActivity" in Virginia for the last 4 years ("ecoActivity" brochure, 1994). Although live rock aquaculture will only be a part of the closed system mariculture industry product, it will supply an additional source of live rock and offset some of the socioeconomic impacts of the prohibition.

The proposed quota of 485,000 pounds annually will be tracked beginning January 1, 1994 for the first year's quota. If this quota is already met or exceeded upon implementation of the plan amendment, the fishery will be closed until January 1, 1995.

The SAFMC concluded that the removal of wild live rock is a violation of Council, NMFS, and NOAA habitat policies. The proposed level and duration of harvest is selected to allow orderly conversion from wild harvest to aquaculture in state and eventually federal waters with reduced economic hardship and disruption of markets for harvesters and dealers while preventing continued detrimental impacts to essential fishery habitat in the South Atlantic region. The phaseout period allowed by the Council, is to provide for those individuals desiring to continue to land live rock who have not yet begun to pursue aquaculture. It must be noted that the Council's phaseout is actually a second phaseout. The State of Florida implemented an initial phaseout of landings from the Exclusive Economic Zone off Florida in 1992, which would have ended in mid-1995, and directed harvesters to pursue aquaculture and apply for Florida permits. In addition, the Council was informed by Florida Department of Environmental Protection personnel in November 1993 that the entire state of Florida live rock aquaculture lease and site review process had been in place with only the removal permit to be finalized by mid-1994.

C.2.b. Rejected Alternative: Establish an annual harvest quota of 800,000 pounds of wild live rock per year in the Gulf and South Atlantic for the years 1995 through 1998 with no wild live rock harvest in 1999 and subsequent years. However, if a federal live rock aquaculture system is not in effect by 1996, wild harvest will remain at the 1995 level.

Discussion:
The SAFMC rejected this alternative because it would allow significant removal of essential fishery habitat through 1998. Allowing an extended continued harvest and expansion of the removal activities violates South Atlantic Council habitat mandates under the Magnuson Act.

C.2.c. Rejected Alternative: Set a live rock quota at zero; allow no harvest in the Exclusive Economic Zone upon implementation of this amendment.

Discussion:
This position was initially recommended by the Council because of concern that continued harvest would result in a loss of reef habitat and bottom structure which supports reef dwelling marine life. The Council is proposing to prohibit all chipping of live rock immediately in the South Atlantic and prohibit all harvest north of Dade County, Florida to prevent expansion of removal of this habitat which will address most of the Council's concern but will result in the loss of habitat during the phase-out. This will minimize the impact to bottom habitat in the South Atlantic and provide a date certain for prohibition. Only the harvest of rubble rock through 1995 in the South Atlantic will be allowed, so harvesters who have not already started and have a desire to start will have an incentive to make the transition to aquaculture as soon as possible.

The SAFMC rejected this alternative because, although the State of Florida aquaculture leasing and site review system is in place, the general permit to provide for removal will not be in place until mid-1994. In addition, the closure in 1995 closely tracks the State of Florida's original final phaseout date with which the Council had concurred in initially deferring action.

C.2.d. Rejected Alternative: Establish a quota of 400 tons (800,000 pounds) in 1995, to be reduced by 25 percent in 1996, by 50 percent in 1997, by 75 percent in 1998, and no harvest of wild live rock in 1999 and thereafter.

Discussion:
This alternative would allow a phaseout of wild harvest and provide the incentive to convert to aquaculture. Harvesters argued that as small business operators they needed the income while developing the aquaculture ventures. Decreasing quotas were proposed to provide the incentive for harvesters to make the transition to state and eventually federal aquaculture.

The Council rejected this alternative because they determined that the removal of wild live rock is the removal of essential non-renewable fishery habitat and rejected the idea of allowing continued removal until 1999.

C.2.e. Rejected Alternative: Allow three more years of unlimited live rock harvest after implementation of the amendment. After three years, live rock could be harvested from or possessed in the Exclusive Economic Zone only under permit for aquaculture or scientific collection.

Discussion:
This alternative would allow more time for live rock fishermen to convert to aquaculture. This alternative would allow further expansion of harvest during the phaseout period. Accelerated production could risk damage to coral reefs in the reef tract and ledges and outcroppings elsewhere. The Council prefers to restrict harvest to no more than the 1992 level during the final years of wild live rock harvest.

The Council has determined that removal of wild live rock is the removal of essential non-renewable fishery habitat and rejected the idea of allowing unlimited continued removal for three years after implementation of the amendment. The Council also rejected this alternative because this is essentially no action for three years, allowing continued removal of a non-renewable fishery resource,and probable expansion to other South Atlantic Exclusive Economic Zone areas with extremely limited hard bottom habitat.

C.2.f. **Rejected Alternative:** Establish a live rock quota and permit system. Section 12.3.1 of the FMP could be revised to provide an annual quota for live rock. An additional management measure may be added to include a permit and reporting system for live rock harvest, similar to allowable octocorals.

Discussion:
Harvesters in Florida reported landings of approximately 800,000 pounds in 1992, the most recent year of unregulated harvest from the Exclusive Economic Zone. The fishing year for all species of coral and coral resources in the Exclusive Economic Zone, under the current FMP as amended, is October 1 through September 30. Florida live rock collectors argue that there is net production of live rock on the Florida reef tract, that is, live rock is a renewable resource. In testimony on the State of Florida's rulemaking, marine life fishermen noted that pieces of coral reefs naturally break off during storms - forming the rubble zones or coral rubble - and that this live rock was surplus to the needs of the ecosystem and available for harvest.

The SAFMC rejected this alternative because the Council has made a policy determination that live rock is habitat and should not be harvested. The Council views the industry as being able to supply the market demand with aquacultured live rock from state and federal waters as well as from upland facilities.

C.2.g. **Rejected Alternative:** Implement a moratorium on new entrants in the harvest of live rock and limit the harvest to X pounds per daily trip.

Discussion:
Florida live rock collectors recommended no quotas but wished to limit future entry into the fishery (Januzzi, 1991). Trips limits were also recommended by some fishermen during Council discussions.

The Council rejected this alternative because there is no intention to allow the continued removal of wild live rock from the South Atlantic Exclusive Economic Zone. Members of the South Atlantic Council coral advisory panel, during their meeting in January 1994, noted that trip limits without set annual quotas would not be effective because an individual could increase the number of trips to compensate. In addition, the Council has made the determination that the activity is not compatible with Council habitat policies and management measures implemented under other management plans to in part protect habitat (e.g., fish trap, trawl, and limited longline prohibitions under the Snapper Grouper Fishery Management Plan).

C.2.h. **Rejected Alternative:** Permitted vessels are to be limited to (25 five gallon buckets or 1,250 pounds) of wild live rock per daily trip.

Discussion:
Some harvesters testified at public hearings that they would welcome vessel trip limits in order to extend their harvest of the annual quota of live rock. This would tend to deter a derby harvest early in the season.

At the Council's public scoping meeting in June 1993, and public hearings held during January and February 1994 in the South Atlantic region, harvesters recommended various maximum daily trip limits from 1,000 to 1,500 pounds per day. They noted that they commonly use five gallon buckets to hold their catches. These buckets are described as holding a maximum of

about 50 pounds of live rock. They suggested limits of 20 to 25 buckets with a five gallon capacity. Most operators harvest from vessels from 22 to 28 feet in length and most can accommodate 25 buckets. The original Florida State regulation limited harvesters to a 500 pound trip limit. The industry was able to meet the quota with the trip limits half way through the fishing season. In addition, the average trip taken in Monroe County in 1993 landed 645 pounds (Figure 6), and would be greater than the majority of trips currently taken by harvesters. Environmental representatives on the South Atlantic Council's Coral Advisory Panel, during a meeting in January 1994, voiced opposition to the use of trip limits because they would not control the overall landings. The implementation of trip limits without an annual quota would allow industry to increase effort by making more trips to compensate for the trip limit restrictions.

The Council rejected this alternative because the harvest of wild live rock in the South Atlantic will end in 1995 and there is a desire to minimize additional constraints on the industry while shifting to aquaculture.

C.2.i. **Rejected Alternative:** Allow a recreational harvest and possession of up to a two gallon (0.27 cubic foot) bucket container of live rock per vessel per day without a permit.

Discussion:
This alternative allows an individual to take live rock from the Exclusive Economic Zone for personal use in his aquaria. Aquarists requested some allocation for their use.

The Council rejected this alternative because it was not presented at public hearings, since it would be prohibited in Florida state waters. Also, to allow an exemption for an unlimited and unregulated harvest of what the Council considers non-renewable habitat is inconsistent with Council policy. To allow any individual, whether a trained diver or an unskilled home hobbyist, to remove live rock would compromise the intent of the prohibition and would also result in additional prohibited corals being harvested because anyone could remove the substrate. In addition, such an exemption may jeopardize the State of Florida prohibition on any removal of live rock from state waters. Limiting the removal during the phaseout to commercial harvesters will lessen the possibility of removal of prohibited corals and seafans.

C.2.j. **Rejected Alternative:** Unless otherwise prohibited in this plan, only non-power-driven hand tools such as chipping hammers and chisels may be used in the allowable harvest of species in the management unit where chipping is permitted.

Discussion:
This alternative would prohibit the use of power tools, crow bars, and other gear capable of inflicting serious damage to reef and ledge structures. Octocorals and small pieces of live rock could be harvested by hand tools in areas where harvest is permitted. Excluded would be the habitat areas of particular concern and other areas where harvest of octocorals and live rock is prohibited.

The Council rejected this alternative because it was not taken to public hearing and all chipping of live rock will be prohibited immediately in the South Atlantic Exclusive Economic Zone making this measure unnecessary.

C.2.k. **Rejected Alternative:** No action, no restriction on use of collecting gear.

Discussion:

The Council rejected this alternative because the Council is already prohibiting chipping throughout the South Atlantic area of jurisdiction, therefore, no additional gear restrictions are necessary.

C.3. PROVIDE FOR AQUACULTURE OF LIVE ROCK IN THE EXCLUSIVE ECONOMIC ZONE.

C.3.a. ACTION 5: Allow and facilitate aquaculture in the Exclusive Economic Zone.

Discussion:
The Council has begun the scoping process on the establishment of an aquaculture program for the Exclusive Economic Zone in the South Atlantic region. The Council will develop an aquaculture siting system for individuals desiring to culture live rock in the South Atlantic Exclusive Economic Zone. NOAA General Counsel indicated that if the Council wants to implement a comprehensive aquaculture program identifying specific siting criteria and a review process such as the establishment of Special Aquaculture Zones, it would have to be accomplished through a subsequent amendment or an additional series of public hearings. The draft criteria for a U.S. Army Corps of Engineers permit in Appendix D once reviewed by the Scientific and Statistical Committee, Coral Advisory Panel, Habitat Advisory Panel, Habitat Committee, and Council may serve as a basis from which to develop a special aquaculture zoning process to assure that the activity in the South Atlantic Exclusive Economic Zone meets national standards and is monitored by the Council.

Harvest of "wild" live rock could be replaced with live rock from aquaculture in state or federal waters. Experiments on the cultivation of live rock in Tampa Bay, Florida, indicate that marketable live rock can be produced within 6 months (Ehringer and Webb, 1992). Testimony during the scoping meeting and public hearings indicates a more desirable product would take longer to produce, perhaps a year or longer.

Organisms in the management unit for live rock will readily attach to and grow on suitable material introduced into the marine environment given the appropriate conditions. Shipwrecks, offshore platforms, rock jetties, bottles, and artificial reefs all bear evidence of accretion of various organisms. The Coral Fishery Management Plan, for example, specifically exempts the "harvest" of coral in the removal of marine equipment such as that used in offshore petroleum extraction.

The rate of encrustation by desirable live rock organisms depends on the local environment. Some seed rock may be salable as live rock in as short a period as six months, while development of more showy pieces may require several years. In order to identify the cultured rock it may be necessary to require use of non-indigenous material or some type of mark or tag to separate aquaculture rock from "wild" live rock.

Aquaculture operations would eventually replace the harvest of naturally occurring live rock while contributing to a reef type habitat. Deposition of material would be similar to construction of an artificial reef. In addition, stony corals and other prohibited corals will settle on the aquaculture substrate, and their harvest and sale will need to be addressed specifically.

The State of Florida aquaculture leasing and site review system is in place, but the final permit which allows aquacultured live rock harvest is to be finalized by July 1994 (Virginia Wetherall, Florida Department of Environmental Protection, pers. comm.). The Minerals Management Service, in correspondence to NOAA General Counsel (Appendix D) regarding the regulation of harvest of live rock, has indicated that naturally occurring limestone in the Outer Continental Shelf is a mineral whose production is subject to leasing under the Outer Continental Shelf Lands Act, 43 U.S.C. 1337 (k). However, Minerals Management Service would not assert title to property of those who use the Outer Continental Shelf pursuant to valid authorization of another federal agency under statutory or executive delegation to manage certain activities on the Outer Continental Shelf.

Billy Causey, Florida Keys National Marine Sanctuary Manager, testified at a Habitat Committee meeting in June, 1993, that the aquaculture of live rock could be done in the "special use zones" which have been proposed in the Draft Sanctuary Plan. Special use zones, as described in a Sanctuary draft management alternatives document (NOAA, 1993), can be

used to: "establish areas that confine or restrict high-impact activities ... and to reduce user conflicts." Florida Department of Environmental Protection and Sanctuary personnel are coordinating aquaculture sitings in the Sanctuary (Jennifer Wheaton, Florida Department of Environmental Protection, pers. comm.).

There will be costs associated with permitting and licensing systems to establish and monitor open-system aquaculture operations. A continuation of a supply of aquacultured products, however, could benefit the marine aquarium industry as a whole, including fish collectors, fish wholesalers and retailers, equipment suppliers, and live rock producers. Although most marine aquarium species are taken from the wild, about 90 percent of the freshwater fish available in the ornamental trade are captive-bred (Andrews, 1990). If prohibitions are placed on wild harvests, the marine aquarium industry could transfer to aquaculture provided the legal means to do so are implemented in state and/or federal waters.

C.3.b. Rejected Alternative: No provision for aquaculture. After termination of the period allowing annual quotas, the harvest or possession of live rock in the Exclusive Economic Zone would be prohibited.

Discussion:
The U.S. Army Corps of Engineers has issued permits for placement and removal of cultch material in the Gulf of Mexico Exclusive Economic Zone and the Florida Keys National Marine Sanctuary is reviewing applications for aquaculture within its bounds. Without provision for possession of cultured live rock the only source of material would be through imports or upland mariculture.

The Council rejected this alternative because aquaculture of live rock will offset the need for wild live rock and mitigate some of the socioecomomic impacts of the prohibition.

C.4. HARVEST PERMITS

C.4.a. **ACTION 6: In addition to any applicable state license or permit, a federal permit is required for the harvest and possession of wild live rock in the Exclusive Economic Zone during the phaseout period. Permits shall be limited to persons who have commercially landed and, where required, reported wild live rock landings prior to the control date of February 3, 1994.**

Discussion:
This alternative is intended to prevent expansion of removal of live rock, stabilize harvest at the 1992 level, and limit participants to those already in the fishery. The permit requirement would serve to identify harvesters and facilitate monitoring of landings. The permits would be issued by NMFS and would be subject to an administrative fee. The permits are to be issued annually and would expire at the conclusion of the phaseout.

Permits are to be issued only to those individuals that reported landings to the State of Florida through the trip ticket system prior to February 3, 1994. Florida trip ticket information will allow rapid evaluation of those meeting the permit requirement prior to the start of the January 1, 1995 fishing year. If upon implementation, the 1994 quota is met or about to be met, federal permits will not be necessary for the 1994 fishing year. NMFS is to issue permits for the 1995 fishing year beginning January 1995. This will require considerable effort during November/December 1994 so that permits are available January 1, 1995. According to FDEP records during the period of 1990-1993, some 147 permit holders reported live rock landings. In 1993 only 102 permittees reported landings. It is the Council's intent that during the phaseout period data would continue to be collected by the State of Florida through the trip ticket system.

C.4.b. **Rejected Alternative:** Require a federal permit in the absence of a state permit for harvest and possession of "wild" live rock from the Exclusive Economic Zone during the phaseout period.

Discussion:
Use of a federal permit would have identified participants for possible use if effort limitation or a moratorium was selected as the preferred option. Use of a permit could also facilitate statistical reporting. Florida already requires a saltwater products license with marine life and restricted species endorsements for landing live rock from the Exclusive Economic Zone, therefore, only persons landing live rock in other states would be affected.

This alternative was rejected, because the Council concluded that it is unnecessary because harvest is prohibited outside the State of Florida and the State of Florida requires a permit.

C.4.c. **Rejected Alternative :** Require no harvest permit for taking commercial quantities of wild live rock during the phaseout period.

Discussion:
Permits would serve to identify participants during the moratorium and would facilitate reporting of landings. The Council rejected this alternative because the Council elected to limit participants and establish annual quotas. Therefore, during the phaseout period, federal permits will be necessary.

C.5. AQUACULTURE PERMITS

C.5.a. **ACTION 7: Require a permit for the possession or harvest from aquaculture operations in the Exclusive Economic Zone. Such a permit will be required in order to harvest or possess live rock from an aquaculture site. Harvest from the area may only be done by the permittee or his written designee and an administrative fee will be authorized for the permit.**

Discussion:
This alternative does not tie the aquaculture permittee to possession of a specified aquaculture site authorized by the Corps of Engineers. The Council, although establishing the aquaculture permit, has only begun the scoping process to develop a more structured monitoring and review process to assure that the Council retains involvement in establishment and development of aquaculture in the South Atlantic Exclusive Economic Zone. The Council has a vested interest in assuring that the placement and operation of aquaculture leases does not interfere with designated special management zones established under the Snapper Grouper Fishery Management Plan or existing coral, coral reefs, or hard bottom habitat.

C.5.b. **Rejected Alternative :** Require a permit for the possession or harvest of live rock from aquaculture operations. Require a permit for the possession or harvest of live rock and attached prohibited corals from aquaculture operations in the Exclusive Economic Zone. NMFS permits shall be available only to those individuals who have demonstrated that they have deposited rock or substrate in the permitted site.

To obtain permits for live rock aquaculture in the Exclusive Economic Zone, permittees must have an approved Corps of Engineers' permit to place substrate in the Exclusive Economic Zone, and have demonstrated that they have deposited approved material in the permitted area. Such a permit shall be subject to an administrative fee. In order to harvest or possess live rock from an aquaculture site a NMFS permit will be required. Harvest form the area may only be done by the permittee or his written designee.

Discussion:
The Council rejected this alternative because it was not taken to public hearing. The measures requiring individuals to have deposited rock prior to obtaining a Federal permit, and the limitation of harvest to the permitte or his written designee are more stringent than what was taken to hearing. NOAA General Counsel made this determination at the South Atlantic Council meeting in February 1994 and also indicated that limiting harvest to permit holders may not be possible.

C.5.c. **Rejected Alternative:** No permit required for possession of live rock from aquaculture operations in the Exclusive Economic Zone.

Discussion:
The Council rejected this alternative because without some means of identifying cultured live rock from prohibited wild live rock, enforcement of a closure and subsequent prohibition of possession of wild live rock would be impossible. The Council will readdress the issue and refine the process in a future amendment.

C.6. SCIENTIFIC, EDUCATIONAL, AND RESTORATION PERMITS

C.6.a. **ACTION 8: Require a federal permit for harvest and possession of prohibited corals and prohibited live rock from the Exclusive Economic Zone for scientific, educational, and restoration purposes.**

Discussion:
The Coral Fishery Management Plan currently provides for issuance of a federal permit to take prohibited corals for scientific and educational purposes. If live rock is added to the management unit and its harvest is restricted or prohibited, allowance should be made to add it to the scientific collecting permit.

C.6.b. **Rejected Alternative:** Do not add live rock to the list of other prohibited species for which a permit is required for harvest and possession for scientific, educational, and restoration purposes.

Discussion:
Adding live rock to the management unit is the first step in regulating the resource. The Council rejected this alternative because they concluded that an allowance similar to that allowed for coral for scientific, educational, and restoration purposes is appropriate.

D. OPTIMUM YIELD (OY) FOR LIVE ROCK

D.1. **ACTION 9: Optimum Yield (OY) for wild live rock is to be 485,000 pounds annually for the South Atlantic region where harvest is allowed during 1994 and 1995, after which it is to be zero except for that which may be allowed by permit.**

Discussion:
Optimum Yield for coral and coral reefs in the existing management plan is already zero, except for allowable octocorals that are harvested under an annual quota. As of January 1, 1996 OY for wild live rock will also be zero. The Council, as for corals and coral reefs, identifies live rock as essential habitat. This alternative addresses only the harvest from Dade and Monroe Counties in Florida, along the reef tract in the South Atlantic Council's area of jurisdiction. Permits are allowed which provide for scientific, educational, and restoration purposes as well as for aquaculture.

D.2. **Rejected Alternative:** Optimum Yield for live rock is to be that established by quota(s) or which may be allowed by permit.

Discussion:
Parts of this alternative are included in the proposed alternative whereby the optimum yield for 1994 and 1995 are equal to the proposed quota of 485,000 pounds per year.

The Council rejected this alternative because they concluded that it was inappropriate and essentially impossible to forecast the quantities to be harvested under permit.

D.3. Rejected Alternative: Optimum Yield for live rock is to be zero except for that which may be allowed by permit.

Discussion:
There is to be no allowable harvest quota under this Optimum Yield, except that which is provided under scientific, educational, or restoration collecting permit or aquaculture permit. The amended management plan currently defines overfishing as an annual level of harvest that exceeds Optimum Yield.

This alternative would provide the maximum protection to the hard bottom habitat because it is compatible with an immediate prohibition on harvest. There would be no further loss to fisheries from habitat removal due to harvest of live rock. Harvesters and dealers of live rock and those in the aquarium trade would lose access to the natural resource unless and until an alternative source is provided through aquaculture or from imported material.

The Council rejected this alternative due to the negative socioeconomic impacts and because this statement of optimum yield is incompatible with the phaseout for the South Atlantic.

D.4. Rejected Alternative: Optimum Yield for live rock is to be unlimited for three years after which it is to be zero except for that which may be allowed by permit.

Discussion:
This alternative would have provided for a three-year phaseout with unlimited harvest during that period. After that, harvest would be allowed only under permits for scientific, educational, and restoration purposes as well as for aquaculture.

The Council rejected this alternative because live rock harvest, in response to the anticipated closure date, would at a minimum remain near the current level but more likely increase. This option would provide a three-year grace period to allow harvesters, dealers, and users to develop an alternative source of supply but it would not provide any incentive to actively pursue aquaculture.

3.0 AFFECTED ENVIRONMENT

Florida's "marine life" or aquarium fishery involves at least 300 species of tropical ornamental fish and invertebrates. In recent years, declining catch-per-unit-effort has led to industry-sponsored proposals for limited entry. The Florida Department of Environmental Protection has issued marine life endorsements on 198 saltwater product licenses (SPLs). About 60 percent are full-time fishermen, approximately two-thirds reside in Monroe County, and almost 90 percent are from South Florida (Januzzi, 1991; FMFC, 1992).

Wheaton (1989) defined "live rock" as a broad term used by the marine life collection industry to describe several types of substrate colonized by marine organisms and described four main types collected in somewhat specific habitats:

1. Rubble Rock - Also called base rock, "possesses very little life" but is desirable for the "borers" living in the rock and as a substrate "base" in aquaria. Rubble rock is collected from mounds in shallow water in back-reef locations.

2. Algae Rock - Also called plant rock, is colonized chiefly by algae, secondarily by feather duster worms and other invertebrates. Algae rock is collected from rubble areas in the back reef and from inshore areas on both the Atlantic and Gulf sides of the Keys.

3. False Coral - Also called anemone rock, is covered with anemones in the genera *Ricordea* and *Rhodactis*, which are accompanied by encrusting gorgonians, chicken liver sponges, other invertebrates, and algae. Although collected mostly from patch reef areas, false coral occurs in other reef habitats.

4. Sea Mat - Also called gravel rock, is colonized almost exclusively by anemone-like organisms, usually of the genus *Zoanthus*, and is principally collected from dredged rock jetties.

Wheaton (1989) confirms that dealers and collectors maintain that the majority of the rock itself is dead coral, and its collection is primarily to obtain the associated organisms. She further states that similar types of live rocks are also harvested from Gulf of Mexico. However, the underlying substrate in the Gulf is chiefly limestone outcropping with carbonate sediments rather than dead coral. Live rock can therefore be defined as a substrate with a composition that varies from dead/eroded coral, to a conglomerate of cemented calcium carbonate sediments, to non-organic rock of various shapes and dimensions with attached and/or associated biota, forming micro-communities. The substrate may exist as reef framework, outcroppings of hard bottom, or unconsolidated rubble.

A. Description of the Resource

The assemblage that makes up live rock comprises a community of organisms that have recruited at different times, grown at different rates, and pursued different life history strategies (Wheaton, 1989), supported by a hard substrate, and often composed of dead coral. In general, little is known of the biology of the individual organisms and even less of the communities they form. Some are sessile for all of their adult life, some are sedentary and move slowly or rarely, and others range extensively over the live rock and reef habitats. These organisms are members of a variety of species of the Phyla PORIFERA (sponges), CNIDERIA (anemones and gorgonians), ANNELIDA (polychaete worms), BRYOZOA, and CHORDATA (tunicates or sea squirts).

Following is a brief summary of the general characteristics of each of these groups.

1. Porifera - Sponges (Phylum PORIFERA) are typically attached to hard substrate. They are all sessile and exhibit little detectable movement. They display great variability in size and shape. Growth rates and body shape are highly dependent on space availability, the inclination of the substrate, and current velocity. They are taken commercially for curios, as bath sponges, and for use in marine aquaria. Certain species are thought to provide critical habitat for juvenile spiny lobster (Butler et al., 1992).

2. Cnideria - Corals and sea anemones (Phylum CNIDERIA) include stony corals, octocorals, gorgonians, and anemones. Coral biology and life history is discussed in the Coral Fishery Management Plan (GMFMC and SAFMC, 1982) and Amendment #1 (GMFMC and SAFMC, 1990). Anemones include a wide variety of organisms that may be solitary or colonial. The polyps vary greatly in morphology and colonial structure. Species are often brightly colored and are usually attached to rocks. Solitary anemones are considered sessile but can change location by slow gliding. Colonies of anemones are comprised of numerous polyps, each 1-2 cm in diameter and interconnected as a mat, which may form large encrusting masses on rocks.

The Caribbean or pink-tipped anemone, which spawns off Key West in late spring, provides shelter for a variety of juvenile and adult fish and crustaceans (Jennison, 1981).

3. Annelida - Segmented tube worms (Phylum ANNELIDA: Polychaeta) including fan worms, feather duster worms, and Christmas tree worms, live in tubes of varying degrees of complexity attached to hard substrate and filter-feed with their "fans." Because they firmly adhere to the substrate, in many cases it is necessary to remove the underlying rock to collect segmented worms.

4. Bryozoa and Chordata - Other Phyla, principally the BRYOZOA (ectoprocts or "moss"animals) and CHORDATA (ascidians or sea squirts) may be the animals primarily responsible for the water-filtering characteristics of live rock. Bryozoan colonies can form a thin encrusting layer over rock or they may be erect and branching. As adults, sea squirts usually live attached, singly or in colonies, to hard substrate or to the bases such as gorgonian stalks, and vary greatly in size and coloration.

B. Ecological Relationships

The frequency of commensalism (relationship between two organisms in which one species benefits and the other host species is neither benefited nor harmed) in the coral reef environment is one of the most important contributing factors to high species diversity (Bruce, 1974). Hanlon and Hixon (1986) recorded over 30 small West Indian reef fish within the tentacles of a single anemone. Several reef and shrimp species, living in close association with anemones, are believed to play an important role in reef health by their "cleaning" activities. Limbaugh (1961) recorded one cleaning station that was visited by 300 fish over a six hour period. Following removal of cleaner species from two reefs, he noted a marked decline in fish in the area over the following few weeks and, among those remaining, an increase in infections and parasites.

Other interspecific associations have been documented for other fish, cnidarians, molluscs, crustaceans, echinoderms, and bryozoans (Wheaton, 1989). For example, sponges are inhabited by a wide variety of animals, including crustaceans, polychaetes, and fish. Several reef fish feed on sponges as does the endangered hawksbill sea turtle, *Eretmochelys imbricata*. *Zoanthus*, a colonial anemone, is a food source of major importance for at least 16 species of fish in seven families (Randall, 1967). In Randall's study, polychaetes were among the most important food items of 62 West Indian reef fish species in 24 families, and were surpassed as preferred foods only by crustaceans. Ophiuroids (brittlestars) were food for 33 fish species and 16 species fed on benthic tunicates. Octocorals have been noted to provide important habitat for fish and invertebrates including lobster in the 20-40 mm size range (Butler et al., 1992).

For additional information on affected environment and South Atlantic Council directives under the Magnuson Act to protect and enhance essential fishery habitat, refer to Appendicies A, B, and C in this document.

4.0 REGULATORY IMPACT REVIEW AND INITIAL REGULATORY FLEXIBILITY ANALYSIS

Introduction

The following headings track the numbering system in Section 2 for the proposed actions and rejected alternatives. Additional information for any measure can be found by referring to the same number in Section 2 (e.g., C.2.a in the RIR corresponds to C.2.a in Section 2).

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: 1) it provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action, 2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the

problem, and 3) it ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost effective way.

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

This RIR analyzes the probable impacts on fishery participants of the proposed plan amendment to the Fishery Management Plan for Coral and Coral Reefs of the Gulf of Mexico and South Atlantic (FMP).

Problems and Objectives

The general problems and objectives are found in the fishery management plan. This amendment proposes to add a new problem and revise an existing objective. The purpose and need for the present plan amendment are found in Section 1.0 of this document. Essentially the current plan amendment addresses the issue of: (1) including "live rock" in the management unit, (2) regulating the harvest of wild live rock in the Exclusive Economic Zone until this is prohibited, (3) providing for and facilitating the process of aquaculture of live rock in the Exclusive Economic Zone, (4) requiring permits for the harvest and possession of live rock, and (5) defining optimum yield.

Methodology and Framework for Analysis

The fundamental issue in this plan amendment is the management of "live rock" as part of the fishery management plan. The basic approach adopted in this RIR is an assessment of management measures from the standpoint of determining the resulting changes in costs and benefits to society. The net effects should be stated in terms of producer surplus to the harvest sector, net profits to the intermediate sector, and consumer surplus to the final users of the resource.

The harvest sector refers to the commercial harvesters of live rock and the intermediate sector, to dealers of live rock. Final users of the resource are taken to refer to the individuals that derive benefits from the resource in either a consumptive or non-consumptive manner. This last group consists of individual buyers of live rock from commercial dealers or harvesters, harvesters of live rock for use in personal aquaria, extractors of live rock for research purposes, and non-extracting users of live rock such as divers.

In addition to changes in the surpluses mentioned above from managing live rock, there are also changes in producer and consumer surpluses for indirect users of the resource, such as those involved in other fisheries and tourist activities, that will be effected through a change in the management of live rock. Moreover, other so-called non-use values, such as existence value, bequest value, and option value, will be affected by a change in the management of live rock. Finally, there are public and private costs associated with the process of changing and enforcing regulations on live rock.

Ideally, all these changes in costs and benefits need to be accounted for in assessing the net economic benefit to society from the management of live rock. However, lack of data (particularly on the structure of the market for live rock) does not allow for this type of analysis. The RIR attempts to determine these changes to the extent possible, albeit in a very qualitative manner.

In addition to discussions on net economic benefits, some consideration is given to other issues such as community employment and income opportunity, acceptability of the regulatory measures, and present and historical participation in the fishery.

Impacts of Proposed Actions and Alternatives

A. NO ACTION

Global retail sales in the ornamental fish hobby has been estimated at about $4 billion annually, and about $1.6 billion of that amount is spent in the United States (Derr, 1992; Andrews, 1990). Reportedly, the fastest growing component of the marine life or aquarium trade is minireefs or live reef aquarium systems, the cost of which could range from a thousand to tens of thousands of dollars (Derr, 1992). The backbone for this type of aquarium is live rock and its associated invertebrates. Consumer demand for such types of aquaria underlie the derived demand for live rock. Empirical estimates of such demand are not currently available, and in fact, little is known about the demand for live rock. As long as such consumer demand for minireefs continues to grow over time, derived demand for live rock or its substitutes will correspondingly grow. The likelihood of such growth in demand depends partly on whether minireefs are a mere fad or a structural shift in demand for aquaria. As a fad, minireef demand would decline in the near future. As a structural shift, such demand would be sustained over time. In the latter case, income and population growth would become significant factors. Looking only at the income factor, one can possibly argue that if a growing demand for minireefs is observable at current times when the economy is at the lower end of an upward trend, a higher demand can be expected when the economy is much stronger. Given such prospects for increased demand for live reef aquarium systems, the derived demand for live rock and its substitutes may be expected to keep apace.

While live rock landings are reported to have occurred in Alabama and possibly in the Carolinas, records of landings are only available for Florida. The live rock industry in Florida is one major source of live rock supply for the aquarium trade in the United States. Since Florida included live rock in its trip ticket reporting system around March 1990, reported landings over the period 1990-1993 have shown steady increases. This could be interpreted to mean that the supply of live rock has been increasing to match the demand for the product. It could also have been an artifact due to the new reporting system. If the former is true, the trip ticket system has been effective in tracking landings of live rock accurately in recent years. However, if the latter holds, it is likely that more damage has been done to the reef systems and hard bottoms in the past than was actually acknowledged.

Among the states under the jurisdiction of the Council, only Florida has explicit regulations on the harvest of live rock. Live rock removal from Florida State waters was prohibited in 1989. Although there are several types of live rock, Florida instituted management measures for live rock as one unit. This management action mainly consistedof a regulation that in 1992 began phase out of the harvest and landing of live rock from the Exclusive Economic Zone off Florida over a three-year period ending June 30, 1995 by providing gradually reduced harvest quota with trip limits. However, enforcement of this state regulation was blocked by a preliminary court injunction which indicated that such a rule could not apply to live rock harvested in federal waters.

A no action alternative essentially means that the producer surplus to the harvest sector, net profits to the dealers, and consumer surplus would be maintained at levels that match any growth in demand. The level of these benefits cannot be estimated due to lack of information. It may only be stated that about 147 individuals are involved at least part-time in the collection of live rock. Various types of live rock command different exvessel prices. In 1992, the average price per pound for algae rock was $0.98, for false coral $1.52, for gorgonian rock $1.44, for rubble rock $1.00, for Sea Mat $1.48, and for serpulid rock $1.50 (FDEP, 1994). The Florida Department of Environmental Protection reports the exvessel value of the 1992 live rock harvest at about $628,000. However, if demand continues to increase, more individuals in Florida and other states would enter in the fishery, likely resulting in increased harvest and higher revenues. Noting the relatively low cost of harvesting live rock, producer surplus may be expected to increase as well.

While benefits due to the no action alternative could accrue to the live rock industry and its associated industries, certain potential costs would be borne by other sectors and by society as a whole. These cost items are associated with forfeiting benefits from non-harvest of live rock. These benefits are in turn associated with the value of live rock either by itself or as a contributing factor to the survival of other marine organisms that may have commercial, recreational, or other uses.

Like any natural resource, live rock commands what has been termed non-use values; specifically existence value, bequest value, and option value. Existence value refers to the satisfaction individuals derive from the knowledge that a natural resource exists and will continue to exist in the future even though they may never use or see the resource. Bequest value is the benefit associated with endowing a natural resource to future generations. Option value refers to the benefit individuals obtain from retaining the option to use the resource in the future by conserving it now. These values are undoubtedly difficult to measure, but measurement has been done in a few instances. For example, Pearce (1990) estimated the existence value for the Amazonian rainforest to be at least US $3.2 billion and Hundloe (1990) estimated the existence and option values for the Australian Great Barrier Reef at about AUS $45 million per year. It only needs mentioning here that a certain degree of the mentioned three values would be forfeited by the harvest of live rock.

Section 3 outlines some of the important contributions of various kinds of live rock to the survival and growth of some marine species that have commercial or recreational value, and in the particular case of rubble rock to the promotion of high carbonate production from coral and algae which sustains the living coral reef. The economic issue related to the effects of live rock on other marine species is one of productivity. This issue involves the valuation of the change in the productive capacity of an area relative to the affected marine species where live rock is harvested. The actual estimation of such value requires an enormous amount of data especially when some of the organisms sustained by the food and protection afforded by live rock would later command higher than minimal commercial or recreational value when they reach certain size. The "other uses" referred to above relate to the scientific, educational, and pharmaceutical values of those species, including organisms attached to the hard substrate, whose survival partly depend on the presence of live rock.

In terms of live rock's contribution to the living reef system, the economic issue involves valuation of such contribution to the overall non-extractive value of reefs such as those derived from tourism and non-extractive research and educational activities. While some methodologies exist to estimate such values, data are simply non-existent to undertake the exercise. There are, nonetheless, existing estimates on the value of reefs some of which were conducted in assessing the value of damage to reefs. In connection with the damage assessment of the Mavro ship grounding, the value of bottom habitat was estimated at about $11 per square foot (GMFMC and SAFMC, 1992). This valuation was based on the dockside value of rubble rock with encrusting organisms. In another instance using tourism expenditures, Mattson and DeFoor (1985) estimated the value of coral reefs in seven sites located in the John Pennekamp Coral Reef State Park and Key Largo National Marine Sanctuary to be $15.75 per square meter annually based on direct revenues and $85 per square meter annually based on gross revenues (i.e., inclusive of indirect expenditures). They also estimated the lifetime value of coral reefs in these seven areas to be at least $1.6 billion. Using a different technique, Finch et al. (1992) estimated the value of 1,610 square meters of coral reefs in the Florida Keys damaged by vessel grounding at $1.5 million.

While the above estimates for coral reefs are not directly applicable to the issue of valuing live rock as an integral part of the coral reef, they do point to the possibility of estimating such values. In the present case, it has been reported that 75 percent of rubble live rock comes from a known area of the Florida reef tract, the so-called Area 748 which is a 40-mile section of the Florida reef tract. Thus, if valuation of live rock and its contribution to the living reef were attempted, this area would be the prime candidate for study. Spurgeon (1992) spells out the

various components of valuing coral reefs in terms of financial and social benefits associated with reefs. These benefits can be assigned monetary values or a range of monetary values when estimation proves difficult. The two major estimating techniques are travel cost method (TCM) and contingent valuation method (CVM). Valuation under TCM utilizes such information as the number of people visiting a reef site and their corresponding travel costs. One major assumption of this method is that the number of people visiting a site is inversely related to the distance traveled. Under CVM, valuation is undertaken generally by asking people how much they would be willing to pay for certain reef products assuming they could not be obtained elsewhere. The basic idea in CVM estimation is to construct a hypothetical market for reef products and to elicit information from people on the amount they are willing to pay, or be compensated, for any increase or decrease in such products. Both techniques have been employed in the Gulf but only with regard to determining the recreational value of fishing for certain marine species (Green, 1989). Currently, a study is under way to estimate the economic value of reefs in Florida (Chuck Adams, pers. comm., 1993).

In summary, the no action alternative may be expected to sustain the benefits derivable from the harvest of live rock, but the attendant costs of a continuing increase in the harvest of live rock, although not quantifiable at the present time, appear to be substantial.

B. DEFINITION OF THE MANAGEMENT UNIT

B.1. Definition of Live Rock and Addition to the Coral FMP's Management Unit

Additions to the management unit:

B.1.a. ACTION 1: Live rock: Living marine organisms or an assemblage thereof attached to a hard substrate (including dead coral or rock). For example, such living marine organisms associated with hard bottoms, banks, reefs, and live rock may include, but are not limited to:

- **Sea Anemones (Phylum CNIDARIA: Class Anthozoa: Order Actinaria)**
- **Sponges (Phylum PORIFERA)**
- **Tube Worms (Phylum ANNELIDA)**
  - **Fan worms**
  - **Feather duster worms**
  - **Christmas tree worms**
- **Bryozoans (Phylum BRYOZOA)**
- **Sea Squirts (Phylum CHORDATA)**
- **Marine Algae**
  - **Mermaid's fan and cups (*Udotea* spp.)**
  - **Corraline algae**
  - **Green feather, green grape algae (*Caulerpa* spp.)**
  - **Watercress (*Halimeda* spp.)**

Discussion:
In order to be included in the management unit, live rock must be defined. The Council is authorized to develop management plans for fisheries composed of stocks of finfish, molluscs, crustaceans, and all other forms of marine and plant life other than marine mammals and birds. This definition aptly describes the product and conforms to those animals and marine life subject to management under the Magnuson Act.

Live rock is included in the management unit in order to provide additional protection to coral reefs in the Florida Reef Tract and rock Ledges and hard bottoms elsewhere. Although any damage to coral reefs is currently prohibited, enforcement has been difficult in the absence of possession of living coral.

B.1.b. **Rejected Alternative:** Live Rock: Certain living marine organisms or an assemblage thereof attached to a hard substrate (including dead coral or rock). Such Living Marine Organisms associated with Hard Bottoms, Banks, Reefs, and Live Rock may include:

- Sea Anemones (Phylum CNIDARIA: Class Anthozoa: Order Actinaria)
- Sponges (Phylum PORIFERA)
- Tube Worms (Phylum ANNELIDA)
  - Fan worms
  - Feather duster worms
  - Christmas tree worms
- Crustaceans (Phylum ARTHROPODA: Class Crustacea)
  - Cleaner shrimp
  - Decorator and hermit crabs
- Molluscs (Phylum MOLLUSCA)
  - Snails
  - Nudibranchs
  - Bivalves: scallops, oysters, clams, mussels
- Echinoderms (Phylum ECHINODERMATA)
  - Starfish
  - Brittlestars and feather stars
  - Crinoids
  - Sea Urchins
- Bryozoans (Phylum BRYOZOA)
- Sea Squirts (Phylum CHORDATA)
- Marine Algae
  - Mermaid's fan and cups (*Udotea* spp.)
  - Corraline algae
  - Green feather, green grape algae (*Caulerpa* spp.)
  - Watercress (*Halimeda* spp.)

Discussion:
The definition is similar to Action 1 but includes, as examples, some crustaceans, molluscs, and echinoderms which may be present on the live rock but are not attached to it. The Coral Advisory Panel recommended that the definition be limited to organisms attached to the rock for purposes of defining material that is harvested. The Council in their deliberations had originally intended the list to represent a sample of benthic organisms that may be found associated with live rock.

B.1.c. **Rejected Alternative:** Live Rock: Biogenic rock attached to or in close association with hard bottom communities on or in which marine organisms (sessile attached benthos) or an assemblage thereof are growing.

Discussion:
The Councilwas provided this alternative that was developed at the January 1994 meeting of the Council's Coral Advisory Panel to consider as an alternative definition. NMFS staff indicated that this alternative did not adequately describe material removed because not all live rock removed at this time is considered biogenic, or originating from previous living organisms (e.g. chipped rock outcrops).

B.2. Redefinition of Allowable Octocorals

B.2.a **ACTION 2: Allowable octocorals means erect, non-encrusting species of the subclass Octocorallia, except the prohibited sea fans *Gorgonia flabellum* and *G. ventalina*, including only the substrate covered by and within one inch of the holdfast.**

Discussion:
Any restrictions on live rock harvests will affect harvest of octocorals allowed under the fishery management plan since most octocorals taken for the marine aquarium trade are removed with some attached substrate. A redefinition of "allowable octocorals" clarifies that

only individual colonies, and not whole rocks, may be taken under the octocoral quota. A small portion of the rock is allowed to provide a suitable anchor for the octocoral. Harvest of encrusting octocorals (i.e. primarily *Briareum* and *Erythropodium spp.* or "gorgonian live rock") involves removal of the entire substrate and thus is defined as harvest of live rock rather than allowable octocorals.

B.2.b. Rejected Alternative: No change.

Discussion:
When the harvest of live rock is prohibited, the possession of a small portion of substrate around the holdfast would cause enforcement problems. The substrate provides an anchor for the octocoral in the aquarium.

B.1.a. provides for an explicit definition of live rock and associated organisms. B.2.a. redefines octocorals that are allowed to be harvested as one excluding the hard substrate on which certain octocorals grow. Thus even if octocorals may be harvested, they have to be separated from any hard substrate on which they may be found.

The inclusion of live rock in the management unit means that explicit management regulations may be enacted affecting live rock taken in the Exclusive Economic Zone. In part, the need to explicitly manage the harvest of live rock in the Exclusive Economic Zone is prompted by the existence of state regulations on the fishery. More importantly, however, earlier discussions on the potential effects of a no action alternative points to the need for managing the live rock fishery for purposes of recognizing and estimating the costs and benefits associated with the harvest of live rock. While the no action alternative may seem to afford the live rock industry a more competitive environment, the harvest of live rock results in positive or negative economic externalities that justify government intervention. These externalities have been discussed earlier in terms of costs to society from forfeiting benefits from consumptive and non-consumptive uses of live rock and other affected marine species.

B.2.c. Deferred Alternative: Prohibit all octocoral harvest in areas north of Florida.

Discussion:
The Council received a request from the South Carolina Wildlife and Marine Resources Department (SCWMRD) to consider prohibiting the harvest of octocorals because they are an essential part of the live bottom habitat. Also, some members of the Coral Advisory Panel are opposed to the harvest of octocorals offshore of South Carolina and areas north of Florida because the octocorals and associated sponges attached to the limestone outcrops constitute the majority of what is considered as essential live hard bottom in the region. There is no information to assess the economic impact of this alternative and also no scientific evidence is available to substantiate the claim of the Coral Advisory Panel members. The Council deferred action at this time because NOAA General Counsel noted that the measure was more stringent than what was earlier proposed and would require additional public hearings.

C. MANAGE LIVE ROCK HARVESTS

C.1. ACTION 3: Provide for different management in the jurisdictional areas of the two Councils by promulgating a separate set of management measures and regulations for the South Atlantic.

Discussion:
Section 2, sub-section C.1.a gives the rational for promulgating a separate set of management measures and regulations for the South Atlantic.

C.2 . PROHIBIT HARVEST OF LIVE ROCK

C.2.a. ACTION 4:Prohibit all wild live rock harvest north of Dade County Florida and prohibit chipping throughout the jurisdiction of the South Atlantic Council immediately. Cap wild harvest at 485,000 pounds annually until January 1, 1996 when all wild harvest will end.

C.2.b. **Rejected Alternative:** Establish an annual harvest quota of 800,000 pounds of wild rock per year in the Gulf and South Atlantic for the years 1995 through 1998 with no wild harvest in 1999 and subsequent years. However, if a federal live rock aquaculture permit system is not in effect by 1996, wild harvest will continue at the 1995 level.

C.2.c. **Rejected Alternative:** Set the live rock quota at zero; allow no harvest in the Exclusive Economic Zone upon implementation of this amendment.

C.2.d. **Rejected Alternative:** Establish a quota of 800,000 pounds in 1995, to be reduced by 25 percent in 1996, by 50 percent in 1997, by 75 percent in 1998, and no harvest of wild live rock in 1999 and thereafter.

C.2.e. **Rejected Alternative:** Allow three more years of unlimited live rock harvest after implementation of the amendment. After three years, live rock could be harvested from or possessed in the Exclusive Economic Zone only under permit for aquaculture or scientific collection.

C.2.f. **Rejected Alternative:** Establish a live rock quota and permit system. Section 12.3.1 of the FMP could be revised to provide an annual quota for live rock. An additional management measure may be added to include a permit and reporting system for live rock harvest similar to allowable octocorals.

C.2.g. **Rejected Alternative:** Implement a moratorium on new entrants for the harvest of live rock and limit the harvest to X pounds per daily trip.

C.2.h. **Rejected Alternative:** Permitted vessels are to be limited to 25 five gallon buckets (1,250 pounds) of wild live rock per daily trip.

C.2.i. **Rejected Alternative:** No daily vessel trip limits for harvest of wild live rock.

C.2.j. **Rejected Alternative:** Allow a recreational harvest and possession of up to a two gallon (0.27 cubic foot) bucket container of live rock per vessel per day without a permit.

C.2.k. **Rejected Alternative:** Unless otherwise prohibited in this plan, only non-powered hand driven tools such as chipping hammers and chisels may be used in the allowable harvest of species in the management unit where chipping is permitted.

C.2.l. **Rejected Alternative:** No action, no restriction on the use of collecting gear.

Discussion:
The range of alternatives, including Action 4 cover a wide spectrum of options from an outright ban to no restriction on the harvest of wild live rock. The discussion in this section evaluates the economic impacts that could result from implementing the various alternatives on consumptive and non-consumptive users of the resource. Net benefit from consumptive use is broadly taken to be the resulting change in producer surplus from the harvest of live rock while net benefit from non-consumptive use refers to the value obtained from the non-harvest of live rock. Ideally, the main indicator for evaluating the resulting effects of the trade-off between consumptive and non-consumptive uses is the overall net benefit to society.

The mentioned trade-off in net benefit may be appropriately approached within the context of allocating the wild live rock resource among competing users, i.e., consumptive and non-consumptive. The necessary condition for an optimal allocation of the resource implies that the marginal net benefits are equal for the various users of the resource. The dearth of information on live rock biology, harvesting, marketing, etc. makes it impossible to determine the level of allocation between consumptive and non-consumptive users that will satisfy this condition. This is further compounded by the fact that it is even more difficult to estimate the non-consumptive values for live rock. To date, there is no known study that has attempted any estimation of the value of live rock to non-consumptive users. However, it should be stated that the preferred alternative of the Council is for prohibition of wild live rock harvest as of January 1, 1996. Thus, the evaluation simply looks at the impacts of the Council's action and the rejected alternatives.

The Council's action limits wild live rock harvest at 485,000 pounds annually until January 1, 1996 when all wild live rock harvest will end. It further prohibits all wild live rock harvest north of Dade County, Florida and prohibits chipping throughout the jurisdiction of the South Atlantic Council immediately. The action of prohibiting harvest north of Dade County, Florida is to prevent this activity from spreading further north and could be seen as a preemptive measure. Presently, no harvest of wild live rock has been reported north of Dade County, Florida.

Capping the harvest of wild live rock at 485,000 pounds until the end of 1995 will prevent any further increase and also reduce total annual harvest of all live rock by 11.5 percent (63,000 pounds) based on 1992 harvest figures. This will reduce annual producer surplus (exvessel) from wild live rock harvesting by approximately $42,000. This is the estimated loss in producer surplus to wild live rock harvesters. There are over 100 people engaged in live rock harvesting in south Florida, but only 24 accounted for 75 percent of the landings in 1992. Assuming that 75 percent of the annual surplus is spread evenly among these 24 harvesters, each harvester will lose $1,300 in annual producer surplus in 1994 and 1995. The remainder of the harvesters will lose far less than this amount. Thus, this alternative will not impose any significant hardship on harvesters during the period harvesting is allowed to continue.

As of January 1, 1996 all wild live rock harvesting would be prohibited in the area within the South Atlantic Council's jurisdiction. It is expected that by this time all those wanting to set up aquaculture operations would have been able to do so. This would require some investment, but there is not enough information to determine the level of investment that would be involved. It would include costs for the various permits that are required, costs for cultch materials and for depositing them, and monitoring and harvesting costs. If aquaculture operations are successful, there should be little or no disruption to the supply of live rock to the industry. However, it is likely that the number of suppliers would have contracted and that they would be in a better position to enforce tighter control on pricing, particularly if there is still an effective demand for the products. There is no way of knowing the magnitude by which such price changes would occur except to say that it would likely result in price increases if demand continues to be high.

If aquaculture of live rock turns out not to be as successful as anticipated, or if the rate of growth of organisms on the cultch materials is slower than what has been projected, there could be some disruption to the supply of live rock. This could affect the development of this industry. Also, those who have invested in aquaculture of live rock would have to wait a longer period of time before receiving any return on their investments. If prices are high enough, the returns they eventually receive would adequately compensate for the longer waiting period.

Those presently harvesting wild live rock who do not engage in aquaculture of live rock will lose this source of income. It is likely that most of the people harvesting wild live rock are part time harvesters. Thus, this latter group may spend more time on their other activities or look for alternative activities to make up for the loss of income. Some of them might engage in other fishing activities. There is also likely to be some loss in jobs, but this would be minimal since the number of people involved in this industry is small. No redundancy in equipment is expected. Basically, live rock harvesters use boats 22 - 28 feet in length and dive gear. These could be easily utilized for other activities such as harvesting marine tropicals.

In terms of non-consumptive uses, this alternative will reduce further loss of hard bottom surface until the prohibition prevents chipping of any hard bottom, increases the possibility of enhancing marine productivity, and increases existence, bequest, and option values. Once harvest is prohibited, all the direct benefits will go to the non-consumptive users. The other values, existence, bequest, and option are likely to increase at a faster rate. There is no direct method to estimate these benefits. However, assuming that the coral reefs and associated ecosystems have similar value to the Great Barrier Reef of Australia (Hudloe, 1990) and using a functional population of 134,600 for Monroe County (Monroe County, 1993), the one time value for this system is estimated at approximately $5 million. If the tourist population is excluded, the one time value is estimated at approximately $3 million. (forty-two percent of the functional population is seasonal.) The non-consumptive use value is estimated at $36 per person. These values are estimates for the systems in south Florida under the jurisdiction of the South Atlantic Council.

An outright ban on wild live rock harvest would shut down all those businesses dependent on live rock unless other sources for obtaining live rock could be found. This would cause loss in producer surplus to harvesters of $628,000 during the first year of the ban based on exvessel value for 1992. On average, the 24 harvesters who landed 75 percent of the total harvest in 1992 would each lose approximately $20,000 during the first year of the ban. It would also cause serious disruption to the marine aquarium industry. This would affect other industries that are horizontally integrated with this industry. There would also be some loss in export earnings. Based on an average export figure of three tons daily from Miami International Airport (Wheaton, 1989; FMFC, 1991) and assuming that not more than 50 percent of 800,000 pounds would be exported in any one year, the loss in export revenues could be over $400,000. Some jobs would be lost although this would be minimal because of the relatively small number of people involved in harvesting. Initially, there would be some dislocation of these people until they are able to adjust and secure alternative employment. There would likely be some shift to other marine related activities. The Council decided that this alternative would impose hardship on harvesters and that those who want to continue with the industry should be given adequate time to set up aquaculture operations.

The net benefits from prohibiting harvest are discussed above. Apart from increases in the non-consumptive values, prohibition is likely to increase productivity of marine life in the ecosystem. In particular, reef fish species would be protected and could result in increased yields depending on other management measures being implemented for those species. The 1992 commercial landings of Monroe County reef fish were 4.8 million pounds. The recreational landings (excluding headboats) were 2.5 million pounds (Bohnsack et al., 1994). The magnitudes of these landings are indicative of the benefits that could be obtained in reef fish harvest potential by enhancing the productivity of the reef system.

The alternative that sets a quota of 800,000 pounds in 1995 and reduces harvest by 25 percent annually over four years (C.2.d) would allow for a gradual reduction in annual revenues. From 1996, annual revenues would decrease in increments of 25 percent successively, for three years. Based on the 1992 landings value and assuming that there is no change in pricing, annual producer surplus would decrease by $157,000, $314,000 ,and $471,000 from 1996 to 1998. However, if the demand for live rock is still high and there is no other source for obtaining live rock during those years, the prices would likely increase and the loss in producer surplus could be significantly lower than the above estimates. If this scenario were to be enacted, harvesters should not be constrained in terms of the availability of funds for investing in aquaculture.

This alternative (C.2.d) would not prevent chipping of hard bottom surfaces and harvesting north of Dade County, Florida. It would allow an illegal activity to continue and could enable harvesters to extend their activities northwards. The Florida Marine Fisheries Commission estimated that the 1991 harvest resulted in the loss of at least 0.39 acre of hard bottom surface (4 inches deep). Based on this estimate, this alternative would result in the loss of 0.53 acre of hard bottom surface each year until 1999. The main point to note here is that a significant portion of this loss would be concentrated along a 40 mile stretch of reef in the Florida Keys, Tavernier to Duck Key. This alternative was therefore rejected by the Council.

Alternative C.2.e allows for three more years of unlimited harvest. This would encourage more people to enter the industry and accelerate the loss of hard bottom surface. Annual harvest has been increasing at a rate of 30 percent for the past three years. Assuming that there is no more entry to the fishery, the loss of hard bottom surface would be at least 0.7 acre yearly for those three years. If there is entry, the loss could be up to one acre yearly. This could affect the ecosystem, reduce productivity of marine life, and accelerate reduction in the non-consumptive values.

Alternative C.2.f limits harvest and establishes an annual quota for live rock. This would allow harvest of wild live rock to continue indefinitely. There would be a continuous loss of hard bottom surface. The rate at which this takes place would depend on the level at which the annual quota would be set and whether the quota is exceeded or not. Harvesters would be the ones to benefit at the expense of the environment and non-consumptive users once they have adjusted their harvesting capacity to the quota level. There could be derby-style harvesting unless a trip limit is imposed. The long term effect of this alternative could lead to irreversible

damage to the ecosystem. The extent of such damage can not be quantified because of lack of data.

The remaining five rejected alternatives (C.2.g – k), although imposing some restrictions on the level of harvest and/or limiting the number of participants or the type of gear that can be used for harvesting, would allow for indefinite harvesting of wild live rock. The costs to society and the possibility of irreversible damage to the ecosystem are fully discussed at the beginning of this section under the no action alternative. The major difference between these alternatives and the no action alternative is that there are some restrictions with these other six alternatives. However, because live rock is considered to be a non-renewable resource, the costs of allowing indefinite harvest of this resource would likely outweigh the benefits. Therefore the Council rejected these alternatives.

C.3 PROVIDE FOR AQUACULTURE OF LIVE ROCK IN THE EXCLUSIVE ECONOMIC ZONE.

C.3.a ACTION 5: Allow and facilitate aquaculture of live rock in the Exclusive Economic Zone.

C.3.b. **Rejected Alternative:** No provision for aquaculture. After termination of the period allowing annual quotas, the harvest or possession of live rock in the Exclusive Economic Zone would be prohibited.

Discussion:
The Council's action complements its position on the phasing out of wild live rock harvest and its eventual prohibition beginning January 1, 1996. If aquaculture of live rock is successful, the benefits from both consumptive and non-consumptive uses are expected to increase. Aquaculturists would likely be able to adjust their levels of harvest to meet with the demand for the products. This would enable them to obtain reasonable returns on their investments. If demand continues to increase, producer surplus would also increase. Because there would be no more harvest of wild live rock, maximum benefits would be obtained from its non-consumptive uses. Productivity of marine life would likely increase. In addition, the cultch materials deposited for live rock aquaculture would also act as artificial reefs for some fish species. This will introduce fish species to areas that were previously unproductive and would add to the net benefits to society.

The selection of sites for depositing cultch materials would be an important factor in determining the success of aquaculture operations. If materials are deposited in areas where trawling and longlining operations are going on, both fishing and aquaculture activities could be affected. There could be significant loss of fishing gear as these get entangled on cultch materials and significant damage could be caused by the gear to the organisms growing on the cultch materials. These two effects could become significant enough to result in net loss to society.

Those engaging in aquaculture would have to bear the start up cost for the operation. The investment capital needed will depend on the scale of any particular aquaculture operation. The various components of the start up cost were identified earlier in the discussion under sub-section C.2. Based on the estimated annual revenues obtained by the 24 harvesters who landed 75 percent of the total landings in 1992, the start up cost is not expected to be prohibitive for any of these people. It should be noted that at least one individual has already deposited cultch material for live rock culture in Tampa, Florida.

Presently, the Council and the NMFS do not have any authority to lease water bottoms for aquaculture in the Exclusive Economic Zone. Other federal agencies have such regulatory responsibilities. However, the Council's actions include facilitating the process for developing aquaculture. Thus, the Council and NMFS will work with other federal agencies responsible to reduce the obstacles involved in developing aquaculture of live rock.

C.4. HARVEST PERMITS

C.4.a **ACTION 6: In addition to any applicable state license or permit, a federal permit is required for the harvest and possession of wild live rock in the Exclusive Economic Zone during the phaseout period. Permits shall be limited to persons who have commercially landed and, where required, reported wild live rock landings prior to the control date of February 3, 1994.**

C.4.b. Rejected alternative: Require a federal permit in the absence of a state permit for harvest and possession of "wild" live rock from the Exclusive Economic Zone during the phase-out period.

C.4.c. Rejected Alternative: Require no harvest permit for taking commercial quantities of wild live rock during the phase-out period.

Discussion:
The basic advantage for requiring permits is in the identification of fishery participants and the subsequent effective monitoring and enforcement of rules governing wild live rock harvest. The direct cost outlay for securing permits is minimal since it may not exceed the administrative cost of issuing them. The cost per applicant is estimated at $40. Given that harvest permits would only be needed during the phasing out period, the permitting requirement would have only a short term effect.

In addition, there would be a moratorium on the issuance of harvest permits. Only those who have commercially landed live rock prior to the control date will be eligible for harvest permits. This would limit the number of participants involved in harvesting. The Florida Department of Environmental Protection records show that in 1993 about 102 permittees reported live rock landings although in previous years there were about 147 permittees that reported landings of live rock. The number of harvest permits that would be issued will likely not exceed the latter number.

If demand for live rock stays constant over the phase-out period, the price would likely remain stable and those with permits will not incur any loss in producer surplus. However, if demand increases over the phase-out period, the average price for live rock would likely increase and permittees will benefit more in the form of increased producer surplus. Those wanting to participate in the fishery but are excluded because of the permit requirement would forgo these benefits. If harvest permits are transferable, a market for the sale of permits could develop. It would be expedient to make harvest permits non- transferable because of the short period of time that they will be used to avoid incurring management costs in tracking the transfer of permits.

Alternative C.4.b essentially is similar to the preferred action but does not impose any limitation on who can qualify for a harvest permit. This would allow more people to obtain harvest permits and could lead to an increase in landings, particularly if the demand for live rock remains high. Since it is the Council's intention to limit harvest at the 1992 level until wild harvest is prohibited, this alternative was rejected.

Alternative C.4.c requires no harvest permit during the phaseout period. This alternative would allow anyone wanting to harvest wild live rock to do so legally. Also, it would prevent the effective monitoring and reporting of statistics. If this alternative causes an increase in harvest, there would be further damage to the ecosystem with all the attendant consequences already discussed earlier. This alternative was therefore rejected by the Council.

C.5 AQUACULTURE PERMITS

C.5.a. **ACTION 7: Require a permit for the possession or harvest from aquaculture operations in the Exclusive Economic Zone. Such a permit will be required in order to harvest or possess live rock from an aquaculture site. Harvest from the area may only be done by the permittee or his written designee and an administrative fee will be authorized for the permit.**

C.5.b. **Rejected Alternative:** Require a permit for the possession or harvest of live rock and attached prohibited corals from aquaculture operations in the Exclusive Economic Zone. NMFS permits shall be available only to those individuals who have demonstrated that they have deposited rock or substrate in the permitted site.

C.5.c. **Rejected Alternative:** No permit required for possession of live rock from aquaculture operations in the Exclusive Economic Zone.

Discussion:
The basic advantage of requiring an aquaculture permit is for the identification of fishery participants and the subsequent effective monitoring and enforcement of rules governing live rock aquaculture. The corresponding cost may be deemed minimal considering that the direct cost outlay for securing permits may not exceed the administrative cost of issuing permits. There is, of course, the possibility of some transaction costs that may be incurred in case some form of access limitation is adopted for the fishery. Such costs would be appropriately considered attendant to other regulations that may be adopted and not necessarily from any of the permitting options considered here.

The Council rejected alternative C.5.b because they concluded that it is not necessary to impose any restriction for obtaining aquaculture permits at this time. Also, alternative C.5.c was rejected because if there is no means for identifying cultured live rock from wild live rock, enforcement of the prohibition on wild live rock harvest would be almost impossible.

C.6. SCIENTIFIC, EDUCATIONAL, AND RESTORATION PERMITS

C.6.a. **ACTION 8: Require a federal permit for harvest and possession of prohibited corals and prohibited live rock from the Exclusive Economic Zone for scientific, educational, and restoration purposes.**

C.6.b. **Rejected Alternative:** Do not add live rock to the list of other prohibited species for which a permit is required for harvest and possession for scientific, educational, and collecting permit.

Discussion:
The Coral FMP provides for issuance of a federal permit to remove prohibited corals for scientific and educational purposes. Since this amendment is proposing to include live rock in the management unit, allowance should be made to add it to the scientific permit. It would also facilitate monitoring of such activities. Alternative C.6.b was rejected because of the difficulty of enforcement of possession of prohibited species.

D. OPTIMUM YIELD (OY) FOR LIVE ROCK

D.1. **ACTION 9: Optimum Yield (OY) for wild live rock is to be 485,000 pounds annually for the South Atlantic region where harvest is allowed during 1994 and 1995, after which it is to be zero except for that which may be allowed by permit.**

D.2 **Rejected alternative:** Optimum Yield for live rock is to be that established by quota(s) or which may be allowed by permit.

D.3 **Rejected Alternative:** Optimum Yield for live rock is to be zero except for that which may be allowed by permit.

D.4 **Rejected Alternative:** Optimum Yield for live rock is to be unlimited for three years after which it is to be zero except for that which may be allowed by permit.

Discussion:
The inclusion of live rock in the management unit requires a definition of overfishing. The current coral management plan, as amended, already contains a definition of overfishing which is tied to the definition of Optimum Yield. Specifically, the management plan, as amended, stipulates that overfishing is an annual harvest that exceeds Optimum Yield. Optimum Yield will be 485,000 pounds until the end of 1995. This is only for Dade and Monroe

Counties, Florida as of January 1, 1996. Optimum Yield will be zero, except that which may be allowed by permit. This will limit the volume of harvest and reduce the impact on the ecosystem until wild harvest is prohibited. Also, it will lessen the economic impact on harvesters by allowing them time to switch to aquaculture if they so desire.

Alternative D.2 allows for indefinite harvesting of wild live rock. This was rejected by the Council because the intent is to phase out the harvesting of wild live rock.

The Council rejected Alternative D.3 because it could cause disruption to the marine aquarium industry and also have significant economic impact on harvesters and dealers.

Alternative D.4 was rejected by the Council because it allows for unlimited harvest of wild live rock for the next three years. Considering the present demand for live rock and the rate of increase in harvesting, significant and possibly irreversible damage could be done to the environment by the end of the three year period. The cost to society would likely exceed the benefits to harvesters, dealers, and the aquarium industry.

Government Costs of Regulation

The preparation, implementation, monitoring ,and enforcement 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	$20,000
NMFS administrative costs of document preparation, meetings and review	$15,000
Law enforcement costs	$15,000
Public burden associated with permits	$10,000
NMFS costs associated with permits	$10,000
TOTAL	$70,000

The items above have been identified as the likely costs to be incurred in preparing and implementing this plan amendment. The public costs of securing permits refer only to permits issued by the NMFS. The public would incur additional permit cost and application fees in undertaking live rock aquaculture. Aquarium Systems, Inc. has determined the following cost items and amounts (permit and application fees) for undertaking live rock aquaculture in Florida:

Division of State Lands Lease Application	$200
DEP Division of Water Management Artificial Reef Permit	$100
and/or Special DEP Dredge and Fill Permit	$500
and/or General Live Rock Aquaculture Permit	$100
U.S. Army Corps of Engineers Letter Permit	none
Pinellas County Dredge and Fill Permit	$150

(Note: some counties do not require permits)

Summary and Expected Net Impact of Proposed Action

The proposed regulatory action constitutes changes in the management of live rock harvests in the Exclusive Economic Zone under the jurisdiction of the South Atlantic Council. The emphasis of the summary is on the expected economic impact of the various alternatives.

The no action alternative could result in sustained profitability of the live rock harvest sector, but there are attendant costs that could increase along with any increases in the harvest of live rock. Such cost increases may be prevented by the various options that include live rock under the management plan and provide for certain restrictions in the harvest of wild live rock until it is prohibited.

The Council's actions that caps wild live rock harvest at 485,000 pounds until the end of 1995 and provides for, and facilitates live rock aquaculture would ensure minimal disruption to the marine aquarium industry, enable harvesters to set up live rock aquaculture, and protect the environment. It should provide significant overall benefit to society if aquaculture of live rock is successful.

The permit requirements are deemed necessary to identify industry participants and to monitor and enforce any regulations adopted for the fishery. A definition of Optimum Yield is deemed appropriate if live rock is to be included in the management unit. The appropriate definition of Optimum Yield stipulates that annual harvest will be 485,000 pounds until the end of 1995 and zero thereafter except for that which may be allowed by permit.

The table on page 44 summarizes the impacts of the preferred alternatives.

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

The entire Florida commercial harvest sector of the live rock fishery is valued at about $628,000 exvessel which is significantly less than $100 million. Even if the fishery in other states could be accounted for, the total value would not exceed $1 million still below the $100 million level. The actions in this plan amendment apply to live rock harvests in the Exclusive Economic Zone under the jurisdiction of the South Atlantic Council. Given the size of the fishery and the segment of the fishery directly affected by the proposed regulation, it is concluded that any revenue or cost impacts on the fishery would be significantly less than $100 million annually.

However, the rate of uptake of aquaculture of live rock and the success of this venture will determine whether there would be any major impact (in terms of forgone economic benefits) to the industry. If the uptake and success rates are high, there will be net gains to the industry. On the other hand, if low rates are obtained there could be some losses to the industry. In the latter case, it would impact negatively on employment and investment, and likely render the industry less competitive in the international market, specifically in Canada and England.

Based on the foregoing, it is concluded that this regulation if enacted would constitute a "significant regulatory action" under some of the mentioned criteria.

Summary of Expected Changes in Net Benefits

ACTION	POSITIVE IMPACTS	NEGATIVE IMPACTS	NET IMPACTS
NO ACTION Status Quo – No management of live rock	Possible increase in producer surplus and profits to harvesters and dealers respectively.	Loss of habitat and associated living organisms. Degradation of the environment. Decrease in non-consumptive value.	Possible irreversible damage to the ecosystem. Long-term loss in both consumptive and non-consumptive values.
DEFINITION OF MANAGEMENT UNIT Definition of live rock and addition to Coral FMP's Management Unit	Provides additional protection to coral reefs and hard bottoms. Facilitates enforcement. Sustains the value of the system.	None	Improves management and protects coral reefs and hard bottoms.
Redefinition of Allowable Octocorals	Protects hard bottoms.	None	Facilitates management measures.
MANAGE LIVE ROCK HARVESTS Provide for different management in the jurisdictional areas of the two Councils	Facilitate implementation of SAFMC approved actions.	None	Improve the process of future plan amendments.
Prohibit live rock harvest	Protect coral reefs and hard bottoms. Maintain and possibly increase non-consumptive value.	Short-term loss in producer surplus and net benefits to harvesters and dealers respectively.	Long-term gains to non-consumptive users.
Provide for Aquaculture of live rock in the EEZ	Regular supply of live rock. Increased productivity of ecosystem. Stable income to harvesters and dealers.	Short-term increase in operating costs. Initial start-up costs.	Long-term gains to both consumptive and non-consumptive users.
Harvest Permits	Limit number of harvesters. Control harvest activities. Improve statistical data collection for the fishery.	Cost of permit. Loss of revenue for those not qualified to apply for permit.	Facilitate management measures and transition to aquaculture. Protects the coral reefs and hard bottom.
Aquaculture Permits	Controls deposit of cultch materials. Tracks harvesting activities.	Cost of permit.	Facilitates management of coral reefs and hard bottoms.
Scientific, Educational and Restoration Permits	Controls collection of live rock for certain approved activities.	Uncontrolled harvest of live rock for certain approved activities.	Protects the environment. Facilitates scientific, educational and restorational activities.
OPTIMUM YIELD	Protects coral reefs and hard bottoms. Increases their values.	Short-term loss in producer surplus and net benefits to harvesters and dealers respectively.	Long-term increase in consumptive and non-consumptive values.

Initial Regulatory Flexibility Analysis

Introduction

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

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). It has been estimated that there are about 147 individuals who are at least on a part-time basis engaged in the harvest of live rock. 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. Since the proposed action will affect practically all participants of the live rock harvest sector, the "substantial number" criterion will be met in general.

Economic impacts on small business entities are considered to be "significant" if the proposed action would result in any of the following: 1) reduction in annual gross revenues by more than 5 percent; 2) increase in total costs of production by more than 5 percent as a result of an increase in compliance costs; 3) 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; 4) capital costs of compliance represent a significant portion of capital available to small entities, considering internal cash flow and external financing capabilities; or 5) as a rule of thumb, 2 percent of small business entities being forced to cease business operations (NMFS, 1992).

The proposed quota on wild live rock harvest until January 1, 1996 when all wild harvest will be prohibited, is expected to reduce producer surplus to harvesters by more than five percent. A switch from harvest of wild live rock to aquaculture in compliance with the proposed action may be deemed to result in a significant increase in the operating and capital costs to fishermen as a result of complying with the regulations. Considering that all participants in the commercial live rock harvest fishery may be deemed small business entities, the issue of big versus small business operations is not relevant in determining distributional/regional effects of regulations, and it thus also rules out disproportionate effects on capital costs of compliance. Although most Florida permit holders do not derive a major portion of there income from live rock, a number of current participants in the live rock harvest industry may be forced to cease business or switch to other operations if the more severe restrictions were adopted for the fishery. This number, however, is not known.

It can be inferred from the foregoing discussion that the proposed regulations can be expected to result in a significant economic impact on a substantial number of small entities in the commercial live rock harvest sector. On this account, an IRFA has been prepared. The following comprises the remaining portions of the IRFA.

Explanation of Why the Action is Being Considered

Refer to the section on Problems and Objectives in the RIR and to Section I of the amendment document.

Objectives and Legal Basis for the Rule

Refer to the section on Problems and Objectives in the RIR and to Sections 1and 2 of the amendment document. The Magnuson Fishery Conservation and Management Act of 1976 provides the legal basis for the rule.

Demographic Analysis
Refer to the Coral Fishery Management Plan, as amended.

Cost Analysis
Refer to the Government Cost and Summary sections of the RIR.

Competitive Effects Analysis
The industry is composed entirely of small businesses (harvesters). Since no large businesses are involved, there are no disproportional small versus large business effects.

Identification of Overlapping Regulations
The proposed action does not create overlapping regulations with any state regulations or other federal laws. Some of the proposed options may even render federal and state (Florida) rules compatible.

Conclusion
The proposed regulation is concluded to have a significant economic impact on a substantial number of small entities. In this regard, the foregoing information and pertinent portions of the RIR are deemed to satisfy the analysis required under the RFA.

5.0 ENVIRONMENTAL CONSEQUENCES

Habitat Loss: Hard bottoms and reef rubble from which live rock is removed contributes to the habitat for reef dwelling organisms which include reef fish and ornamental fishes and invertebrates. There is concern that the removal of this material degrades the value of the habitat.

Aquarium Sales: Harvest of live rock at a level of about 500 tons per year is said by producers to be the backbone of the marine aquarium trade because it allows appropriate habitat for captive tropical fishes and invertebrates. Harvest of naturally occurring rock could be replaced by material from aquaculture operations.

Ecosystem Management: An acceleration and/or continuation of removal of live rock can degrade the quality of fishery habitat, particularly if the activity is concentrated in high use areas.

Aesthetic Values: Removal of coral or damaging coral reefs is already prohibited by federal and Florida regulations. However, the removal of showy material in areas frequented by divers would contribute to aesthetic degradation.

Consistent Regulations: Only the State of Florida currently regulates harvest of live rock. Florida prohibited removal from State waters in 1989.

Conclusion

Habitat of the Stocks - Since corals are sessile animals, the management plan section on Description of the Stocks (5.0) and the section on Description of the Habitat (6.0) adequately describe the habitat of the stocks, including condition of the stocks as well as man-induced and natural impacts to the habitat. Amendment #1 modified the FMP by including the following updated revised subsections: 6.4 Habitat Information Needs; 6.5 Habitat Protection Programs; and 6.6 Habitat Recommendations. These revisions are in Appendix A.

Mitigating Measures Related to the Proposed Action - Introduction of aquaculture would enhance the hard bottom habitat and tend to mitigate earlier loss from harvest of the natural

live rock. Aquaculture would also reduce the economic loss to live rock harvesters who are displaced from harvest of naturally occurring material and who elect to revert to aquaculture.

Unavoidable Adverse Effects - Without management of live rock under this plan, the removal of fishery habitat would continue and probably increase with demand for live rock. Short term adverse impacts will occur from the removal of the rubble rock quota but be limited to Dade and Monroe Counties, Florida and only during the phase out. The phase out of wild rubble rock harvest is to provide harvesters an additional time period to transfer to aquaculture.

Relationship of Short-term Uses and Long-term Productivity - The Council weighed the short-term losses to harvesters against the long-term yield and stability of the habitat and species under federal management utilizing the habitat and concluded that the proposed action would result in net benefits to society. With the industry's transition to aquaculture, short term losses will be offset by long term gains in habitat availability and revenues to harvesters involved in aquaculture. One additional external benefit resulting from the transition to aquaculture would be increased recreational fishing opportunities afforded by additional structure placed in federal and state waters.

Irreversible and Irretrievable Commitments of Resources - There are no irreversible or irretrievable commitments of resources associated with the proposed actions. If the Council had not taken action to prohibit live rock removal continued loss of coral reef and live bottom habitat would occur and possibly expand to other federal waters in the South Atlantic.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES
EFFECTS OF LIVE ROCK MANAGEMENT ALTERNATIVES ON THE ISSUES

	LIVE ROCK ALTERNATIVES						
		LIMIT HARVEST		PROHIBIT HARVEST			
ISSUES	No Action	Establish an Annual Quota	Limit Access/Effort	Prohibit all Harvests	Phase Out Harvest Except Aquaculture	Provide for Aquaculture	Permit Requirement
Habitat Loss	Losses increase	Losses could stabilize	Losses could stabilize	No net loss	Short term loss; long term possible gain	Gain from seed material	No effect
Aquarium Sales	Profits stable or increase	Profits stable	Redistribute and possible reductions	Adverse effects	Aquaculture could replace wild production without interruption	Temporary Loss	No effect
Ecosystem Management	Reef and hard bottom systems unprotected	Some level of loss to reef systems and hard bottoms	Non-renewable losses	Benefits other species	Short term loss; long term benefit	Some Benefit	Enforcement and protection enhanced
Aesthetic Values	Negative effects	Negative effects	Negative effects	Positive effects	Short term negative; long term positive	Positive Effect	No effect
Consistent Regulations	Not consistent with Florida regulations	Not consistent with Florida approach	Not consistent with Florida approach	Consistent with with Florida approach	Consistent with Florida approach after closure of wild harvest	Consistent with Florida approach	Consistent with Florida approach

Effects of the Fishery on the Environment

Physical Environment - The proposed actions in this amendment will have a positive impact on the physical environment by preventing continued removal of habitat.

Fishery Resource - The proposed actions are intended to protect the coral, coral reefs, and live rock habitat and to prevent them from becoming overfished.

Human Environment - Some live rock fishermen would be affected by restrictions intended to conserve live rock. Long-term benefits are expected to exceed short-term loss.

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

Damage to Ocean and Coastal Habitats - The proposed actions, and their alternatives, are not expected to have any adverse effect on the ocean and coastal habitats. Habitat concerns are included in Appendicies A, B, and C. The live rock fishery, as presently prosecuted, does

substantially impact the live bottom habitat that is essential to the reef species under Council management. The Council has proposed the regulations contained in this amendment to mitigate and minimize damage to coral, coral reefs, and live bottom habitats essential to other species under management.

Cumulative Effects - The proposed actions are not expected to result in cumulative adverse effects that could have a substantial effect on the coral, coral reefs, and live rock resources or any related stocks, including sea turtles. In fact, the proposed measures will improve status of stocks and minimize habitat damage because wild live rock removal will be prohibited and aquaculture activities will theoretically increase available bottom structure.

Bycatch - Implementation of regulations proposed in this amendment will eliminate the problem identified as removing entire micro-communities with all associated organisms described in detail in the "Purpose and Need "section of this document. Another problem that has occurred in harvesting live rock is the intentional or unintentional removal of prohibited coral. These bycatch problems will be eliminated by the Council's actions.

Additional environmental consequences resulting from the protection of habitat and non-renewable resources are described on page 40 Section 4.0 of the Draft Environmental Impact Statement for the Fishery Management Plan for Coral and Reef Associated Plants and Invertebrates of Puerto Rico and the United States Virgin Islands prepared by the Caribbean Fishery Management Council (CFMC, January 1994). This discussion is included here by reference as additional rationale for action.

6.0 DATE AND LOCATION OF PUBLIC HEARINGS

January 5 1994 — Savannah, Georgia
Holiday Inn Mid-town, 7100 Street

January 6 1994 — Duck Key, Florida
Hawk's Cay Resort, Mile Marker 61

January 11 1994 — Pensacola, Florida
Pensacola Civic Center, 201 East Gregory Street

January 13 1994 — Wrightsville Beach, North Carolina
Holiday Inn Wrightsville Beach, 1706 North Lumina Avenue

January 19 1994 — Clearwater Beach, Florida
Gulf of Mexico Fishery Management Council meeting
Clearwater Beach Hilton Resort, 715 S. Gulfview Boulevard

February 10 1994 — St. Augustine, Florida
South Atlantic Fishery Management Council meeting
Ponce De Leon Conference Resort, 4000 U.S. Highway 1 North

March 16 1994 — Gulf Shores, Alabama
Gulf of Mexico Fishery Management Council meeting
Holiday Inn on the Beach

April 20 1994 — Brunswick, Georgia
South Atlantic Fishery Management Council meeting
Glynn Mall Suites, 500 Mall Boulevard

Summaries of public comments are included as Appendix E.

7.0 LIST OF PREPARERS

Roger Pugliese, Fishery Biologist, South Atlantic Fishery Management Council
Dr. Theophilus R. Brainerd, Fishery Economist, South Atlantic Fishery Management Council
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Antonio Lamberte, Economist, Gulf of Mexico Fishery Management Council
Terrance Leary, Biologist, Gulf of Mexico Fishery Management Council

The following individuals assisted by reviewing this amendment:
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Gregg T. Waugh, Deputy Executive Director, South Atlantic Fishery Management Council
Jane DiCosimo, Fishery Biologist, South Atlantic Fishery Management Council

The following individual provided landing statistics utilized by Council staff throughout the text and to create graphics presented in this amendment :
Martha D. B. Norris, Associate Research Scientist, Florida Department of Environmental Protection, Division of Marine Resources, Florida Marine Research Institute.

The following individual provided detailed information and expert testimony to the Council on the State of Florida live rock aquaculture leasing program:
Wanda Prentis, Planner IV, Florida Department of Environmental Protection, Division of State Lands, Department of Land Management Services

The following individual provided detailed information and expert testimony to the SAFMC and Habitat Advisory Panel on the status of South Atlantic coral and coral reefs, live rock harvest, and impacts of live rock harvest on habitat:
Jennifer Wheaton, Florida Department of Environmental Protection, Division of Marine Resources, Florida Marine Research Institute
Walter Jaap, Florida Department of Environmental Protection, Division of Marine Resources, Florida Marine Research Institute

The following individuals provided assistance to Roger Pugliese in using the desktop information system and geographic boundary files to create maps contained in this document:
Daniel Basta, Chief, NOAA Strategic Environmental Assessment (SEA) Division
Mike Shelby and Tom LaPointe, NOAA Strategic Environmental Assessment (SEA) Division

8.0 LIST OF AGENCIES AND ORGANIZATIONS CONSULTED

South Atlantic Fishery Management Council
- Coral Advisory Panel
- Habitat Protection Advisory Panel
- Scientific and Statistical Committee

Gulf of Mexico Fishery Management Council
- Coral Advisory Panel
- Law Enforcement Advisory Panel
- Scientific and Statistical Committee

National Oceanic and Atmospheric Administration (NOAA)
- Office of General Counsel (SER)
- Florida Keys National Marine Sanctuary
-Looe Key National Marine Sanctuary
-National Ocean Service/ Strategic Environmental Assessment Division

National Marine Fisheries Service (SER)
- Southeast Regional Office

- Southeast Fisheries Center

Florida Department of Environmental Protection
-Division of Marine Resources/Florida Marine Research Institute
-Division of State Lands

Florida Marine Life Association
Florida Marine Aquarium Society
Project ReefKeeper
Reef Relief
Florida Live Rock Alliance
Coral Reef Coalition
The Sierra Club/Florida Chapter
The Upper Citizens Association
Nature Conservancy
Florida Keys Audubon Society
The Nature Conservancy
The American Littoral Society
The Center for Marine Conservation
Clean Water Action
The Coral Reef Community Foundation
Environmental Defense Fund
Florida Audubon Society
Florida Defenders of the Environment
Florida Wildlife Association
Greenpeace
Izaak Walton League/Florida Keys
Last Stand
Manasota 88
The Wilderness Society

9.0 OTHER APPLICABLE LAW

A. VESSEL SAFETY CONSIDERATIONS

PL. 99-659 amended the Magnuson Act to require that a fishery management plan or amendment must consider, and may provide for, temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting the safety of the vessels.

No vessel will be forced to participate in the fishery under adverse weather or ocean conditions as a result of the imposition of management regulations set forth in this amendment to the Fishery Management Plan for Coral and Coral Reefs. Therefore, no management adjustments for fishery access will be provided.

There are no fishery conditions, management measures, or regulations contained in this amendment which would result in the loss of harvesting opportunity because of crew and vessel safety effects of adverse weather or ocean conditions. No concerns have been raised by people engaged in the fishery or the Coast Guard that the proposed management measures directly or indirectly pose a hazard to crew or vessel safety under adverse weather or ocean conditions. Therefore, there are no procedures for making management adjustments in this amendment due to vessel safety problems because no person will be precluded from a fair or equitable harvesting opportunity by the management measures set forth.

There are no procedures proposed to monitor, evaluate, and report on the effects of management measures on vessel or crew safety under adverse weather or ocean conditions.

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.

B. COASTAL ZONE CONSISTENCY

Section 307(c)(1) of the Federal Coastal Zone Management Act of 1972 requires that all federal activities which directly affect the coastal zone be consistent with approved State coastal zone management programs to the maximum extent practicable. While it is the goal of the Council to have complementary management measures with those of the states, federal and state administrative procedures vary and regulatory changes are unlikely to be fully instituted at the same time. Based upon the assessment of this amendment's impacts in previous sections, the Council has concluded that this amendment is an improvement to the federal management of live rock.

This determination was submitted to the responsible state agencies under Section 307 of the Coastal Zone Management Act administering approved Coastal Zone Management Programs in the states of Florida, South Carolina, and North Carolina. North Carolina and South Carolina responded with a determination that the proposed actions were consistent with approved state coastal management plans. The State of Florida did not respond within their allotted 45 days therefore their approval is assumed. The determination letters and responses are contained in Appendix I. Georgia is in the process of developing a Coastal Zone Management Plan.

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 the affected states in the management area.

C. ENDANGERED SPECIES AND MARINE MAMMAL ACTS

The proposed amendment will have a positive effect on endangered species and marine mammals. Endangered and threatened sea turtles utilize live bottom and coral reef habitats for refuge and feeding, therefore the additional protection afforded essential habitat under this amendment, will enhanace other regulations implemented to protect these species. A Section 7 consultation was held for Amendment #1 with a "no jeopardy opinion" being rendered. The proposed actions do not alter provisions of the management that would affect these animals. An additional Section 7 consultation on Amendment 2 is in progress.

D. PAPERWORK REDUCTION ACT

The purpose of the Paperwork Reduction Act is to control paperwork requirements imposed on the public by the federal government. The authority to manage information collection and record keeping requirements is vested with the Director of the Office of Management and Budget. This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications.

The Council is requiring a permit for harvest or possession during the phase out and will in a future amendment implement an aquaculture permit and management system. Monitoring of wild live rock landings during the phase out will be accomplished through a cooperative effort with the Florida Department of Environmental Protection. The Department is presently recording state required trip ticket reports that marine life fisherman must submit as a permit requirement. Therefore, monitoring landings during the phase out will not involve establishment of an additional federal quota tracking system.

E. FEDERALISM

No federalism issues have been identified relative to the actions proposed in this amendment and associated regulations. The affected states have been closely involved in developing the proposed management measures and the principal state officials responsible for fisheries management in their respective states have not expressed federalism related opposition to adoption of this amendment. This proposed action does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under E.O. 12612.

F. IMPACTS ON OTHER FISHERIES UNDER FEDERAL AND STATE MANAGEMENT

Unregulated removal of live rock could reduce the available hard bottom habitat for reef fish and invertebrates and subject coral reefs to damage from collectors. Species potentially affected are managed under the Council's Snapper Grouper Fishery Management Plan, and the joint Coastal Migratory Pelagics Fishery Management Plan. The prohibition of removal of wild live rock will eliminate the adverse impact. Aquaculture by introduction of cultch material has the potential of increasing the hard bottom habitat for reef species.

Additional information on agency responsibities and other applicable legislation is included in Appendix G.

10.0 REFERENCES

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APPENDIX A

Revised Habitat Subsections Contained in Coral Amendment #1

Habitat Information Needs

The following research needs relative to coral habitat are provided so that state, federal, and private research efforts can focus on those areas that would allow the Councils to develop measure to better manage coral and their habitat:

1. Identify optimum environmental and habitat conditions that limit coral production;

2. Determine the relationship between coral reefs and estuarine habitat conditions;

3. Quantify the relationships between coral growth and production and habitat;

4. Identify additional areas of particular concern for coral;

5. Determine methods for restoring reef habitat and/or improving existing environmental conditions that adversely affect reefs;

6. Identify mitigative methods for preserving and/or establishing reef;

7. Determine the impacts of trap fishing and trawling on coral and reef habitats.

Habitat Protection Programs

State and federal agencies and laws and policies that affect coral habitat are found in Section 7.0 of the Coral EIS and FMP (1982). Specific involvement by other federal agencies are identified below.

Office of Coastal Zone Management, Marine Sanctuaries Program, NOAA: Specifically, this program manages and funds the marine sanctuaries program. On-site management and enforcement are generally delegated to the states through special agreements. Funding for research and management is arranged through grants.

National Marine Fisheries Service: The enactment of the Magnuson Act provides for exclusive management of fisheries seaward of state jurisdiction. This includes both specific fishery stocks and habitat. The process for developing FMPs is highly complex. It includes plan development by various procedures through fisheries management Councils. National Marine Fisheries Service implements approved plans. The Coast Guard, National Marine Fisheries Service, and states enforce fishery management plans. Fishery management plans for billfish, corals, and coral reefs, coastal migratory pelagics, red drum, reef fish, shrimp, spiny lobster, stone crab, sharks, snapper and grouper, and swordfish are in force in the Gulf of Mexico and South Atlantic.

National Park Service: National parks and monuments are under the jurisdiction of National Park Service. Management, enforcement, and research are accomplished in house.

Minerals Management Service: This agency has jurisdiction over mineral and petroleum resources on the continental shelf. Management has included specific lease regulations and mitigation of exploration and production activities in areas where coral resources are known to exist.

Fish and Wildlife Service: Fish and Wildlife Service assists with environmental impact review, develops biological resource evaluations, and administers the endangered species

program with the NMFS. In the Keys area, the Fish and Wildlife Service manages several national refuges for wildlife.

Geological Survey: In the coral reef areas, the Geological Survey has conducted considerable reef research and assisted or cooperated with other institutions and agencies to facilitate logistics and support of coral reef research.

Coast Guard: The 1978 Waterways Safety Act charges the Coast Guard with marine environmental protection. The Coast Guard is the general enforcement agency for all marine activity in the federal zone. Among the duties are enforcement of sanctuary and fishery management regulations, managing vessel salvage, and coordinating oil spill cleanup operations at sea.

U.S. Army Corps of Engineers: The Corps contracts and regulates coastal engineering projects, particularly harbor dredging and beach renourishment projects. The Corps also reviews and is the permitting agency for coastal development projects, artificial reefs, and offshore structures.

Environmental Protection Agency: This agency has a general responsibility for controlling air and water pollution. Disposal of hazardous wastes and point-source discharge permitting are Environmental Protection Agency functions. Certain mineral and petroleum exploration and production activities are managed by Environmental Protection Agency. Environmental research germane to waste disposal and pollution also are funded.

Federal environmental agencies such as the National Marine Fisheries Service, Minerals Management Service, Fish and Wildlife Service, and the Environmental Protection Agency also analyze projects proposing inshore and offshore alterations for potential impacts on resources under their purview. This is similar to the function of the Council's Habitat Protection Committees. Recommendations resulting from these analyses are provided to the permitting agencies (the Corps for physical alterations in inshore waters and territorial seas, the Minerals Management Service for physical alterations in the Outer Continental Shelf or the offshore Exclusive Economic Zone and Environmental Protection Agency for chemical alterations). Even though the Corps of Engineers issues permits for oil and gas structures in the Exclusive Economic Zone, they only consider navigation and national defense impacts, thus leaving the rest to the Department of the Interior, in a nationwide general permit.

Environmental Protection Agency is the permitting agency for chemical discharges into the Gulf of Mexico, under the National Pollution Discharge Elimination System (NPDES) program of the Clean Water Act for chemicals used or produced in the Gulf (i.e., drilling muds, produced water or biocides) and then released, or under the Ocean Dumping Regulations of the marine Protection, Research and Sanctuaries Act if the chemicals are transported into the Gulf for the purpose of dumping. When discharge or dumping permits are proposed, federal and state Fish and Wildlife Agencies may comment and advise under the Fish and Wildlife Coordination Act and National Environmental Protection Act. The Council may do likewise under the Magnuson Act and National Environmental Protection Act. The Councils also protect reef fish habitat under the Corals and coral Reefs Fishery Management Plan.

Habitat Recommendation

The coral resources contribute to the food supply, economy, health of the nation, and provides habitat for recreational and commercial fishing opportunities and aesthetic enjoyment. The continued use of these resources can only be assured by the wise management of all aspects of habitat. Increased productivity may not be possible without habitat maintenance and regulatory restrictions.

Recognizing that all species are dependent on the quantity and quality of their essential habitats, it is the policy of the Councils to protect, restore, and improve habitats upon which commercial and recreational marine fisheries depend, to increase their extent and to improve their productive capacity for the benefit of the present and future generations. This policy shall be supported by three objectives which are to:

1. Maintain the current quantity and productive capacity of habitats supporting important commercial and recreational fisheries, including their food base. (This objective may be accomplished through the recommendation of no loss and minimization of environmental degradation of existing habitat);

2. Restore and rehabilitate the productive capacity of habitats which have already been degraded; and

3. Create and develop productive habitats where increased fishery productivity will benefit society.

To achieve these goals the Councils have formed Habitat Protection Committees and Advisory Panels. The purpose of the committees is to bring to the Council's attention activities that may affect the habitat of the fisheries under their management. The Councils pursuant to the Magnuson Act, will use their authorities to support state and federal environmental agencies in their habitat conservation efforts and will directly engage the regulatory agencies on significant actions that may affect habitat. The goal is to ensure that habitat losses are kept to the minimum and that efforts for appropriate mitigation strategies and applicable research are supported.

APPENDIX B

SAFMC Habitat and Environmental Protection Policy

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL HABITAT AND ENVIRONMENTAL PROTECTION POLICY
(as amended- August , 1991)

POLICY:

SAFMC HABITAT AND ENVIRONMENTAL PROTECTION POLICY

Recognizing that all species are dependent on the quantity and environmental quality of their essential habitats, it is the policy of the South Atlantic Fishery Management Council to:

Protect, restore and develop habitats upon which commercial and recreational marine fisheries depend, to increase their extent and to improve their productive capacity for the benefit of present and future generations. (For purposes of this policy, habitat is defined to include all those things physical, chemical and biological that are necessary to the productivity of the species being managed.)

Policy Objectives:

1) To protect the current quantity, environmental quality and productive capacity of habitats supporting important commercial and recreational fisheries. (This objective will be accomplished through the recommendation of no net loss or significant environmental degradation of existing habitat in the short term.)

2) To support and promote the net gain of fisheries habitat as a long term objective that will be accomplished through;

a) the restoration and rehabilitation of the productive capacity of habitats which have already been degraded and;

b) the creation and development of productive habitats where increased fishery production is probable.

The Council shall assume an aggressive role in the protection and enhancement of habitats important to marine and anadromous fish. It shall actively enter Federal decision-making processes where proposed actions may otherwise compromise the productivity of fishery resources of concern to the Council.

APPENDIX C

SAFMC Dredge and Dredge Disposal Policy Statement

SAFMC POLICY STATEMENT CONCERNING DREDGING AND DREDGE MATERIAL DISPOSAL ACTIVITIES

Ocean Dredged Material Disposal Sites (ODMDS)

The shortage of adequate upland disposal sites for dredged materials has forced dredging operations to look offshore for sites where dredged materials may be disposed. These Ocean Dredged Material Disposal Sites (ODMDSs) have been designated by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE) as suitable sites for disposal of dredged materials associated with berthing and navigation channel maintenance activities. The South Atlantic Fishery Management Council (SAFMC; the Council) is moving to establish its presence in regulating disposal activities at these ODMDSs. Pursuant to the Magnuson Fishery Conservation and Management Act of 1976 (the Magnuson Act) , the regional fishery management councils are charged with management of living marine resources and their habitat within the 200 mile Exclusive Economic Zone of the United States. Insofar as dredging and disposal activities at the various ODMDSs can impact fishery resources or essential habitat under Council jurisdiction the following policies concerning its role in the designation, operation, maintenance, and enforcement of activities in the ODMDSs:

Policies:

The Council acknowledges that living marine resources under its jurisdiction and their essential habitat may be impacted by the designation, operation, and maintenance of ODMDSs in the South Atlantic. The Council may review the activities of EPA, COE, the state Ports Authorities, private dredging contractors, and any other entity engaged in activities which impact, directly or indirectly, living marine resources within the Exclusive Economic Zone.

The Council may review plans and offer comments on the designation, maintenance, and enforcement of disposal activities at the ODMDSs.

ODMDSs should be designated or redesignated so as to avoid the loss of live or hard bottom habitat and minimize impacts to all living marine resources.

Notwithstanding the fluid nature of the marine environment, all impacts from the disposal activities should be contained within the designated perimeter of the ODMDSs.

The final designation of ODMDSs should be contingent upon the development of suitable management plans and a demonstrated ability to implement and enforce that plan. The Council encourages EPA to press for the implementation of such management plans for all designated ODMDSs.

All activities within the ODMDSs are required to be consistent with the approved management plan for the site.

The Council's Habitat and Environmental Protection Advisory Panel when requested by the Council will review such management plans and forward comment to the Council. The Council may review the plans and recommendations received from the advisory sub-panel and comment to the appropriate agency. All federal agencies and entities receiving a comment or recommendation from the Council will provide a detailed written response to the Council regarding the matter pursuant to 16 U.S.C. 1852 (i). All other agencies and entities receiving a comment or recommendation from the Council should provide a detailed written response to the Council regarding the matter, such as is required for federal agencies pursuant to 16 U.S.C. 1852 (i).

ODMDSs management plans should indicate appropriate users of the site. These plans should specify those entities/ agencies which may use the ODMDSs, such as port authorities, the U.S. Navy, the Corps of Engineers, etc. Other potential users of the ODMDSs should be acknowledged and the feasibility of their using the ODMDSs site should be assessed in the management plan.

Feasibility studies of dredge disposal options should acknowledge and incorporate ODMDSs in the larger analysis of dredge disposal sites within an entire basin or project. For example, Corps of Engineers analyses of existing and potential dredge disposal sites for harbor maintenance projects should incorporate the ODMDSs. as part of the overall analysis of dredge disposal sites.

The Council recognizes that EPA and other relevant agencies are involved in managing and/or regulating the disposal of all dredged material. The Council recognizes that disposal activities regulated under the Ocean Dumping Act and dredging/filling carried out under the Clean Water Act have similar impacts to living marine resources and their habitats. Therefore, the Council urges these agencies apply the same strict policies to disposal activities at the ODMDSs. These policies apply to activities including, but not limited to, the disposal of contaminated sediments and the disposal of large volumes of fine-grained sediments. The Council will encourage strict enforcement of these policies for disposal activities in the Exclusive Economic Zone. Insofar as these activities are relevant to disposal activities in the Exclusive Economic Zone, the Council will offer comments on the further development of policies regarding the disposal/ deposition of dredged materials.

The Ocean Dumping Act requires that contaminated materials not be placed in an approved ODMDS. Therefore, the Council encourages relevant agencies to address the problem of disposal of contaminated materials. Although the Ocean Dumping Act does not specifically address inshore disposal activities, the Council encourages EPA and other relevant agencies to evaluate sites for the suitability of disposal and containment of contaminated dredged material. The Council further encourages those agencies to draft management plans for the disposal of contaminated dredge materials. A consideration for total removal from the basin should also be considered should the material be contaminated to a level that it would have to be relocated away from the coastal zone.

Offshore and Nearshore Underwater Berm Creation

The use of underwater berms in the South Atlantic region has recently been proposed as a disposal technique that may aid in managing sand budgets on inlet and beachfront areas. Two types of berms have been proposed to date, one involving the creation of a long offshore berm, the second involving the placement of underwater berms along beachfronts bordering an inlet. These berms would theoretically reduce wave energy reaching the beaches and/or resupply sand to the system.

The Council recognizes offshore berm construction as a disposal activity. As such, all policies regarding disposal of dredged materials shall apply to offshore berm construction. Research should be conducted to quantify larval fish and crustacean transport and use of the inlets prior to any consideration of placement of underwater berms. Until the impacts of berm creation in inlet areas on larval fish and crustacean transport is determined, the Council recommends that disposal activities should be confined to approved ODMDSs. Further, new offshore and nearshore underwater berm creation activities should be reviewed under the most rigorous criteria, on a case-by-case basis.

Maintenance Dredging and Sand Mining for Beach Renourishment

The Council recognizes that construction and maintenance dredging of the seaward portions of entrance channels and dredging borrow areas for beach re nourishment occur in the Exclusive Economic Zone. These activities should be done in an appropriate manner in accordance with the policies adopted by the Council.

The Council acknowledges that endangered and threatened species mortalities have occurred as a result of dredging operations. Considering the stringent regulations placed on commercial fisherman, dredging or disposal activities should not be designed or conducted so as to adversely impact rare, threatened or endangered species. NMFS Protected Species Division should work with state and federal agencies to modify proposals to minimize potential impacts on threatened and endangered sea turtles and marine mammals.

The Council has and will continue to coordinate with Minerals Management Service (MMS) in their activities involving exploration, identification and dredging/mining of sand

resources for beach renourishment. This will be accomplished through membership on state task forces or directly with MMS. The Council recommends that live bottom/hard bottom habitat and historic fishing grounds be identified for areas in the South Atlantic region to provide for the location and protection of these areas while facilitating the identification of sand sources for beach renourishment projects.

Open Water Disposal

The SAFMC is opposed to the open water disposal of dredged material into aquatic systems which may adversely impact habitat that fisheries under Council jurisdiction are dependent upon.

The Council urges state and federal agencies, when reviewing permits considering open water disposal, to identify the direct and indirect impacts such projects could have on fisheries habitat.

The SAFMC concludes that the conversion of one naturally functioning aquatic system at the expense of creating another (marsh creation through open water disposal) must be justified given best available information.

APPENDIX D

Aquaculture

Draft Criteria for Federal Aquaculture Permit

State of Florida State Live Rock Aquaculture Lease Application

DRAFT CRITERIA FOR AQUACULTURE

Draft Recommendations to the U.S. Army Corps of Engineers on Live Rock Aquaculture General Permit Conditions

I. Site Characteristics/Selection Criteria

1. A site evaluation report must be submitted by the applicant showing that the proposed site:
   a). avoids hazards to safe navigation or hindrance of vessel traffic, traditional fishing operations or other public access; and
   b). avoids impacts on naturally occurring hardbottom habitat;, i.e., natural underlying substrate should be primarily hard packed sand, hard shell hash, sand over rock, or sparsely colonized rock (occasional algal, sponge or octocoral colonies) mixed with sand/shell substrate.
2. Sites larger than 10 acres shall not be approved under the general permit.

II. Site and Product Marking

1. Identify the site on a chart in sufficient detail to allow for site inspection.
2. Provide accurate coordinates so that site can be located using LORAN or Global Positioning System (GPS) equipment.
3. Rocks deposited on the aquaculture site must be geologically or otherwise distinguishable from the naturally occurring substrate or indelibly marked or tagged.

III. Operating Procedures

1. Rocks may not be placed over naturally occurring reef outcrops, limestone ledges, or coral reefs.
2. A minimum setback of at least 50 feet must be maintained from natural hardbottom habitats.
3. All materials used in aquaculture operations must be nontoxic and deposited rocks must be free of contaminants.
4. No mechanical dredging or drilling activities are allowed.
5. Harvest of aquacultured live rock is by hand only.

IV. Monitoring and Reporting Requirements

1. Annual reports are required to document the source, type and weight of rocks deposited on the aquaculture site.
2. Aquacultured live rock landed in the state of Florida must be reported to the Florida Bureau of Marine Research's Fisheries Statistics Section using Form #33-610 (Florida Trip Ticket). Harvesters need a Florida Saltwater Products License and a Marine Life Endorsement.)
3. Aquacultured live rock landed outside of Florida must be reported in conformance with state reporting requirements, or if none exist, in conformance with NMFS SEFSC requirements.

V. Other Authorities

1. To be authorized under this general permit for activities within the Exclusive Economic Zone, persons must have obtained a permit from the National Marine Fisheries Service to harvest and possess aquacultured live rock in the Exclusive Economic Zone.

2. Additional permits may be required for aquaculture operations in areas under the jurisdiction of other state or federal authorities, such as a National Marine Sanctuary.

APPLICATION FOR A SOVEREIGNTY SUBMERGED LIVEROCK AQUACULTURE LEASE

Application No. _____ Date _____

Please type or print. Fill in the blanks for all applicable information. If information requested is not applicable, so indicate by placing N/A in the blank.

_____

APPLICANT INFORMATION:

NAME _____

ADDRESS _____

CITY _____ ZIP CODE _____

TELEPHONE NUMBER _____

LOCATION:

LORAN Coordinates _____

County _____ Near City/Town _____

Waterbody affected by activity: _____

Acreage of proposed lease area: _____

Is the project located in an aquatic preserve? Yes ( ) No ( )

If "yes" please note that your proposed aquaculture activities cannot destroy grassbeds, corals or other benthic organisms, natural flow of waters, or other natural values which designation of the area as an aquatic preserve was intended to protect, pursuant to section 258.42(1)(b), Florida Statutes.

DESCRIBE THE PROPOSED ACTIVITIES IN DETAIL (Please include a description of all structures proposed to be installed on state-owned sovereignty lands).

DESCRIBE HOW THE ACREAGE WILL BE DEVELOPED AND THE LENGTH OF TIME IT WILL TAKE TO COMPLETELY DEVELOP THE ACREAGE REQUESTED (in the first year, the second year, the third year, etc.).

DESCRIBE THE PRODUCTION TECHNIQUES OR SUPPLY SOURCE OF ROCK MATERIALS

DESCRIBE THE GENERAL SITE CHARACTERISTICS IN DETAIL

DESCRIBE AND EQUIPMENT TO BE USED INCLUDING STORAGE

DESCRIBE THE DISTRIBUTION OF THE PRODUCT AFTER HARVEST

DO YOU HAVE A SALTWATER PRODUCTS LICENSE? Yes ( ) No ( )

DO YOU HAVE A SPECIAL ACTIVITIES LICENSE? Yes ( ) No ( )

If yes, is a Marine Life Endorsement attached to it?
Yes ( ) No ( )

ALL REQUIRED INFORMATION INCLUDING A CHECK IN THE AMOUNT OF $200 FOR THE REQUIRED APPLICATION PROCESSING FEE, SHOULD BE ATTACHED TO THIS APPLICATION AND SENT TO THE FOLLOWING ADDRESS:

Department of Environmental Protection
Bureau of Land Management Services
3900 Commonwealth Boulevard
Mail Station 130
Tallahassee, Florida 32399

Signature of Applicant _____

Date _____

4

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND
LIVE ROCK AQUACULTURE LEASE APPLICATION GUIDELINES

The guidelines are to assist applicants in understanding the procedures to be followed when applying for an aquaculture lease. As a practical matter there are four basic steps:

ONE: Nomination of a Site - applicant selects an area and makes application for a lease. Completion of the "draft" aquaculture lease application form is highly recommended, otherwise:

1. Applications should be typed and double spaced. (Refer to rule pages 5 and 6).

2. Describe the proposed activity in enough detail so the application is clear, for example:

   > Petrified coral rock will be barged to the lease site and placed on the sand bottom, in beds approximately 3 inches to 1/2 foot deep by crane.

3. Describe how the acreage will be developed and the length of time it will take to completely develop the acreage requested. Specify the amount of rock and acres of bottom land that will be preempted each year, until the lease is fully developed.

4. You must include a statement describing the general site characteristics and if the activity would significantly change the area. You should also include a navigation chart to show depth, sketch in nearby reefs, the proposed landing location(s) and the distance from shore.

5. You need to identify the site on a map in sufficient detail to allow a site inspection by the Department of Environmental Protection, Division of Marine Resources staff who may be unfamiliar with the area. Use a USGS topographic map or a navigation chart and provide detailed latitude and longitude coordinates/LORAN numbers and federal survey reference (1/4 1/4 section) as well as the total acreage requested. Remember, you must mark the boundaries of the lease area and obtain permission from the U. S. Army Corps of Engineers, the U.S. Coast Guard and the Florida Marine Patrol beforehand.

6. If you wish to obtain an experimental lease, document your research organization status and the nature of the experimental activity (see No. 3). Remember, if you are granted an experimental lease, commercial sale of the products will be prohibited.

7. A $200 nonrefundable processing fee.

TWO: Completeness Review by DNR - Once your application is received, a courtesy copy of it will be sent to the U. S. Army Corps of Engineers, the Division of Water Management (DWM) (formerly the Department of Environmental Regulation), and the Florida Marine Patrol. Then it is reviewed to insure: (1) state ownership of the submerged lands, a four week process; (2) sufficient detail to allow further processing; and (3) receipt of the application processing fee.

Prior to the issuance of any lease, applicants must obtain the following prior to final review of the lease application: 1) A general permit to dispose rock products on a proposed lease site, under the DWM's Artificial Reef Program; or a Dredge and Fill Permit (a Joint Application Form must be completed and approved) to dispose and harvest rock products, and transmit to the appropriate district office of the DWM. The general permit authorizes exclusively the disposition of rocks on a lease site. Upon completion of the DWM's proposed general permit format for the disposition and harvest of live rock products on approved lease sites, lessees/applicants may apply for such permit. 2) A U. S. Army Corps of Engineers permit. After the review for state ownership is completed, the completeness review of the application should be completed within four to six weeks. You will then receive a written statement telling you the application is complete or incomplete. You then have 180 days to either request a waiver of time limit (form provided) or submit additional material that will be itemized by the staff on a completeness summary. This process will continue until the application is complete, up to one year from the date of receipt of the original application. Your failure to respond will cause the application to be deactivated, and the forfeiture of the $200 application processing fee. Completed applications will be processed in the order received.

THREE: Inspection and Notification - A site inspection will be made to determine whether or not the site is suitable for live rock aquaculture activities. Upon receipt of favorable site inspection reports from the affected regulatory agencies, you will be sent instructions and materials necessary to advertise the proposed lease site through newspaper advertising. At that time, the local government will be notified. If substantial objections are received, a public hearing may be scheduled in the area. In addition to a review by the affected Board of County Commissioners, the local government may require a permit for the performance of the proposed activity.

FOUR: The Agenda Process - Proposed leases preempting more than 25,000 square feet outside of aquatic preserves of state-owned submerged lands must be approved by the Governor and Cabinet in their role as the Board of Trustees. They meet in Tallahassee twice a month for this purpose. Once steps 1-3 are complete, staff will submit an agenda item and recommend approval or denial. From start to finish, the agenda process takes roughly thirty days. If the lease is approved, then the approval will be subject to: The submittal of a survey and legal description of the lease area. Other special conditions may be added as well, but you will be made aware of those far in advance of the agenda process.

From start to finish, the entire process can take as little as nine (9) months. Some applications may unfortunately require a year or more, but to some extent you can speed the process by submitting as much material as possible with your initial application. Other possible pitfalls include:

- *If there are seagrasses, diverse algal habitats, reef outcrops or hard bottom habitats (assemblages of stoney corals, octocorals, sponges, etc.) already on the site;
- *if the local government is opposed to the project;
- *if the Department receives substantial objections to the project concerning anticipated environmental impacts;
- *if the Division of Marine Resources states that the project is not suitable at the site;
- *if the U. S. Army Corps of Engineers denies a required nationwide permit, and if the DNR denies a general or dredge and fill permit; and,
- *if a proposed lease exceeds a size that the applicant is capable of developing/utilizing efficiently.

This Instrument Prepared By:

Bureau of Land Management Services
3900 Commonwealth Boulevard
Mail Station No. 130
Tallahassee, Florida 32399

DRAFT

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND

OF THE STATE OF FLORIDA

SOVEREIGNTY SUBMERGED LAND AQUACULTURE LEASE

No. _____

THIS LEASE is hereby issued by the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida, hereinafter referred to as the Lessor.

WITNESSETH: That for and in consideration of payment of the lease fees hereinafter provided, and the faithful and timely performance of and compliance with all terms and conditions stated herein, the Lessor does hereby lease to _____, hereinafter designated as the Lessee, the sovereignty lands shown on attachment A, more particularly described as follows:

A parcel of sovereignty, submerged lands lying in the _____, approximately _____ miles offshore of _____, in _____ County, containing _____ acre(s) more or less, within the following (longitude/latitude coordinates:

Latitude	Longitude	Description

TO HAVE THE USE OF the hereinabove described premises for a period of 10 years from _____, the effective date of this lease. The terms and conditions upon and for which this lease is granted are as follows:

1. The Lessee is hereby authorized to undertake aquaculture activities on the lands described above and in Attachment A.

2. Lessee shall pay to Lessor a base annual rent of $_____, representing $15 per acre or fraction thereof included within the area described within this lease, together with any sales tax required by Section 212.031, Florida Statutes. The base annual rent shall be adjusted January 1, 1995, and every five (5) years thereafter, based upon the five-year average change in the Consumer Price Index. In addition to the base annual rent, Lessee shall also pay an annual surcharge of $____, representing $5 per acre or fraction thereof, for deposit in the Marine Biological Trust Fund pursuant to Section 370.16(4)(b), Florida Statutes. The first year's base annual rent and annual surcharge shall be paid to Lessor within thirty (30) days of the effective date of this lease. For all succeeding years, the base annual rent and annual surcharge shall be paid to Lessor on or before January 1 of each year.

3. The Lessee shall pay a late charge of twelve percent (12%) per annum from the due date until paid on any lease fees due which are not paid within thirty (30) days of the due date. Such failure shall constitute a default by the Lessee and the Lessor may, at its option, immediately terminate this lease.

4. Failure of the Lessee to perform effective cultivation, or otherwise comply with the terms of this lease, shall constitute cause for termination of the lease and forfeiture to the State of all the works, improvements, and animal and plant life in and upon the leased land and water column.

5. This lease may be terminated upon the Lessee's written request.

6. The Lessee shall, within ninety (90) days from the date of execution of this lease, properly post the lease boundaries pursuant to the federal system of uniform waterway markers of the United States Coast Guard and obtain a permit from the Florida Marine Patrol.

7. The Lessee, in accepting this lease, does hereby agree that no claim to title or interest to said lands hereinbefore described shall be made by reason of the occupancy or use thereof and that all title interest to said land hereinbefore described is vested in the Lessor.

8. The lease granted to the named Lessee may be subleased, assigned or otherwise transferred upon written consent of the Lessor.

9. The Lessee shall neither permit the sovereign lands described in this lease nor any part thereof to be used or occupied for any purpose or business other than herein specified; nor shall the Lessee knowingly permit or suffer nuisances or illegal operations of any kind on the sovereign lands described in this lease.

10. The Lessee agrees to maintain the sovereign lands described in this lease in good condition in the interest of public health, safety and welfare. The Lessee agrees that the sovereign lands described in this lease are subject to inspection by the Lessor or its designated agent at any reasonable time.

11. The Lessee hereby covenants and agrees to investigate all claims of every nature at its expense, and to indemnify, defend, hold, and save harmless the Board of Trustees of the Internal Improvement Trust Fund and/or the State of Florida from all claims, actions, lawsuits and demands arising out of this lease or any activity conducted hereunder. The Lessee further agrees to be solely responsible for any injury or property damage resulting from any property conditions or activity on the lease area.

12. The Lessee agrees that upon expiration or termination of this lease all permission granted to undertake the activities, as described in paragraph one (1) of this lease, shall cease and terminate, and Lessee shall immediately vacate and surrender possession of the premises to Lessor subject to the provisions of ¶ 24.

13. If requested by Lessee, this lease shall be renewable for one additional ten (10) year term upon such terms and conditions as are acceptable to the parties hereto. The request for renewal must be in writing and delivered by Lessee to Lessor no later than thirty (30) days before the expiration date of the initial term.

14. Neither failure, or successive failures, on the part of the Lessor to enforce any provision, nor any waiver or successive waivers on its part of any provision herein, shall operate as a discharge thereof or render the same inoperative or impair the right of the Lessor to enforce the same upon any renewal thereof or in the event of subsequent breach or breaches.

15. The Lessee, by acceptance of this lease, binds itself to abide by the provisions and conditions herein set forth, and said provisions and conditions shall be deemed covenants of the Lessee. In the event the Lessee fails or refuses to comply with the provisions and conditions herein set forth, or in the event the Lessee violates any of the provisions and conditions herein, this lease may be terminated by the Lessor after notice in writing by certified mail to the Lessee. Upon receipt of such notice, the Lessee shall undertake to correct such noncompliance or violation for which the Lessor has given notice to correct within thirty (30) days of receipt of notice. In the event Lessee fails or refuses to timely correct the violation, the Lessor, at its option, shall be entitled to terminate this lease and, if terminated, all rights of Lessee hereunder shall cease. All costs, including attorneys' fees, incurred by the Lessor to enforce this provision shall be paid by the Lessee. The Lessee, by acceptance of this lease, agrees to accept service by certified mail of any notice required by this lease or Chapter 253, Florida Statutes, in addition to Chapter 18-14, Florida Administrative code at the following address:

_____

STREET OR P.O. BOX NO.

_____

CITY ZIP

The Lessee agrees to notify the Lessor by certified mail of any change in this address at least ten (10) days before the change is effective.

16. The Lessee agrees to assume all responsibility for liabilities that accrue to the subject property or to the improvements thereof, including any and all drainage or special assessments or taxes of every kind and description which are now or may be hereafter lawfully assessed and levied against the subject property during the effective period of this lease.

17. Unless the mooring of a security vessel is specifically approved in writing by Lessor, no security vessels shall be moored on or adjacent to the lease area. Lessee further agrees that no vessel required to be registered or titled under Florida law shall be allowed to moor or dock within or adjacent to, or otherwise use the area described within this lease unless such vessel is registered or titled in accordance with Chapter 327 and 328, Florida Statutes. Lessee agrees that no vessel of any description shall be moored on or adjacent to the leased premises for a period exceeding twenty-four hours, irrespective of whether the vessel is periodically moved, unless authorized by the terms of this lease.

18. The Lessee, at its own expense, shall record this lease and any subsequent approved renewals and/or modifications in the official records of _____ County, within ten (10) days after receipt of a fully executed copy of this lease, and shall provide the Lessor with a copy of the recorded lease indicating the book and page at which the lease is recorded.

19. NOTICE: The undertaking of any unauthorized activities, including the erection or placement of any permanent or temporary structures, shall constitute a violation of Chapter 253, Florida Statutes, and subject the Lessee to administrative fines under Chapter 18-14, Florida Administrative Code, and the terms of this lease. Any such violation may result in the imposition of administrative fines, judgement for damages, and/or the termination of this lease.

20. As a condition to obtaining this lease, the Lessee hereby agrees not to discriminate against any individual because of that individual's race, color, religion, sex, national origin, age, handicap, or marital status with respect to any activity occurring within the area subject to this lease or upon lands adjacent to and used as an adjunct of the area described within this lease.

21. Lessor and Lessee agree that Lessor has venue privilege as to any litigation arising from matters relating to this lease. Therefore, any such litigation between Lessor and Lessee shall be initiated and maintained only in Leon County, Florida.

22. This lease is the entire and only lease between the parties. Its provisions are not severable. Any amendment or modification to this lease must be in writing and must be accepted, acknowledged and executed by the Lessee and Lessor.

23. This lease shall be deemed to have been executed and entered into in the State of Florida. Any dispute arising hereunder shall be governed by the laws of the State of Florida. This lease shall be binding on and shall inure to the benefit of the heirs, executors, administrators and assigns of the parties hereto, but nothing contained in this paragraph shall be construed as a consent by Lessor to any assignment of this Lease or any interest therein by Lessee.

24. Lessee shall remove all works, equipment, structures and improvements from the sovereign lands described in this lease within sixty (60) days following the date of expiration or termination of this lease.

26. SPECIAL APPROVAL CONDITION

A. The Lessee agrees to obtain a permit from the Department (formerly the Department of Environmental Regulation), for the harvest of liverock within the lease area. The harvest of any liverock within the lease area prior to the issuance of such permit, may result in the imposition of administrative fines under Chapter 18-14, Florida Administrative Code, judgement for damages, and/or the termination of this lease.

27. SPECIAL LEASE CONDITIONS

a. The Lessee shall maintain complete and accurate production documents, reflecting all production from the sale of live rock products, and shall submit them on a quarterly basis to the department.

b. Lessee shall report all products harvested from the lease site to the Bureau of Marine Research's Fisheries Statistics Section, by using Form #33-610 (a Marine Fisheries Trip Ticket Form). Lessee shall record the lease number in the "AREA FISHED" data field of DNR Form #33-610.

c. For the purpose of stipulating an effective cultivation performance standard, required under chapter 253.71(4), F.S., the Lessee shall make a reasonable and bona fide attempt to harvest a minimum of ____ tons of rock by the close of the third year of the lease term. By the close of the eighth year of the lease term, Lessee must have made a reasonable and bona fide attempt to have harvested a minimum of _____ tons of rock on the lease site.

d. The Lessee shall be bound by present and future enactments in Florida law as expressed in chapter 370, F.S., or elsewhere in Florida Statutes, and by present and future provisions of the Florida Administrative Code promulgated thereunder.

e. The Lessee shall comply with the Department of Environmental Protection's specifications regarding placement, type, height, density, and function of materials and equipment used in culture practices, including but not limited to a prohibition against the use of indigenous rock, as rocks deposited on the leased bottom must be clearly distinguishable from native rock crops in the immediate and general vicinity of the lease site.

f. The Lessee shall notify the staff of the Division of Marine Resources in writing, no later than ten days in advance, prior to the placement of all rock products on the lease site, so that appropriate marine resource

personnel can arrange to be on site to ensure that sensitive resources are protected.

g. Lessee shall provide Lessor with three copies of an acceptable survey and legal description, upon request by the Department of Natural Resources.

h. The Lessee shall possess a Saltwater Products License, and a Marine Life Endorsement, and valid Special Activities License prior to the harvest of any live rock on the lease site.

i. The Lessee agrees that rocks can be planted within no more than _____ feet of the water column.

j. All materials utilized in conjunction with the lease operations shall be non-toxic in nature. No predator control, (i.e. fences, chemicals, etc.), shall be utilized outside of traditional legal fishing methods.

k. No permanent (fixed) structures shall be installed at the lease site, except when required for marking/staking the boundaries of the lease area.

l. Mechanical dredging and drilling activities are strictly prohibited at the lease site.

m. Lessee shall not prohibit boating or fishing directly over the lease site.

n. The lease shall not preempt more than _____ cubic yards of material at any time, unless such preemption is approved in advance by the U. S. Army Corps of Engineers, and the Department of Environmental Protection, respectively.

WITNESSES:

_____
Original Signature

_____
Typed/Printed Name of Witness

_____
Original Signature

_____
Typed/Printed Name of Witness

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA

(SEAL)

BY _____
Percy W. Mallison, Jr., Director
Division of State Lands, Agent for the
Board of Trustees of the Internal
Improvement Trust Fund

"LESSOR"

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this _____ day of _____, 19____, by Percy W. Mallison, Jr., Director, who is personally known to me and who did not take an oath.

APPROVED AS TO FORM AND LEGALITY:

_____
DEP Attorney

_____
Notary Public (SEAL)
State of Florida at Large

_____
Typed/Printed Name of Notary Public

My Commission Expires:

_____

Commission No. _____

WITNESSES:

_____
Original Signature

_____
Typed/Printed Name of Witness

_____
Original Signature

_____
Typed/Printed Name of Witness

_____ (SEAL)
Lessee

BY _____
Original Signature of Executing Authority

_____
Typed/Printed Name of Executing Authority

"LESSEE"

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 19____, by _____, who is personally known to me or who has produced _____ as identification and who did/(did not) take an oath.

My Commission Expires:

_____

Commission No. _____

_____
Notary Public (SEAL)

_____
Typed/Printed Name of Notary Public

State of _____ at Large

APPENDIX E

Public Comment Summaries

Summary of Individual Written Comments

Summary of Agencies and Organizations Written Comments

Summary of Public Hearing Comments

ACTION ITEM	Letters From Individuals
Definitions for Management Unit	
1. Define live rock /add to unit	
2. Redefine octocorals	
Management of live rock	
2. Harvest prohibition	
a. Prohibit upon implementation	10
4. Permits	
c. Provide for federal permit to take prohibited live rock for scientific, educational, and restoration purposes.	
Optimum Yield	
1. OY for live rock is zero except	
for that which may be allowed	
by permit	
(scientific, education & restoration)	
Other Comments	
Manage SA & Gulf seperately	1
Redefine octocorals with substrate holdfast not to exceed 2".	1
Limited access	6
Limited access carry over to aquaculture	1
Permit specify allowance of prohibited coral	1
Fishery value incorrect	1
Use mitigation in live rock removal	4
Aquarium provides educational benefits	13
Manage as a sustainable resource	22
No scientific evidence harvesting rubble is detrimental	4
Coral could settle in rubble but too turbulent to create reefs	2
Collection does not effect fisheries or marine ecology	2
For $ spent on live rock even more $ are spent on accessories	4
Live rock collecting no more damaging than sport fishing	2
Quotas	3
20-30 lb. daily bag limit	1
Rubble rock is renewable	9
Live rock provides shelter, and is important to the diversity and abundance of marine life	5
Deposition greater than harvest	1
Prohibition will send business overseas	7
Provides economic benefits of what is wasted in storms	2
Support aquaculture	7
Live rubble rock essential to aquariums	21
Small amount of rock colected compared to available rock	2
Great economic loss if live rock is not available	13
Use rock excavated for swimming pools, drain fields, and septic tanks for aquaculture	1
Against aquaculture on public lands	1
Live rock is short lived in aquarium	1
Live rock is a non renewable public resource	1
Long term consequences of collection outweigh short term economic gain	1

Object to any regulation	3
Live rock collect is not injurious	3
Study impact of collection	14
More serious threats to the ocean	4
License collectors	1
Phase out wild harvest and phase in aquaculture over 5 years	1
OY of zero violates national standards	1
Aquaculture will increase available habitat	2
Allow wild harvest in Gulf for 3 years with 1.000 daily limit and 2 years in SA with 500 lb. daily limit	1
Prohibition tied to success of aquaculture	1
Reduce daily limit of live rock to 200 lb. as aquacultured rock is harvested	1
Divide quota into months or quarters	1
Limit permits to individuals with landings in 1993	1
1.000-1.500 lb. trip limit	3
Need to resolve if aquaculture lease holder has exclusive rights	1
Phase out wild harvest and phase in aquaculture.	3
Support collection in compliance with state and Federal law	13
Meetings are held outside collection area to make it hard for fisherman to attend	1
Government does not want aquaculture	1
1,500 lb. boat limit for Monroe County,FL	1
Regulate commercial collectors and hobbyists differently/do not lock out hobbyists	1
Collect rock in rotation	1

Individual Written Comments

Shella Barger-

Major differences between West and East coast marine life /regulate separately.
Redefinition of allowable octocorals needs to have dimensions of substrate holdfast e.g. not to exceed 2".
Implementation of limited access.
Limited access should carry over to aquaculture in state and federal waters.
Have one permit under limited access.
Collectors should continue to have FL saltwater product license, with the marine life, and restricted species endorsements.
Limited access permit specify the allowance of prohibited coral on aquacultured rock.
Fishery value incorrect.
Use mitigation in live rock removal.

Gary Lesnik-

Aquarium provides educational and aesthetic benefits and need live rock (intricate ledges and flat shapes)..
Manage as a sustainable resource.

Lorenzo F. Alvarez-

No scientific evidence that harvesting rubble rock is detrimental to reef areas.
Coral larva could settle on live rock but turbulent environment prevents rubble zones from becoming reefs.
Collection does not have detrimental effect on lobster, fish or shellfish industry.
Manage collection of live rock.
For every $200 spent on live rock $1,000 is spent on aquarium accessories.

Jack Kent-

Continue collection of live rock.
Live rock collecting no more damaging than sport fishing or boating.
Aquariums provide public understanding of marine life.
Manage with controls as a sustainable yield.

Ron Zoratti-

Divide rock among licensed collectors.
Set quotas and 20-30 lb daily limit.
Place new rock in place of harvested ones.

Gregory E. Cook-

Live rock is a renewable resource.
Live rock act as shelter for various marine fauna but because of lack of light and sediment coral does not grow on it.
No scientific evidence but feels calcium carbonate deposition is far greater than harvest.
Provides educational aspects and increases awareness of reefs.

Merrill Cohen-

Prohibition will send business overseas.
Nothing is lost as collectors want to put rock back.
Provides educational and economic benefits and uses what is wasted in storms.
Supports aquaculture.

Beverly J. Petts-

Base rock is ideal media in aquariums.
Collection occurs 10 miles from shore in 40-60 feet of water and doesn't ruin marine ecology.
Small amount of rock collected compared to available rock.
Lose 50% of business if no live rock is available.

Ira Grabow-

In south Dade county and the Keys, use rock material (coral rock) from excavations of septic tanks, drain fields and swimming pools for aquaculture.

Curtis R. Kruer-

Implement a quick phase out (1994) of all commercial live rock harvest.
Aquaculture on public lands will be a problem and a waste of resource agencies time.
Most live rock harvested and sold was lost in a short time.
Live rock collection was a minor part of marine life collecting 15-20 years ago.
Live rock is a non-renewable public resource important to the diversity and abundance of marine life

Cliff McCreedy-
Preserve reefs to maximum extent possible, ban immediately.
Long term consequences outweigh short-term economic gain.

Lawrence M. Baird-
Strongly object to any regulation of harvesting of live rock.
Harmless profession on a renewable resource.

Tippins-
Continue to allow a managed harvest of live rock in federal waters.
Support continued study of the impact of live rock collection.
Other factors are more serious threat to the life in the oceans.

Don Ahee, Jr.-
Collecting for the aquarium hobby is not an overwhelming factor in relation to other sources of ocean resource degradation.
Live rock should be managed and regulated as a renewable resource.
License collectors and phase out wild collection while phasing in aquaculture over 5 years.

Elsa Flothmann-
One of the most beneficial changes in saltwater aquariums is the use of live rock and base rock.
Provides benefits by bringing education and pleasure to people who other wise would not be exposed to it.

Henry Feddern-
Amount of harvest compared to the amount of rock present is small.
No irreversible catastrophic problem to justify a ban.
Establishing a 0 OY violates Magnuson Act National Standard #2.
Prohibition is a burdensome regulation.
Banning harvest without an operating alternative will severely impact harvest of aquarium organisms.
Time is required for the government to develop regulations for aquaculture.
The 1989 live rock fishery was insignificant compared to fishing and dredging activities.
Supports Gulf AP Position-
Allow wild harvest for 3 years in Gulf with 1000 lb. daily limit and 2 years in South Atlantic with 500 lb. daily limit.
Prohibition tied to success of aquaculture.
Periodic reviews of aquaculture and permitting.
Aquaculture would increase amount of shelter habitat and should be done in areas lacking habitat.
Allow consumptive and non-consumptive users to remain in the fishery, higher net benefit to society.

Sandra Maurice-
Live rocks are a valuable national resource not for the taking.
They maintain water quality and provide food and shelter for fish.
Support aquaculture.

Al Feuer-
Strongly opposed to the collection of live rock.

Craig Banning-
Rocks with living marine organism attached, should be left in the ocean.

Keith Black-
Support collection of live rock from coastal waters of U.S.
Advocate limitations and regulations of collection not a ban.
Collection is insignificant when compared to damage from boating, dumping, pollution, and fishing.

Glenda L. Mayer-
Ban live rock harvest.

Ken Nedimyer-
Amendment suggests a managed harvest instead of immediate closure.
Amendment flawed destroying legitimate fishery and disrupt aquarium trade.
Manage harvest which could sustain the trade until an alternative is found.
Support C.1.a. establish a live rock quota and permit system or C.1.b. limit access/effort in the live rock fishery.
Divide quota into months or quarters.
Only issue permits to those individuals who have reported live rock landings in the last year.
Reduce daily take of wild live rock (200 lb.) as aquaculture rock is harvested.
40-50 collectors in 20 ft boats have no impact on the resource.
Do not believe expert findings from the state of Florida.

Walid Al-Kahtany-
Provide educational benefits.
Quality live rock is indispensable to a living reef aquarium and should be managed as a fishery.

B. Wymard-
A piece of aquatic environment at home is educational and provides a more valuable understanding of critical environmental issues.
Live marine rubble rock is an important ingredient in the establishment of a marine aquarium.
Support professional collection system based on a consistent, supervised, and regulated quota.

Adrienne Kutner-
The removal of live rock is detrimental to the oceans survival.
The effects of slowly picking away will not be seen right away but when they are it will be too late.

Nan Gay Dugas-
Families and lives are built around this resource and a hasty ban would devastate not only the people in this area but a huge business around the country and abroad.
As a group open to utilizing aquaculture as a substitute.
Aquaculture is economically unfeasible at this time due to the difficulty in obtaining a permit.
Need to resolve whether a lease holder has exclusive rights to aquacultured rock.
Support limited entry and 1,500 lb. trip limit.

Wendy Smith-
Live rock accounts for 50% of income.
No scientific data that live rock is a non-renewable resource.
Immediate halt to wild harvest will result in a dramatic nationwide rise in unemployment.
Support limited entry permitting, 1,500 lb. daily limit and phase in of aquaculture linked to phase out of wild harvest.

James Ronald-(form letter 2)
Live rock provide essential biological functions as well as aesthetic appearances.
Support businesses which collect live rock in compliance with state and federal regulations.
Support continued availability of live rock to the marine hobby.
Support scientific study of the impact of live rock collection.

Steve Amezquita & John LoBello-
Aquarium business already suffering because of the recession and live rock proposals would adversely impact
it.
Regulations would force importation of higher priced foreign rock.
Consider effects on small businesses across the country.

Patrick T. Troy-
The options under consideration will cause our business to completely restructure because of lost sales.
Live rock is nucleus of mini-reef system.
Banning domestic live rock would cause us to import rock at high cost.
Banning live rock will result in lost jobs for collectors and demise of many reef trade manufacturers.

David Herr-
Without inexpensive quality live rock the saltwater hobby will suffer drastically.
Support sensible culture, harvest and replacement.

Sukurner De Silva-(form letter 1)
Live rock is backbone for the marine reef aquarium.
Rely on availability of domestic live rock due to high cost of shipping from overseas.

M. Golds-(form letter 1)
Live rock is backbone for the marine reef aquarium.
Rely on availability of domestic live rock due to high cost of shipping from overseas.

Brian Atwood-(form letter 1)
Live rock is backbone for the marine reef aquarium.
Rely on availability of domestic live rock due to high cost of shipping from overseas.

Mark D. Scott-
Major reduction in business would result from having to import live rock from other countries.
Business slowdown will result in lost positions and reduced wages.
Saltwater animal husbandry has come a great distance because of the reef aquarium hobby.

Jeff Voet-

5,000 lb. of live rock generated $30,000 and $250,000 of dry goods and salt water sales.
Regulate harvest
Banning live rock would destroy educational value of reef tank to public.
Support aquaculture in conjunction with regulated harvest of live rock.
Needs permits and overrule law prohibiting placement of objects on the ocean floor in Florida state waters.

John Furstenwerth-

Rubble rock is a renewable resource.
Councils have meetings out of collection area to make it hard for fisherman to attend and testify.
Government does not want aquaculture.
Phase in of aquaculture phase out of wild harvest.
Concerned over permit requirements in the FKNMS (processing fees, liability insurance, limited to 5 years and revocable).
Support 1,500 lb. daily boat limit for Monroe County.
Due to weather fisherman may only be able to fish 1 out of 10 days.

John Featherman-(form letter 2)

Live rock provide essential biological functions as well as aesthetic appearances.
Support businesses which collect live rock in compliance with state and federal regulations.
Support continued availability of live rock to the marine hobby.
Support scientific study of the impact of live rock collection and educating the public on environmental factors impacting our seas.

Maurice Magers-(form letter 2)

Live rock provide essential biological functions as well as aesthetic appearances.
Support businesses which collect live rock in compliance with state and federal regulations.
Support continued availability of live rock to the marine hobby.
Support scientific study of the impact of live rock collection and educating the public on environmental factors impacting our seas.

Bath Hayden-

Responsible collection for the aquarium trade is not injurious.
Not aware of hard data showing live rock collection from rubble zones is detrimental to coral reefs.
Current trend in aquarium trade is to only use live rock and a protein skimmer with no other filtration.
Make live rock part of a regulated fishery with limited entry.
Support aquaculture with viable permitting/leasing in tandem with phase out of wild harvest.

Julian Sprung-

Harvest of live rock is harmless to the environment.
Rocks do not take a long time to grow and are a renewable resource.
Average rock represents 2-3 years coral growth and 1 year or more growth after coral has died.
Rocks are not produced on a geologic time scale.
Impact of harvest falls within the range of natural destructive effects on coral reefs.

Lorenzo Alvarez-

Allow harvest no scientific reason for closure.
Support daily trip limits (1,000-1,500) will keep fishery within sustainable yield.
Living rock fishery is backbone of the living reef aquarium industry.
Keep jobs in America.
Aquaculture is an experiment.

Eileen Serrano-

Living reef aquarium is educational and emotionally satisfying and allows non divers to learn about coral reefs.
Allow live rock harvest to continue at an annual sustainable yield.

Ashwin Philips-(form letter 2)

Live rock provide essential biological functions as well as aesthetic appearances.
Support businesses which collect live rock in compliance with state and federal regulations.
Support continued availability of live rock to the marine hobby.
Support scientific study of the impact of live rock collection and educating the public on environmental factors impacting our seas.

William D. Kinney- (form letter 2)

Live rock provide essential biological functions as well as aesthetic appearances.
Support businesses which collect live rock in compliance with state and federal regulations.
Support continued availability of live rock to the marine hobby.

Support scientific study of the impact of live rock collection and educating the public on environmental factors impacting our seas.

Robert D. Tolz-(form letter 2)
Live rock provide essential biological functions as well as aesthetic appearances.
Support businesses which collect live rock in compliance with state and federal regulations.
Support continued availability of live rock to the marine hobby.
Support scientific study of the impact of live rock collection and educating the public on environmental factors impacting our seas.
Permitting continued live rock harvest ultimately advances and protects the environment because aquariums provide appreciation for the underwater environment.
So long as rock and rubble remains on the floor of the ocean it will continually be colonized by life forms.

William Barrese-(form letter 2)
Live rock provide essential biological functions as well as aesthetic appearances.
Support businesses which collect live rock in compliance with state and federal regulations.
Support continued availability of live rock to the marine hobby.
Support scientific study of the impact of live rock collection and educating the public on environmental factors impacting our seas.

Jeff McFarlane-(form letter 2)
Live rock provide essential biological functions as well as aesthetic appearances.
Support businesses which collect live rock in compliance with state and federal regulations.
Support continued availability of live rock to the marine hobby.
Support scientific study of the impact of live rock collection and educating the public on environmental factors impacting our seas.

Frank M. Greco- (form letter 2)
Live rock provide essential biological functions as well as aesthetic appearances.
Support businesses which collect live rock in compliance with state and federal regulations.
Support continued availability of live rock to the marine hobby.
Support scientific study of the impact of live rock collection and educating the public on environmental factors impacting our seas.
In aquaria set up with live rock, the rate of reproduction of coral is astounding.

Robert Dixon-(form letter 2)
Live rock provide essential biological functions as well as aesthetic appearances.
Support businesses which collect live rock in compliance with state and federal regulations.
Support continued availability of live rock to the marine hobby.
Support scientific study of the impact of live rock collection and educating the public on environmental factors impacting our seas.

Stephanie Craner-(form letter 2)
Live rock provide essential biological functions as well as aesthetic appearances.
Support businesses which collect live rock in compliance with state and federal regulations.
Support continued availability of live rock to the marine hobby.
Support scientific study of the impact of live rock collection and educating the public on environmental factors impacting our seas.

Mitch Gale-
Crabber/lobsterman who collects tropicals from traps. Marine life collecting is secondary but still important source of income

Julio Fumoso-(form letter 2)
Live rock provide essential biological functions as well as aesthetic appearances.
Support businesses which collect live rock in compliance with state and federal regulations.
Support continued availability of live rock to the marine hobby.
Support scientific study of the impact of live rock collection and educating the public on environmental factors impacting our seas.

Charles E. Morgan-
Support restrictions on pulling live rock from the ocean.

Richard G. Tilghman III-
Extend the ban on live rock.

Larry L. Jackson-
Speed up process for permitting culturing of live rock or interruption of supply and loss of jobs, revenue and product.
Purchases of live rock contribute to the economy of Florida.

Culturing is best solution for aquarists and environment.
Aquaculture will create bottom habitat and provide jobs.

David J. Aissen-
Treat commercial collector and hobbyist differently.
Do not lock hobbyists out.

Larry Riffle-
Rather snorkel in ocean than watch marine life in a glass tank.
Commercial harvesting of live rock is detrimental to the quality of marine life and must be stopped.

Mike Grodzinski-
Recreational divers break well over 400 tons of live living coral each year.
NOAA will not ticket people for breaking coral.
Human impact is the major cause to resource degradation.

William Hermann-
Agree with the ban on live rock harvesting.

Tomi Curtis-
Enact a ban on live rock harvesting in federal waters.
Even dead coral is important to reef building.

Trink Racz-
Many fish and invertebrates must have live rock to survive.
Monitor collection, set limits, but do not ban.

Joseph Compel, Jr.-
Support regulations prohibiting live rock harvesting.

new letters submitted at Duck Key public hearing
Todd P. Beal-
Customers depend on the avsilibility of affordable live rock.
Some species need a certain amount of live rock introduced into their environment.
Rubble rock collected is not part of the reef, they are pieces broken during storms.
To save reef stop water pollution.
Aquariums are educational and exposed people to the underwater world.
Negative impact on businesses trading marine species.
Unsubstantiated benefits from halting collection.

Marion Wolf-
Regulations will have a negative impact on business and hobbyists in U.S. and Canada..
Hobbyists are using domestic rock due to its reasonable price and availability.
Live rock is a renewable resource.

Carl C. Crawford-
80% of live rock handled comes from Florida and distributed to retailers in U.S..
Any regulation will have a negative impact on this valuable renewable resource.

Kimberly Hutchinson-
Collect rock in a rotation. 15 different areas one day a week throughout the year.
Collecting delegated to licensed collectors under regulation.
Without live rock collection will not be able to survive financially.
Collecting only loose rubble rock

ACTION ITEM	Letters From Agencies and Organizations
Definitions for Management Unit	
1. Define live rock /add to unit	NMFS
2. Redefine octocorals	NMFS
Management of live rock	
2. Harvest prohibition	
a. Prohibit upon implementation	National Alliance to Protect Live Rock- (144 Organizations endorsing prohibition)
	Coral Reef Society
	Project ReefKeeper
	Reef Relief
	Looe Key National Marine Sanctuary
4. Permits	
c. Provide for federal permit to take prohibited live rock for scientific, educational, and restoration purposes.	NMFS
Optimum Yield	
1. OY for live rock is zero except	
for that which may be allowed	
by permit	
(scientific, education & restoration)	NMFS
OTHER COMMENTS	
Phase out reduction year 1- 25%, year 2- 50% & year 3 75%.	NMFS
Apply same management regime to Gulf & SA.	NMFS
Aquaculture permitting unclear/ no criteria.	NMFS
Need system to mark culture rock.	NMFS
Add OY statement if managed under quaota.	NMFS
Add discrete problem statement	NMFS
Florida Keys Sanctuary act prohibits leasing or production of minerals within sanctuary boundaries.	NOAA General Counsel
MMS would not likely implement a leasing program for live rock	NOAA General Counsel
Limited access	Florida Marine Life Association
	Ocean Voice International
Limit harvest to Florida.	Florida Marine Life Association
Permit specify allowance of prohibited coral	Ocean Voice International
Lobsters, snappers, and groupers do not feed in rubble zone.	Florida Marine Life Association
Delete "..non encrusting species of the subclass Octocorallia.." from octocoral definition.	Florida Marine Life Association
Aquarium provides educational benefits	Ocean Voice International
Manage as a sustainable resource	Florida Marine Life Association
	Ocean Voice International
No scientific evidence harvesting rubble is detrimental	Florida Marine Life Association
License collector to solely collect at a given site and keep a log is kept identifying the number of rocks collected from a given site.	Ocean Voice International
Collection does not effect fisheries or marine ecology	Ocean Voice International
For $ spent on live rock even more $ are spent on accessories	Florida Marine Life Association
Live rock with settled larvae of invertebrates, hard and soft coral should not be classified as coral.	Ocean Voice International
Support Quotas	Florida Marine Life Association
No quota or phase out of live rock landings.	Florida Marine Life Association
Rubble rock is renewable	Florida Marine Life Association
Do not collect anemones, spongers and brittle stars and worms living under the rock crawl away when rock is removed.	Florida Marine Life Association
Invertebrate communities on live rock do not provide important food base for fisheries.	Florida Marine Life Association

Live rock provides shelter, and is important to the diversity and abundance of marine life	Looe Key National Marine Sanctuary
	National Alliance to Protect Live Rock
	Project ReefKeeper
	Reef Relief
Support aquaculture	Florida Marine Life Association
	Project ReefKeeper
	NMFS
	Reef Relief
Do not support aquaculture	Ocean Voice International
	Florida Marine Life Association
Live rubble rock essential to aquariums	Ocean Voice International
	Florida Marine Life Association
Small amount of rock collected compared to available rock	Ocean Voice International
	Florida Marine Life Association
Great economic loss if live rock is not available	NMFS
Live rock is a non renewable public resource	National Alliance to Protect Live Rock
	Project ReefKeeper
	Reef Relief
	Looe Key National Marine Sanctuary
	Ocean Voice International
More serious threats to the ocean	Ocean Voice International
License collectors	Florida Marine Life Association
500 lb. daily limit	Florida Marine Life Association
Divide quota into months or quarters	NMFS
Phase out wild harvest and phase in aquaculture.	Looe Key National Marine Sanctuary
Current live rock harvest occurs in areas defined in the FMP as coral reefs	
	Looe Key National Marine Sanctuary
Collection does occur on coral reefs	Looe Key National Marine Sanctuary
Coral FMP regulations are only being enforced if rock has many corals or seafans.	

Agencies and Organizations Comments

NMFS-SERO-

Phased out reduction in harvest of live rock from the EEZ.
[year 1- 25% reduction, year 2- 50% reduction, year 3- 75% reduction]
Provide incentive to the industry to pursue aquaculture and mitigate to the extent possible adverse impacts on this non renewable resource.
Apply the same management regime to both the Gulf and South Atlantic regions absent strong evidence to do so otherwise.
No criteria for issuance of aquaculture permits and not clear who will issue them.
Need a system for marking cultured rock.
Need discrete problem statement related to FMP objectives.
Need scientific basis for establishing quotas.
Add option for OY if managed under quota.

NOAA, Office of General Counsel-

The Florida Keys National Marine Sanctuary Act prohibits leasing, exploration, or production of minerals or hydrocarbons within sanctuary boundaries.
Minerals Management Service would not likely implement a leasing program for live rock because of program costs, minimal potential revenues, and the multiple agencies necessarily involved.

Coral Reef Society-

Supports prohibiting the collection of live rock from the Florida seabed.

Ocean Voice International-

Wild live rock can be harvested with low impact on the marine environment.
live rock is
Live rock sustains viable marine ecosystems in aquaria.
Live rock with settled larvae of sessile invertebrates including hard and soft corals should not be classed as coral. The removal of larvae has little effect.
The use of live rock in aquariums has educational and economic benefits.
The volume of live rock collected is a tiny fraction of what is available and less than what is destroyed by other activities.
Harvest can be viable where:
License collector to solely collect at a given site and keep a log identifying the number of rocks collected from a given site.
The number of collectors is limited and based on supply.
Does not support live rock culture.

The Florida Marine Life Association-

Allow a controlled harvest for a set period of time.
Support C.1.b. limit access to those who have been reporting and limit effort for live rock through 500 lb. daily catch limit.
Not in favor of quota or phase out but if one has to happen divide into quarterly allocations.
90% of live rock does not contain visible colonies of coral.
Experts are not objective.
No justification for immediate prohibition of harvest.
Current harvest is a minute % of amount out there.
Totally unregulated harvest for the next three years would not be measurable.
Collectors cannot impact standing stock.
Not collecting coral reefs or corals.
Collection does not affect aesthetic values.
Live rock is collected from Pickles Reef to Mariner G and beyond 60+ miles.
Lobsters snappers, and groupers don.t live or feed in rubble zone.
Delete "..non encrusting species of the subclass Octocoralia.." from octocoral definition.
Octocoral harvest does not always remove entire substrate.
Limit harvest to Florida.
500 pound daily trip limit.
Invertebrate communities associated with live rock are not important to fisheries.
Do not collect anemones, sponges and brittle stars and worms living under the rock crawl away when the rock is removed.

Rubble rock is renewable.
Exemption for coral on aquacultured rock.
Integral part of a multi billion dollar worldwide industry.
Fishing is concentrated in relatively unused areas away from the reefs divers use.

Looe Key National Marine Sanctuary- (Sanctuary Managers Comments)
Most if not all of the current live rock harvest occurs in areas defined in the FMP as coral reefs.
Regulations are only being enforced only if the live rock contains stony corals or seafans.
Industry implies no collection on coral reefs but this is not the case.
Protecting only the coral components of the coral reefs is not providing the intended protection to this valuable resource.
Live rock collection is not limited to the collection of loose rubble a significant component of the industry chisels live rock from the coral reefs to capture the non coral component of the coral community.
The amount of calcium carbonate substrate on the bottom is irrelevant.
The rubble zone is an integral component of the coral reef and is included in the definition of coral reef in the FMP (activity may already be prohibited under the FMP).
The unconsolidated nature of the rubble zone provides habitat for a wide variety of small invertebrates and invertebrates who reside in other areas of the reef (at night a host of fish species and invertebrates, predominantly spiny lobster, come off the main reef to forage and feed in the rubble zone).

Reef Relief-
Support prohibit harvest of live rock.
Do not support aquaculture.

Project ReefKeeper-
(submitted at Savannah, Wrightsville Beach and Duck Key public hearings)
Enact a ban on live rock collection.
If not banned phase out over 3 years with 33% reduction a year based on 1993 landings.
Join 143 organizations in asking for a ban on live rock collection.
Opposed to any collection of live rock in state or federal waters.
Live rock is a non renewable habitat.
Live rock provide essential habitat to countless marine creatures and collection disrupts or destroys entire micro communities..
Collection of live rock is mining rather than harvest of a renewable fishery resource.

National Alliance to Protect Live Rock
(submitted at Savannah, Wrightsville Beach and Duck Key public hearings)
Opposed to any collection of live rock in state or federal waters.
Live rock is a non renewable habitat.
Live rock provide essential habitat to countless marine creatures and collection disrupts or destroys entire micro communities..
Collection of live rock is mining rather than harvest of a renewable fishery resource.

National Organizations and SA State and Local Organizations
American Littoral Society
Center for Marine Conservation
Compuserve Scuba Forum
Environmental Defense Fund
Greenpeace
International Marine Alliance
Island Conservation Effort
National Audubon Society
National Coalition for Marine Conservation
Natural Resources Defense Council
Project ReefKeeper
Sierra Club National Marine Committee
Underwater Society Of America (NY)
World Wildlife Fund
1000 Friends of Florida
Alachua Audubon Society
Audubon Society of the Everglades
Audubon Society, Panhandle Chapter
Byrne-Rinehart Associates
Central Florida Pleasure Divers
Citizens for Wekiva Springs
The Conservancy
Coral Reef Community Foundation
Environmental Coalition of Broward
Florida Audubon Society
Florida Defenders of the Environment
Florida Environmental Alliance

Florida Keys Environmental Fund
Florida Keys Initiative- The Nature Conservancy
Florida League of Anglers
Florida Wildlife Federation
HML Ecology Club
Innerspace Visions Divers
Isaac Walton League of the Florida Keys
KBC Barracudas
Last Stand
Manasota-88
Ocean Expo Associates
Ocean Trust International
Osmond Anchor Chasers
Palm Beach Diving Association
People Organized to Prevent Pollution
Project Environmentally Safe Shores
Reef Relief
Save the Wildlife
Sierra Club Florida Chapter
South Florida Underwater Photography Society
Suncoast Reef Rowdies
University of Miami marine Science Association
Upper Keys Citizens Association
Volusia-Flagler Sierra Club Group
Watersnake Divers
The Wildlife Collection
Wildlife Education and Rehabilitation Center
Aqua Venture Divers (SC)
Atlanta Divers (GA)
Atlanta Oceans (GA)
Atlanta Scuba Club (GA)
Aquatic Engineers of Georgia (GA)
Charbon Sports Club (GA)
Charlotte Divers (NC)
Clairemont Divers (NC)
Dive South Scuba Club (GA)
Gypsy Divers (NC)
Hatteras Divers (NC)
Island Divers (GA)
Island Hoppers Dive Club (NC)
Marietta Divers (GA)
Nag's Head Divers (NC)
New Dive Crew (NC)
Wet Set Divers (SC)

(Remainder of U.S. State and Local Organizations of U.S. Caribbean, Hawaii, & Western Pacific listed in Alliance letter 1/3/94)

	Savannah, GA (4 attended/ 2 commented)	Duck Key, FL (65 attended/ 16 commented)	Wrightsville Beach, NC (15 attended/ 4 commented)
ACTION ITEM			
Definitions for Management Unit			
1. Define live rock /add to unit	2		
2. Redefine octocorals	2		
Management of live rock			
2. Harvest prohibition			
a. Prohibit upon implementation	2	3	3
4. Permits			
c. Provide for federal permit to take prohibited live rock for scientific, educational and restoration purposes.	2		2
Optimum Yield			
1. OY for live rock is zero except for that which may be allowed by permit		2	2
(scientific, education & restoration)	2		2
Other Comments			
No soft corals in SA.	1		
Manage SA & Gulf seperately		1	
Limited access		3	
Fishery value incorrect		1	
Use mitigation in live rock removal		1	
Aquarium provides educational benefits		1	
Manage as a sustainable resource		2	
No scientific evidence harvesting rubble rock is detrimental		3	
Coral could settle in rubble but too turbulent to create reefs		2	
Collection does not effect fisheries or marine ecology		1	
For $ spent on live rock even more $ are spent on aquarium accessories		2	
Rubble rock is renewable		2	1
Live rock provides shelter, and is important to the diverarity and abundance of marine life	1	1	1
Prohibition will send business overseas		3	1
Provides economic benefits of what is wasted in storms			
Support aquaculture	1	5	1
Live rubble rock essential to aquariums		4	
Small amount of rock collected compared to available rock		6	
Great economic loss if live rock is not available		8	
Live rock is a non renewable public resource			1
Long term consequences of collection outweigh short term economic gain			1
Live rock collect is not injurious		1	
More serious threats to the ocean		2	

License collectors % income requirement		1	
Prohibition tied to success of aquaculture		2	
1,000-1,500 lb. daily trip limit		2	
Need to resolve if aquaculture lease holder has exclusive rights			
Phase out wild harvest and phase in aquaculture.	1	3	2
1,500 lb. daily boat limit for Monroe County,FL		1	
Phase out wild harvest 33% a year for 3 years	1	1	2
Divers impact live rock.	1	1	
Supply of live bottom habitat of the inner and mid shelf not extensive enough to support a commercial harvest.	1		1
Live rock harvesting is already prohibited in Biscayne National Park		1	
Aquaculture operations dependant on live rock		1	
1,000 -1,500 lb. weekly limit/200-500 daily limit		1	
No annual quota		1	
Quota should be on license to prevent over harvest in a particular area		1	
When collecting not looking at coral reef zone looking for sandy bottom		1	
Do not support aquaculture		2	
Not decided what is needed to get a lease in federal waters		1	
Aquaculture permitting must be cleaned at state level		5	
No small lobsters or snappers in rubble harvest areas		1	
Collection exposes new material for colonization		1	
Prohibit chipping		1	
Aquaculture is an experiment		1	
Live rock collected does not have coral		2	
Daily limit of 100-200 lb. for three years		1	
Daily limit		1	
Feasible criteria for aquaculture need to be developed (cannot be limited to sand bottoms)		1	
Allow consumtive and non consumptive uses		1	
Support one or two year phase out		1	
Live rock harvest speeds up bioerosion and takes habitat new corals can recruit upon.		1	
Landing live rock/taking habitat goes against premise of the Florida Keys Sanctuary		1	
Loss of one or two patch reefs a year is a significant loss of habitat		1	
Only 1.7% of ocean bottom off NC are reefs greater than > one meter			1
Do more research/ lack of data		2	
Live rock collection violates existing state and federal law		1	

Public Hearings/South Atlantic Region
Amendment # 2 to the FMP for Coral and Coral Reefs

Savannah, Georgia (1/5/94)

Charles Smass- (Project ReefKeeper & Sierra Club Savannah, GA)

Enact a ban on live rock harvesting.
Joins 143 other organizations support immediate prohibition of live rock collection.
If collection must be phased out, Project ReefKeeper supports starting with estimated 1993 landings and reducing the amount 33% a year over three years until the landings quota reaches zero.
Phase out wild harvest phase in aquaculture.
Savannah Sierra Club is in favor of an immediate and complete prohibition of live rock collecting.

Dr. Matthew R. Gilligan-

According to zoologists there are no soft corals in Atlantic (good descriptive term).
Although live rock off Georgia is not identical to the live rock from Florida, it is biologically diverse and can be maintained and studied for up to several years.
Divers explore, probe, pull, step on, and even collect as souvenirs sea fans, sea whips, clumps of Oculina, coral and live rock, not realizing that in this environment it may take many years or decades to replace.
The supply of existing natural live bottom habitat of the inner and mid shelf of the South Atlantic bight, the shelf is not extensive enough to support a commercial harvest, even on a limited access basis, without severely threatening the quality of the habitat.
Not aware of extensive commercial live rock collecting from the natural reefs and live bottoms in area but as sources become unavailable, Georgia live rock could become commercially attractive.
Low technology mariculture or ocean farming of small artificial reefs could supply a demand for live rock and provide a new, non-destructive, environmentally friendly industry in the area.
Divers in Georgia would like rock to remain.
Live rock in Georgia would be consolidated limestone found even up in the creeks and rivers.(given long enough time almost any hard substrate would eventually get this turf).

Duck Key, Florida- (1/6/94)

Mark Nicholas- (Biscayne National Park)

The marine substrate in south Florida is a limited resource which is critical to the perpetuity o Florida's reefs.
Substrate is being lost at an alarming rate through groundings, pollution, and anchor damage
Live rock harvesting is prohibited in Park.
Support SA proposal to close federal waters to commercial and recreational harvest.

Carol Reese- (Project ReefKeeper)

Enact a ban on live rock harvesting.
Joins 143 other organizations support immediate prohibition of live rock collection.
If collection must be phased out, Project ReefKeeper supports starting with estimated 1993 landings and reducing the amount 33% a year over three years until the landings quota reaches zero.
Phase out wild harvest phase in aquaculture.

Veronica McCullough-

Ninety % of sales are generated around the availability of live rock.
Every aquaria facility needs reef rocks of proper porosity to produce levels of calcium high enough to support fish, invertebrates, and other marine life that cannot be reproduced with any other type of rock or simulated substitute.

The education experimentation and scientific data on captive reproduction of most marine life species would come to an end.
Almost all aquaculture operations dependent on live rock.
If commercial operations are hampered seafood and other commercial products will skyrocket because investors will turn to Central and South American operations for legal and economic reasons.
Best if American jobs were kept in U.S.
Presently replenishing areas of live rock with quarry rock is not legal.
Absurd to allow the to take the rock out, but not put it back.
Support 1,000-1,500 lb. weekly limit or 200-500 lb. daily limit.
Did not support annual quota.
Quota should be on license which would prevent over harvesting of particular areas.
If collection of live rock should be curtailed she would be forced into bankruptcy.
Live rock industry is cornerstone of all future marine life research, education and production for captive breeding.
Has no plans to go into aquaculture.
When you collect live rock , you are not looking at a coral reef zone, you are looking for a sandy bottom.

Ken Nedimyer- (Florida Marine Life Association)
Limit participation in the live rock fishery through license limitation.
Not in favor of an immediate closure.
Did not think the fishery is in any immediate danger of collapse because there is plenty of rock out there.
Not taking enough to have an impact on the fishery at this point.
Manage the fishery and maybe bring it under control.
Not decided what is needed to get a lease in federal waters.
Being pushed into aquaculture.
Aquaculture permitting must be cleaned up at the state level.

Mike Gradzinzinski-
Ban in state was done under misconception of live rock versus live coral.
Never seen any small lobsters or snappers in the areas where he harvests live rock.
Little scientific data to support a ban on live rock harvest.
Most tropical fisherman are willing to try out aquaculture.
State has yet to allow aquaculture to happen.
Council consider the option that if aquaculture proved to be infeasible economically, allow for continuation of live rock collection.
Harvest important to past developments in the aquarium trade.
The recreational dive industry through incidental contact has broken well over 400 tons of live coral every year and the industry is just picking up the pieces.

Lisa Furstenwerth- (for Mr. Ed Horan/Live Rock Alliance)
The impressive list of individuals and organizations supporting the prohibition of any future live rock collection were recruited.
The best scientific data available does not indicate that a prohibition of live rock collection is warranted.
Live rock is a renewable resource.
Could divide a rubble community into several distinct areas and collect only from one of these areas.
Rubble rock is constantly being turned over, buried and uncovered and recolonized.
Collection would expose new rock for colonization of coral.
A system of licensing for all persons involved in the collection of live rock.
Limited entry and licensing only for people who have been involved in the fishery and derived a certain percentage of income from rock collection or sale.
Trip limit of 1,500 lb. because collectors collect 1-3 times not seven a week.
Impose regulations allowing collection of rubble rock and disallowing collection of chipped roc or any rock not loose in the waters of the Atlantic.

Live Rock Alliance will provide any additional information on research and viability of aquaculture.
Underestimate economic impact of a prohibition.

Phil Smith-

Aquaculture is a bunch of bull and people who purchase rock will turn to third world countries such as Haiti and better quality rocks from Mexico.
More rock in the ocean than will be harvested in a million years.
Only picking up rocks like picking up rocks from land.
Do something for the environment and turn to water quality because it is more important.

John Turner-

135 out of 180 advertisements in *Freshwater and Marine Aquarium* would be directly impacted by the loss of domestic live rock sales.
Picking up rocks at the surface did not impact the resource.
Live rock fishery not in danger of depletion.
Daily trip limits would probably take care of any problem the fishery may encounter.

Forrest Young-

Aquaculture of live rock is the most acceptable alternative to wild harvest.
Aquaculture is not damaging to the environment.
Has produced commercially sellable quality of live rock through cage culture.
Still problems with state aquaculture permitting, no legal means to harvest.

Lorenzo F. Alvarez-

Business depends 100% on live rock.
No scientific evidence that harvesting rubble rock is detrimental to reef areas.
Coral larva could settle on live rock but turbulent environment prevents rubble zones from becoming reefs.
Collection does not have detrimental effect on lobster, fish or shellfish industry.
Manage rubble rock collection because it enhances and is directly related to the market of aquarium accessories.
Rock industry in south Florida alone worth over one million dollars.
For every $200 spent on live rock $1,000 is spent on aquarium accessories.
Support daily trip limits (1,000-1,500) will keep fishery within sustainable yield.
Living rock fishery is backbone of the living reef aquarium industry.
Aquaculture is an experiment.

William Brugger-

Live rocks they get do not have coral on them.
they gather rocks fro the rubble zone that is renewable.
Supported continued collection of live rock and at the very least phase out the collection very slowly.
Allow the harvesters to get a permit to do aquaculture.
Water quality is more or a problem than live rock collection.
Rock has no coral on it and there are tons of it out there.
Jobs depend on harvest.

Jeffery A. Turner-

Supports aquaculture in the future but need to limit harvest at least for the next three years, possibly using daily limit of 100-200 lb.
Aquariums educate people on how delicate our marine environment is.
It will cost $100,000 to put together a live rock lease.
Live rock is the biggest part of the industry at this point supporting the sale of all marine life
Phase into aquaculture and not phase out live rock.

Grady Sullivan-

Holes blown for treasure hunting show rock all the way to bottom no way rock can be endangered.
Moved business to Bahamas because investors did not trust U.S. government.

Dr. Henry Fedderm-

Lack of data to determine the optimum yield, the allocation among harvesters and non harvesters, the value of non consumption, the benefits of harvest, and the net benefits.
Prohibition will result in bankruptcy and is a burdensome regulation.
Harvest prohibition tied to aquaculture.
Harvest is small and there is no irreversible catastrophic problem to justify a ban.
Prohibition is a burdensome regulation.
Support limited entry and daily trip limits, different measures between council areas because they are different ecologically..
Periodic reviews of aquaculture and permitting.
Should develop feasible criteria for aquaculture based on biology (cannot be limited to sand because most rock will disappear.
Allow consumptive and non-consumptive users to remain in the fishery, higher net benefit to society.

Marcy Roth- (Center for Marine Conservation)

Represents 115,000 members nationwide and supports a ban on live rock collection and landing in the state of Florida.
Live rock collection violates state and federal that prohibit the harvest of coral and corals and is a taking not only of marine organisms but marine habitat.
Live rock supports thousands organisms benefiting the environment as a whole biologically an economically.
Live rock is base upon which renewable commercial and recreational fisheries are supported and reduces topographical complexity of the reef which reduces the quality of habitat for other organisms.
The landing of live rock or taking of habitat goes against the basic premise of the Florida Keys Sanctuary.
By harvesting live rock we are speeding up bioerosion and taking habitat that new corals can recruit upon.
Loss of one or two patch reefs a year is a significant loss of habitat. The Center Supports a ba on live rock collecting in the state of Florida and the South Atlantic region.
Will support a one or two year phase out not three.
Aquaculture is the only legitimate alternative to wild collection and Center will work with the Council, Florida, and the industry to make it viable.

Jennifer Wheaton-

Seven aquaculture leases in process (two in Gulf).
Mr. Londeree's site was approved and rock has been deposited.
Application fee is $200.
Mr. Frakes site has been approved and is preparing to deposit rock.
Forrest Young's site in the Keys has been surveyed and Lisa Furstenwerth will be making her application.
A lot of delays were caused by State Lands not wanting to issue aquaculture permits in aquat preserves.
A new aquaculture permit will be approved by July 1994.

Wrightsville Beach, North Carolina (1/13/94)

Sandy Eisner- (Project ReefKeeper)

Enact a ban on live rock harvesting.
Joins 143 other organizations support immediate prohibition of live rock collection.
If collection must be phased out, Project ReefKeeper supports starting with estimated 1993 landings and reducing the amount 33% a year over three years until the landings quota reaches zero.
Phase out wild harvest phase in aquaculture.

Bill Mansfield-

Live rock collection is destruction of habitat and is not a fishery.
Need law to prohibit immediately.
Species have become endangered because of loss of habitat.
There is only 1.7% of the ocean bottom off NC with reef habitat one meter or greater.
100% of fish come from 1.7% of bottom.
If live rock collection is prohibited in Florida people will come to NC to get it.
Collection is not supporting a food industry, it supports a hobby and makes somebody wealthy.
Collection of a non renewable resource.
Aquaculture will work in warm water won't work in NC because it grows too slow.

Fritz Rohde-

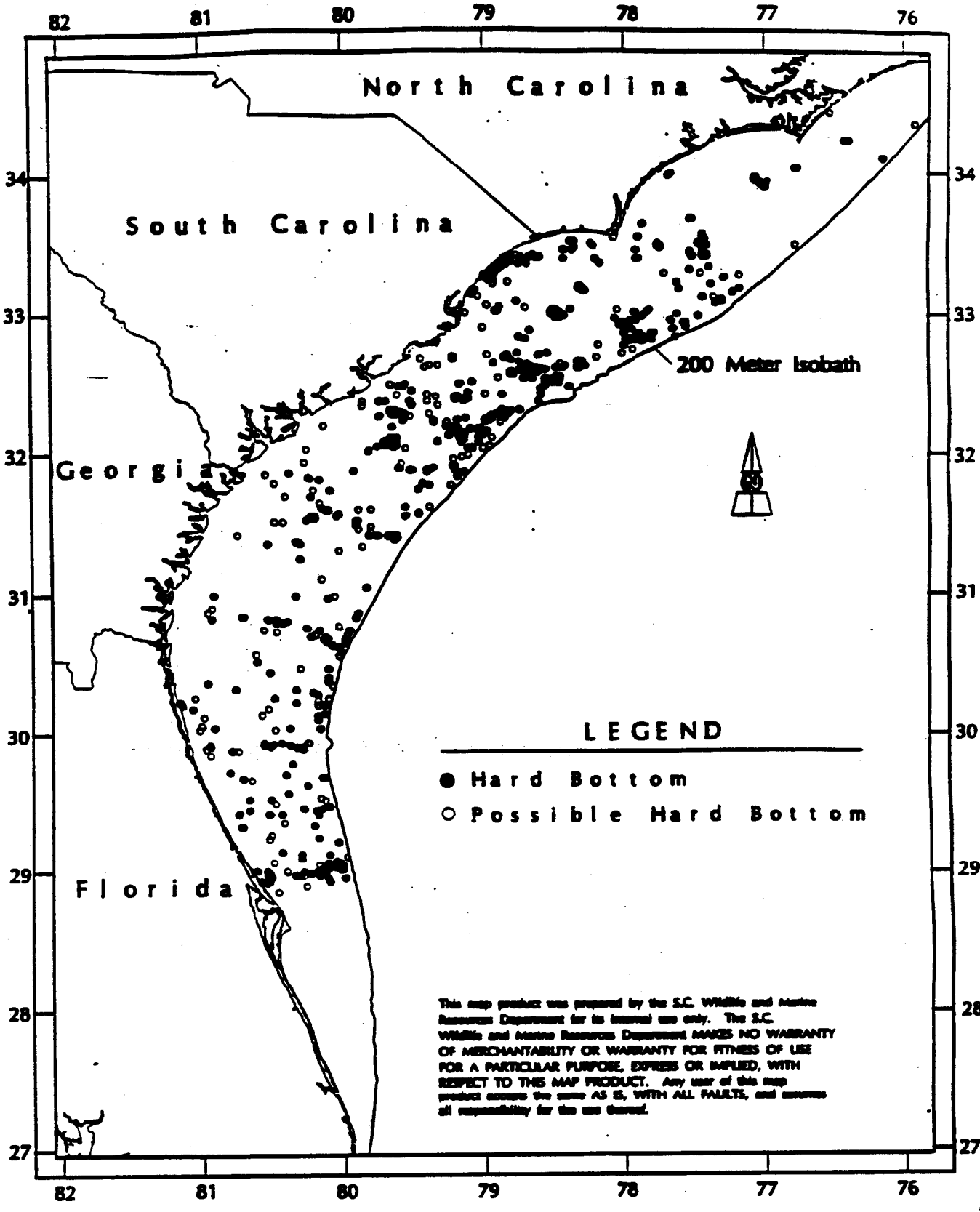
Agreed with SA actions to ban collection of live rock.
Manage the same in the Gulf and SA.

John Best-

Supported three year phase out of live rock harvest.
Not a inexpensive hobby ($6.00-$12.00 a pound for rock)
Live rock is a renewable resource.
Nothing wrong with people in south Florida, the Caribbean, and Indonesia making great sums of money off the landing of live rock.
Phase out will allow aquaculture to be set up.
If live rock is banned the industry will move to lesser developed parts of the world.
Allow hobbyists and collectors to be part of the solution.

APPENDIX F

Miscellaneous Figures and Tables



*circles only indicate existance of hard bottom and not actual total bottom area.

Draft distribution map of live bottom habitat in the South Atlantic Bight identified in the SEAMAP bottom mapping program. (NOAA, SCWMRD, 1993)

(Source: Bohnsack et. al., 1994) MONROE

Table 8. Reported annual marine life catch in numbers for Florida South/East Coast Flori

FISHES	Monroe	SE COAST		
Common Name	1990	1991	1992	Mean
Angelfish, Blue	21,302	25,821	26,317	24,513
Angelfish, Cherubfish	4,662	3,413	5,489	4,521
Angelfish, French	1,960	4,526	3,931	3,473
Angelfish, Gray	11,785	14,786	8,470	11,674
Angelfish, Queen	5,957	10,318	9,722	8,666
Angelfish, Rock Beauty	16,410	23,266	24,909	21,528
Balloonfish	650	849	1,027	842
Bass, Belted Sandfish	176	82	88	109
Bass, Chalk	772	636	292	634
Bass, Harlequin	2,259	2,648	3,193	2,667
Bass, Lantern	357	221	333	304
Bass, Other	141	181	124	149
Bass, Tobaccofish	1,174	912	851	979
Blenny, Other	4,626	2,269	5,726	4,207
Blenny, Redlip	467	491	2,924	1,271
Blenny, Saddled	395	467	212	361
Blenny, Saltlin	372	262	1,526	720
Burrfish	899	896	1,266	1,084
Butterflyfish, Banded	941	782	1,444	1,012
Butterflyfish, Bank	82	394	257	244
Butterflyfish, Foureye	8,896	10,171	8,775	9,601
Butterflyfish, Longsnout	194	393	306	297
Butterflyfish, Reef	1,875	2,190	2,794	2,286
Butterflyfish, Spotfin	1,157	1,316	1,226	1,226
Cardinalfish, Flamefish	8,262	7,413	8,179	8,318
Catfish	–	1	918	926
Clinglish	76	85	209	115
Cowfish, Honeycomb	3,926	9,896	8,140	7,211
Cowfish, Scrawled	–	14	1,097	370
Damselfish, Beaugregory	5,741	5,575	4,407	5,274
Damselfish, Bicolor	2,667	2,496	2,044	2,469
Damselfish, Blue Chromis	12,803	10,183	15,131	12,706
Damselfish, Dusky	382	271	316	323
Damselfish, Other	1,940	1,490	882	1,117
Damselfish, Purple Reeffish	3,050	2,619	2,636	2,769
Damselfish, Sergeant Major	957	1,279	1,310	1,185
Damselfish, Sunshinefish	597	3,393	5,334	3,108
Damselfish, Threespot	2,096	1,768	1,809	1,891
Damselfish, Yellowtail	2,455	2,205	2,555	2,405
Drum, High Hat	8,011	8,500	7,758	8,090
Drum, Jacknife-fish	1,138	1,086	725	976
Filefish, Other	7	606	163	259
Filefish, Planehead	967	1,533	2,571	1,690
Filefish, Pygmy	–	–	520	173
Filefish, Scrawled	8	23	602	211
Filefish, Whitespotted	157	416	758	444
Flounder	63	162	178	134
Frogfish, Sargassumfish	117	199	450	255
Goatfish, Other	83	75	497	218
Goby, Neon	3,297	3,135	4,591	3,674
Goby, Other	181	129	273	194
Grouper, Coney	435	405	333	391
Grouper, Graysby	21	67	265	118
Grunt, French	240	85	186	170
Grunt, Other	577	300	836	571
Grunt, Porkfish	7,513	9,919	6,815	8,082
Hamlets	3,394	4,944	5,986	4,676
Hogfish	172	374	339	295

INVERTEBRATES	Monroe	SE COAST		
Common Name	1990	1991	1992	Mea
Anemone, Banded	14,894	12,401	21,768	16,25
Anemone, Giant Caribbean	218,757	259,026	244,725	240,83
Anemone, Other	75	344	5,956	2,12
Anemone, Ringed	17,704	25,096	34,757	25,84
Anemone, Sun	3,772	3,688	5,980	4,48
Basket Starfish	896	1,097	832	94
Brittle Star, Other	20	60	384	15
Brittle Star, Red Serpent	950	2,283	2,106	1,78
Brittle Star, Serpent	6,414	5,790	7,396	6,53
Brittle Star, Spiny Ophiocoma	9,130	9,863	9,785	9,41
Bryozoa	–	–	1	
Chiton	–	8	16	
Clam, Jewel Box	287	394	40	2
Clam, Other	29	6	1	
Conch, Florida Crown	83	5	4	
Conch, Florida Fighting	–	2	–	
Conch, Florida Horse	–	223	210	1
Conch, Milk	–	2	–	
Cowrie, Atlantic Deer	18	47	118	
Cowrie, Measled	1,895	1,697	1,131	1,4
Crab, Box	–	8	–	
Crab, Inlaw Arrow	729	2,274	4,940	2,4
Crab, Furcate Spider	3,714	3,529	5,189	4,1
Crab, Horseshoe	5,893	10,794	8,910	8,4
Crab, Nimble Spray	2,903	1,882	3,196	2,6
Crab, Other	5,453	4,787	6,880	5,7
Crab, Polkadotted Hermit	8,908	11,486	8,547	9,9
Crab, Redlinger Rubble	190	165	281	1
Crab, Spotted Porcelain	2,890	2,015	3,575	2,6
Crab, Thinstripe Hermit	30,571	37,543	56,773	41,6
Crab, Yellowline Arrow	8,946	11,257	10,486	10,0
Fileclam, Rough	44,817	50,310	60,823	51,9
Fileclam, Spiny	2,801	2,041	2,401	2,3
Gorgonian, Other	6,144	7,189	7,861	6,9
Gorgonian, Rod	5,667	8,906	5,432	6,4
Gorgonian, Sea Blades	5,941	7,926	7,245	7,0
Jellyfish, Other	–	320	–	
Jellyfish, Upside-down	7,006	8,209	5,408	6,9
Lobster, Caribbean Spiny	370	394	194	
Lobster, Spanish Slipper	267	371	319	
Nudibranch, Lettuce Sea Slug	375	423	1,286	
Nudibranch, Other	1,892	2,101	1,867	1,9
Octopus, Atlantic Pygmy	180	208	275	
Octopus, Caribbean Reef	–	9	35	
Octopus, Common	887	532	562	
Oyster, Atlantic Thorny	429	1,203	1,411	1,
Penshell	–	44	5	
Polychaete, Feather-duster	–	80	23	
Polychaete, Horned Christmas-	–	282	426	
Polychaete, Other	49	11	841	
Sand Dollar	210,226	985	34,016	81,
Scallop, Other	178	563	378	
Sea Biscuit, Other	–	–	32,201	10,
Sea Cucumber, Florida	2,818	2,572	1,383	2,
Sea Hare	–	–	84	
Sea Star, Cushion	126	101	63	
Sea Star, Other	–	86	208	
Sea Star, Red Spiny	5,857	7,786	5,886	6

Table 8 (cont.) Reported annual marine life catch in numbers for Florida South/East Coast Florida.

FISHES	Monroe	SE COAST		
Common Name	1990	1991	1992	Mean
Hogfish, Spanish	3,400	4,128	4,270	3,933
Hogfish, Spotfin	1,886	4,260	4,289	3,478
Jack, Lookdown	–	53	518	190
Jawfish, Dusky	140	176	752	356
Jawfish, Yellowhead	5,043	4,286	14,861	7,997
Moray, Goldentail	133	261	227	207
Moray, Green	116	126	129	124
Moray, Other	263	302	219	261
Moray, Spotted	404	255	255	305
Parrotfish, Blue	175	296	308	260
Parrotfish, Other	1,600	2,286	2,180	2,015
Parrotfish, Princess	–	239	550	263
Parrotfish, Redband	29	193	316	179
Parrotfish, Striped	2,325	2,499	4,174	2,999
Pipefish, Sargassum	260	1,050	1,482	957
Porgy	–	251	364	205
Puffer, Sharpnose	2,130	2,577	2,553	2,953
Ray, Butterfly	–	209	300	170
Razorfish	110	196	105	137
Scorpionfish, Reef	450	765	478	557
Seahorse, Dwarf	1,804	7,182	19,972	9,586
Seahorse, Lined	2,905	4,555	4,943	4,134
Shark, Lemon	70	140	101	104
Shark, Nurse	695	662	671	676
Squirrelfish, Reef	324	269	662	418
Stingray, Yellow	96	123	148	112
Tang, Blue	4,940	5,255	6,041	5,212
Tang, Doctorfish	993	455	385	611
Tang, Ocean Surgeon	1,323	1,129	1,637	1,363
Triggerfish, Other	177	211	530	306
Wrasse, Bluehead	12,164	14,792	13,296	13,417
Wrasse, Clown	–	411	468	293
Wrasse, Creole	2,726	3,818	4,165	3,570
Wrasse, Other	3,945	3,663	4,503	4,037
Wrasse, Puddingwife	265	189	448	301
Wrasse, Slippery Dick	29	165	215	136
Wrasse, Yellowhead	1,250	1,365	1,562	1,392
Other Fishes (>72 species)*	10,510	2,521	4,142	5,758
TOTAL FISHES	223,304	260,568	303,676	

INVERTEBRATES	Monroe	SE COAST		
Common Name	1990	1991	1992	M
Shrimp, Banded Coral	4,842	5,852	5,259	5
Shrimp, Cleaner	110	86	119	
Shrimp, Mantis	–	14	18	
Shrimp, Other	119	88	394	
Shrimp, Peppermint	15,828	21,028	12,092	16
Shrimp, Pistol	1,366	1,063	1,542	1
Shrimp, Rock	–	141	454	
Shrimp, Spotted Cleaner	770	542	610	
Snail, Chestnut Turban	23,369	41,815	38,266	34
Snail, Cone	–	6	20	
Snail, Flamingo Tongue	894	993	1,246	1
Snail, Helmet	–	4	–	
Snail, Moon	–	199	234	
Snail, Murex	35	57	108	
Snail, Other	7,096	14,821	31,377	17
Snail, Purple Sea	–	9	–	
Snail, Rocksnail	–	86	–	
Snail, Star	–	5,227	1,287	2
Snail, Topsnail	–	34	5,235	1
Snail, Triton	–	8	16	
Snail, Tulip	891	1,509	1,147	1
Snail, Turbonella	41,201	85,887	118,240	81
Snail, Vase	–	–	35	
Sponge, Other	604	693	721	
Sponge, Red Ball	3,096	3,895	4,182	3
Sponge, Red Finger	–	189	402	
Sponge, Red Tree	6,288	10,575	7,761	8
Tunicates, Sea Squirts	–	151	140	
Urchin, Longspine	2,674	185	37	1
Urchin, Other	–	283	81	
Urchin, Pencil	7,520	10,484	9,814	9
Urchin, Red Rock	6,179	6,672	5,653	6
Urchin, Variable	16,961	16,065	14,648	15
Welk, Knobbed	–	1	4	
Welk, Lightning	–	–	183	
TOTAL INVERTEBRATES	780,853	739,208	877,196	
Algae				
Plant, Other	5,529	8,079	10,271	7
Plant, Caulerpa, Box	1,333	2,589	3,118	2
Plant, Caulerpa, lbs	5,833	3,289	2,227	3
Plant, Caulerpa, no.	113	197	43	
Plant, Halimeda	6,124	5,517	2,511	4
Plant, Merman's Shaving Brush	8,731	8,818	6,590	8
TOTAL ALGAE	27,663	28,489	24,760	
Live Rock				
Live Rock, Algae (lbs)	97,721	175,975	253,071	175
Live Rock, False Coral (lbs)	25,916	18,018	22,820	22
Live Rock, Gorgonian (lbs)	12,563	11,693	16,813	13
Live Rock, Rubble (lbs)	124,253	171,969	178,350	158
Live Rock, Sea Mat (lbs)	41,696	26,286	21,006	29
Live Rock, Serpulid Worm (lbs)	1,717	1,236	41	
TOTAL LIVE ROCK	303,856	405,177	492,103	

* These fishes have mean abundances <100.

APPENDIX G

Fishery Management Jurisdiction, Laws, and Policies

FISHERY MANAGEMENT JURISDICTION, LAWS, AND POLICIES

MANAGEMENT INSTITUTIONS

STATE MANAGEMENT INSTITUTIONS

North Carolina: The Division of Marine Fisheries, an agency within the Department of Environment, Health, and Natural Resources, has responsibility for managing coastal fisheries. The division is governed by the North Carolina Marine Fisheries Commission, a body composed of 15 members appointed by the Governor, which is responsible for promulgating regulations for management, protection, preservation, and enhancement of marine and estuarine resources of the state including commercial and sport fisheries regulations.

General statutes deal primarily with licenses, taxes, record keeping, enforcement, and leasing procedures.

South Carolina: The South Carolina Wildlife and Marine Resources Department (SCWMRD), Division of Marine Resources, is responsible for conservation and management of the state's marine resources. The Department is governed by a nine member board, the South Carolina Wildlife and Marine Resources Commission. The Division is responsible for managing and developing South Carolina's commercial and recreational shellfish, crustacean, and finfish resources; collecting and analyzing fisheries statistics; evaluating permit applications from the Coast Guard, Corps of Engineers; and the South Carolina Coastal Council; developing environmental impact statements; and developing marine recreational fisheries. The Department is also responsible for enforcing fishery regulations.

Most of the regulatory authority of the Division is specified by statute, including provisions for legal trawling areas, gear restrictions, licenses, and taxes.

Georgia: The Georgia Department of Natural Resources, Coastal Resources Division, is responsible for conservation and management of Georgia's estuarine and marine resources. The Department is headed by a Commissioner and a 15 person board. The Georgia General Assembly, in 1989, passed Act 644 which empowered the Board of Natural Resources to adopt rules and regulations to control the harvest of seventeen species of marine fish. Enforcement of fishery regulations is the responsibility of the Georgia Game and Fish Division. The board has authority to promulgate regulations pertaining to coastal fisheries not contrary to existing statutes.

Florida: The Florida Marine Fisheries Commission, created in 1983 and composed of seven members appointed by the governor and cabinet, has full rule-making authority over fisheries and marine life (except endangered species), subject to final approval by the governor and cabinet. The Florida Department of Natural Resources, Division of Marine Resources is charged with administration, supervision, development, and conservation of natural resources within the state. Within the Department, the Marine Research Institute conducts research directed toward fisheries management. The Florida Marine Patrol is responsible for enforcing all marine resource-related laws and all rules and regulations of the Department.

FEDERAL MANAGEMENT INSTITUTIONS

Regional Fishery Management Councils: The South Atlantic Fishery Management Council, under the Magnuson Act, is charged with preparing fishery management plans for fisheries within its area of management authority, from the Florida East coast to the North Carolina/Virginia border. The Council prepares plans that cover foreign and domestic fishing, and submits them to the Secretary of Commerce for approval and implementation. Once implemented, it is the responsibility of the National Marine Fisheries Service (NMFS) and the U.S. Coast Guard to enforce the laws and regulations.

Atlantic States Marine Fisheries Commission: The Atlantic States Marine Fisheries Commission's Interstate Fishery Management Program was initiated through a cooperative agreement with the NMFS in 1980 and promotes cooperative management of marine, estuarine, and anadromous fisheries in east coast state waters. This program determines priorities for territorial sea fisheries management; develops, maintains, and reviews management plans for high priority fisheries; recommends to states, regional fishery management councils, and the Federal government, management measures to benefit such fisheries; and provides a means of conducting short-term research to facilitate preparation or

review of fishery management plans. The Interstate Fishery Management Program board is comprised of fisheries administrators from the fifteen Atlantic coast member states, a representative from NMFS, and a representative from the U.S. Fish and Wildlife Service.

National Marine Fisheries Service (NMFS): NMFS, under the National Oceanic and Atmospheric Administration (NOAA), collects commercial and recreational fishery statistics, develops fish stock assessments, and provides technical expertise to facilitate the regional councils' conservation and management of fisheries through the development of fishery management plans. NMFS responsibilities also include habitat, marine mammals, and endangered species. NMFS shares responsibility for enforcing Magnuson Act regulations with the U.S. Coast Guard.

Office of Ocean and Coastal Resource Management: The Office of Ocean and Coastal Resource Management asserts authority through National Marine Sanctuaries pursuant to Title III of the Marine Protection, Research, and Sanctuaries Act. Several sites have been designated marine sanctuaries along the Atlantic coast (e.g., Florida Keys National Marine Sanctuary). This office also establishes standards for approving and funding state coastal zone management programs. A fishery management plan is forwarded to the states to determine if the plan is consistent to the maximum extent practicable with their approved coastal zone management program.

This amendment has been distributed to North Carolina, South Carolina, and Florida. The State of Georgia is developing a state coastal zone management plan and program.

National Park Service: The National Park Service, under the Department of Interior, establishes coastal and nearshore national parks and monuments such as the Everglades National Park, and retains authority to regulate fishing practices within their area of jurisdiction.

U.S. Fish and Wildlife Service: The U.S. Fish and Wildlife Service, under the Department of Interior, manages fish pursuant to the Endangered Species Act and the Fish and Wildlife Coordination Act . They review and comment on proposed activities affecting navigable waters that are sanctioned, permitted, assisted, or conducted by Federal agencies, focusing on impacts to fish, wildlife, and the habitat on which they depend.

U. S. Environmental Protection Agency: The Environmental Protection Agency regulates the discharge of pollutants into marine waters. Certain standards must be met before a National Pollutant Discharge Elimination System permit will be issued by the agency.

U.S. Army Corps of Engineers: The U.S. Army Corps of Engineers (COE), pursuant to the Clean Water Act, regulates the disposal of dredged material. A number of state and Federal agencies comment on proposed projects which are considered by COE before issuing permits.

U.S. Coast Guard: The U.S. Coast Guard shares the responsibility for enforcing regulations promulgated pursuant to the Magnuson and Lacey Acts with the NMFS.

International Treaties and Agreements: Foreign fishing is prohibited within the Exclusive Economic Zone for anadromous species and continental shelf fishery resources beyond the Exclusive Economic Zone out to the limit of United States jurisdiction under the Convention of the Continental Shelf unless authorized by an international agreement which existed prior to passage of the Magnuson Act and is still in force and effect or authorized by a Governing International Fishery Agreement which has been issued subsequent to the Magnuson Act. There are no pre-Magnuson Act agreements affecting Coral, Coral Reefs and Live Rock for the Atlantic coast.

FEDERAL LAWS, REGULATIONS, AND POLICIES

Magnuson Fishery Conservation and Management Act of 1976 : The Magnuson Act provides a national program for the conservation and management of fisheries to allow for optimum yield (OY) on a continuing basis and to realize the full potential of the nation's fisheries resources. Under the Act, eight Regional Fishery Management Councils are charged with preparing fishery management plans for the fisheries within their areas of management authority. The Councils prepare management plans that cover foreign and domestic fishing

and submit them to the Secretary of Commerce for approval and implementation. Once implemented, it is the responsibility of the NMFS and the U.S. Coast Guard to enforce the laws and regulations.

Marine Protection, Research, and Sanctuaries Act of 1972: The Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1431-1434) authorizes the Secretary of Commerce to designate as marine sanctuaries those areas of ocean waters within U.S. jurisdiction determined to be necessary for preserving or restoring their conservation, recreational, ecological, or esthetic values. On November 7, 1988 this Act was amended and reauthorized through 1992 by PL 100-627.

Florida Keys National Marine Sanctuary Act of 1990 (PL 101-605): The Florida Keys National Marine Sanctuary was created on November 16, 1990. Included in the Sanctuary are 2,800 square miles of nearshore waters extending from just south of Miami to the Dry Tortugas.

Oil Pollution Act of 1961 : The Oil Pollution Act regulates intentional discharge of oil or oily mixtures from ships registered in the U.S. and thus provides some degree of protection to fishery resources. Tankers cannot discharge oil within 92 km (50 nm) of the nearest land. Ships other than tankers must discharge as far as practicable from land. The quantity of oil which can be discharged is also regulated.

Coastal Zone Management Act: The Coastal Zone Management Act of 1972 (16 U.S.C. 1451) establishes a national policy placing responsibility for comprehensive land and water management of the coastal zone upon the coastal states. Federal actions directly affecting a state's coastal zone must be as consistent as possible with approved state coastal zone management plans. In the south Atlantic region, North Carolina, South Carolina, and Florida have programs approved by the Secretary of Commerce. In January 1992, Georgia Department of Natural Resources was designated as the lead agency to develop and implement Georgia's coastal management program.

Endangered Species Act of 1973 : The Endangered Species Act provides for the listing of plant and animal species as threatened or endangered. The taking or harassment of listed species is prohibited. The Act establishes a process which seeks to ensure that projects authorized, funded, or carried out by Federal agencies do not jeopardize the existence of these species or result in destruction or modification of habitat determined by the Secretary to be critical.

National Environmental Policy Act: The National Environmental Policy Act requires that Federal agencies prepare environmental impact statements prior to undertaking major activities which might significantly affect the quality of the human environment. These impact statements are to evaluate any alternatives to the proposed action which may better safeguard environmental values.

Fish and Wildlife Coordination Act: Under the Fish and Wildlife Coordination Act, the U.S. Fish and Wildlife Service and the NMFS review and comment on fish and wildlife aspects of proposals by Federal agencies which take place in or affect navigable waters. The review focuses on potential damage to fish and wildlife and their habitat.

Fish Restoration and Management Projects Act: The Fish Restoration and Management Projects Act appropriates funds to state fish and game agencies for fish restoration and management projects. Additional funds for the protection of threatened fish communities located within state waters, including marine areas, could be made available under the Act.

Lacey Act Amendment of 1981: The Lacey Act Amendments of 1981 strengthen and improve enforcement of Federal fish and game laws and provides Federal assistance in enforcement of state laws. The Act prohibits import, export, and interstate transport of illegally taken fish or wildlife.

Commercial Fishing Industry Vessel Liability Act of 1987: The Commercial Fishing Industry Vessel Compensation and Safety Act establishes guidelines for timely compensation for temporary injury incurred by seamen on fishing vessels.

Plastics Pollution Research and Control Act (MARPOL Annex 5): The Marine Plastics Pollution Research and Control Act of 1987 implements Annex V of the International Convention for the Prevention of Pollution by Ships and prohibits all vessels, including commercial and recreational fishing vessels, from discharging plastics in U.S. waters and severely limits the discharge of other types of refuse at sea. This legislation also requires ports and terminals receiving these vessels to provide adequate facilities for in-port disposal of non-degradable refuse, as defined in the Act.

Clean Water Act & Water Quality Act of 1987: The Clean Water Act requires that a National Pollutant Discharge Elimination System permit be obtained before any pollutant is discharged from a point source into U.S. waters. Issuance of this permit is based primarily on the effluent guidelines found in 40 CFR 435. However, additional conditions can be imposed on permit issuance on a case by case basis to protect valuable resources in the discharge area (Department of Commerce 1987).

The Water Quality Act of 1987 reauthorized and amended the Clean Water Act. The amendment requires the Environmental Protection Agency to identify and establish numerical limits for each toxic pollutant in sewage sludge and establish management practices to achieve the set limits. It also authorized the National Estuary Program to address estuarine pollution, which is probably the greatest threat to the coral and coral reefs on the Atlantic coast.

The National Aquaculture Improvement Act of 1985: The intent of the National Aquaculture Act, is to stimulate development of the domestic aquaculture industry, replenish depleted fisheries, and reduce the trade deficit in fishery products. The SAFMC has taken a position to allow and facilitate aquaculture of live rock in the Exclusive Economic Zone. Research and development continues on live rock aquaculture.

The Coastal Barrier Resources Act of 1982 : The Coastal Barrier Resources Act established a system of 186 undeveloped barrier units comprising 452,839 acres along 667 miles of the Atlantic and Gulf of Mexico shoreline. The barrier island legislation was enacted to create economic disincentives for developing coastal barrier islands by prohibiting expenditure of Federal funds for flood insurance, road and channel construction, and utility construction. Preservation of coastal barriers and associated wetlands helps protect essential fishery habitat.

The Marine Mammals Protection Act Amendments of 1988: The Marine Mammal Protection Act of 1982 prohibited the taking of marine mammals incidental to commercial fishing unless authorized by a general incidental take permit or a small take exemption. On November 23, 1988, PL 100-711 was signed into law reauthorizing and amending the act. The amendments replace existing provisions for granting incidental take authority by commercial fishermen with an interim exemption system valid until October 1, 1993. Exemptions are available only to U.S. vessels or foreign vessels with valid fishing permits issued under Section 204(b) of the Magnuson Act.

APPENDIX H

**Summary Minutes Detailing 1992 Florida Marine Fisheries Commission Position on and Status of Live Rock Harvest;
Joint SAFMC Habitat Committee and Advisory Panel Meeting 4/27/92**

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL
JOINT HABITAT & ENVIRONMENTAL PROTECTION COMMITTEE AND ADVISORY PANEL MEETING
Town & Country Inn/ Charleston, South Carolina/April 27, 1992

Excerpt from Committee Minutes:

Status of Live Rock Harvest/Florida Marine Fisheries Commission Position

Mr. Schill asked Mr. Williams to give a report on the Florida Marine Fisheries Commission's (FMFC) position on the status of live rock harvest.

Mr. Williams said for those who are not familiar with live rock, it is a term used by the marine aquarium industry to describe what has a base of dead coral or non-coral limestone which is encrusted with algae and soft and hard corals and anemones, and it is used in marine aquariums. It has a couple of purposes: some of the live rock is very pretty and it has some filtration aspects, a denitrifier of a sort. Live rock has come into high demand in the past 5 to 7 years as aquariums have become more and more sophisticated. The particular issue of live rock that we have been working on came about and began in 1989 when the Florida DNR determined that the harvest of live rock in state waters was against state law because they were illegal, and live rock harvesters were illegally mining the state's submerged bottoms, and to do that they had to have a permit. So the state made a policy decision and stopped it. When they did that it pushed all of the harvest into the federal zone, but the harvest continued. Last year the marine life harvesters took about 300 tons of live rock from the EEZ adjacent to Florida, and some illegal harvest continues in Florida state waters. The FMFC has decided to stop all harvest of coral in the adjacent EEZ, and while we do not necessarily have the authority to tell a boat what it can and cannot do when it is in the EEZ, the FMFC has decided to stop the landing in Florida. And they will do this through a phase out of live rock landings in the state over a three year period. The marine life industry is kind of split on this. Some members want to see the harvest stop; others want it to continue, and still others want to engage in live rock harvest as an aquaculture venture. The FMFC in phasing it out over a three year period is encouraging aquaculture. We have encouraged the DNR and the Department of Environmental Regulation (DER) to work with industry to try to develop live rock aquaculture, and they have done that. A couple of firms have already applied to take out live rock, although they haven't been permitted yet. One guy said he had gotten some limestone from the Bahamas to sink off of Tampa somewhere as soon as it is legal for him to do so, and he is going to attempt to grow live rock for the aquarium trade. The FMFC has decided to prohibit live rock, he believes, for two reasons: 1) It is illegal under both state and federal law to harvest hard corals. It is illegal to harvest two species of gorgonians as well. DNR investigators have looked at some of the live rock harvest, and the majority of the live rock does contain hard corals of one form or another. He has seen a number of statements that say about 90% of all the live rock has some illegal coral on it; it's just that most people can't identify it. 2) It's a low level strip mining that removes habitat for fish and invertebrate species; so we're going to stop it. DNR has estimated there are 1,050 patch reefs in the state and in adjacent EEZ, and at 300 tons per year the harvesters are removing between one and two patch reefs per year. The industry is increasing at about 15% annually which is a doubling rate of every day. The rate of harvest would continue to increase, and you can't escape it. It's a low level strip mining. It's not as bad as some kinds of strip mining, but you are removing habitat. So based on those two things the FMFC has decided to stop it. It will be phased in by next year. The harvesters will be allowed to remove 225 tons and land it in the state. The year after that they will be limited to 150 tons, and the year after that they will be limited to 75 tons. We also attached a daily vessel limit of 500 pounds per day to it which was done in response to a request from industry because they were afraid some members would rush out and try to catch the whole quota. That's something that fisheries managers have learned will occur whenever you use quotas; it's the goldrush phenomenon. There will be a 500 pound per day vessel limit. It's not law yet but will become law July 1 in Florida. The rule does provide an exception for aquaculture, and we are working with DNR and DER to try to encourage industry to get permits. It takes about nine months to get a permit to engage in this. So hopefully by the time live rock harvest is completely phased out there will be an industry that can continue to generate it. There will be a problem in that there is bound to be some corals still settled onto that substrate, and we will have to get the Florida legislature to change state law to allow some exception to that, but the Commission has expressed their intent to support a change like that. If the rock is properly marked or if it can be clearly distinguished from native rock we would be able to allow an exception from the coral regulations. This concluded Mr. Williams' report.

APPENDIX I

Coastal Zone Consistency Letters

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

ONE SOUTHPARK CIRCLE, SUITE 306
CHARLESTON, SOUTH CAROLINA 29407-4699
TEL 803/571-4366 FAX 803/769-4520

John F. Floyd, Chairman
John D. Brownlee, Vice-Chairman

Robert K. Mahood, Executive Director

May 12, 1994

Mr. William W. Cobey, Jr., Secretary
N.C. Department of Environment, Health & Natural Resources
P.O. Box 27687
Raleigh, North Carolina 27611-7687

Dear Mr. Cobey:

This is to advise the State of North Carolina of proposed federal action and the conclusion of the South Atlantic Council on the consistency of such action with the provisions of North Carolina's Coastal Management Program. This letter is submitted pursuant to provisions of 15 CFR §930 *et seq.* and §307 of the Coastal Zone Management Act of 1972, as amended.

The proposed federal action is to modify the management program for coral, coral reefs and live/hard bottom habitat in the South Atlantic Region. A copy of Amendment 2 is enclosed.

We have reviewed the proposed action with regard to the provisions of your State's Coastal Management Program and have concluded that it is consistent to the maximum extent practicable with the provisions thereof. In accordance with the provisions of 15 CFR §930.41 we are requesting that you advise us of your agreement or disagreement with our determination. In the event that there is no response from your agency within 45 days of receipt of this letter, we will presume your agency's concurrence with our determination of consistency.

If you have any questions, please do not hesitate to call me or Roger Pugliese at (803) 571-4366.

Sincerely,

Robert K. Mahood

Robert K. Mahood
Executive Director

RKM:rp

Enclosures

cc: Mr. Roger N. Schecter, Director w/copy encl.
Division of Coastal Management
SAFMC Council Members

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

ONE SOUTHPARK CIRCLE, SUITE 306
CHARLESTON, SOUTH CAROLINA 29407-4699
TEL 803/571-4366 FAX 803/769-4520

John F. Floyd, Chairman
John D. Brownlee, Vice-Chairman

Robert K. Mahood, Executive Director

May 12, 1994

Dr. H. Wayne Beam, Executive Director
South Carolina Coastal Council
AT&T Capitol Center
1201 Main Street, Suite 1520
Columbia, SC 29201

Dear Dr. Beam:

This is to advise the State of South Carolina of proposed federal action and the conclusion of the South Atlantic Council on the consistency of such action with the provisions of South Carolina's Coastal Management Program. This letter is submitted pursuant to provisions of 15 CFR §930 *et seq.* and §307 of the Coastal Zone Management Act of 1972, as amended.

The proposed federal action is to modify the management program for coral, coral reefs and live/hard bottom habitat in the South Atlantic Region. A copy of Amendment 2 is enclosed.

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If you have any questions, please do not hesitate to call me or Roger Pugliese at (803) 571-4366.

Sincerely,

Robert K. Mahood

Robert K. Mahood
Executive Director

RKM:rp

Enclosures

cc: Mr. Heyward Robinson, Staff Biologist w/copy encl.
Mr. Steve Snyder, Chief Planner w/copy encl.
South Carolina Coastal Council
4130 Faber Place North, Suite 300
N. Charleston, SC 29405
SAFMC Council Members

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

ONE SOUTHPARK CIRCLE, SUITE 306
CHARLESTON, SOUTH CAROLINA 29407-4699
TEL 803/571-4366 FAX 803/769-4520

John F. Floyd, Chairman
John D. Brownlee, Vice-Chairman

Robert K. Mahood, Executive Director

May 12, 1994

Mr. Estus Whitfield
Executive Office of the Governor
The Capitol
Room 1501
Tallahassee, Florida 32399-0001

Dear Mr. Whitfield:

This is to advise the State of Florida of proposed federal action and the conclusion of the South Atlantic Council on the consistency of such action with the provisions of Florida's Coastal Management Program. This letter is submitted pursuant to provisions of 15 CFR §930 *et seq.* and §307 of the Coastal Zone Management Act of 1972, as amended.

The proposed federal action is to modify the management program for coral, coral reefs and live/hard bottom habitat in the South Atlantic Region. A copy of Amendment 2 is enclosed.

We have reviewed the proposed action with regard to the provisions of your State's Coastal Management Program and have concluded that it is consistent to the maximum extent practicable with the provisions thereof. In accordance with the provisions of 15 CFR §930.41 we are requesting that you advise us of your agreement or disagreement with our determination. In the event that there is no response from your agency within 45 days of receipt of this letter, we will presume your agency's concurrence with our determination of consistency.

If you have any questions, please do not hesitate to call me or Roger Pugliese at (803) 571-4366.

Sincerely,

Robert K. Mahood

Robert K. Mahood
Executive Director

RKM:rp

Enclosures

cc: Mr. Ralph Cantral, Director w/cpy encl.
DCA/FCMP
SAFMC Council Members

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Coastal Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
Roger N. Schecter, Director

05/31/94

Mr. Robert J. Mahood Executive Director
South Atlantic Fishery Mgnt Council
One Southpark Circle
Suite 306
Charleston, SC 29407

REFERENCE: CD94-15
Amendment 2 to the Coral and Coral Reefs Fishery Management Plan

Dear Mr. Mahood:

The State of North Carolina received your consistency determination dated 05/12/94 concerning a proposed Federal Activity pursuant to 15 CFR 930.30 on 05/16/94. Your determination, which we have assigned the number CD94-15, has been circulated to the appropriate state agency reviewers for comment. We have requested that our reviewers respond by 06/06/94 and, provided no serious problems are identified, will provide the state's position on this proposal on or before 06/30/94.

Should you have any questions concerning our program or the status of the review, please call me at (919)733-2293.

Sincerely,

Stephen B. Benton
Consistency Coordinator

P.O. Box 27687, Raleigh, North Carolina 27611-7687 Telephone 919-733-2293 FAX 919-733-1495
An Equal Opportunity Affirmative Action Employer 50% recycled/ 10% post-consumer paper

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Coastal Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
Roger N. Schecter, Director

DEHNR

June 20, 1994

Mr. Robert K. Mahood, Executive Director
South Atlantic Fisheries Management Council
One South Park Circle
Suite 306
Charleston, SC 29407

REFERENCE: CD94-20 Emergency Action - Live Rock Taking Prohibitions

Dear Mr. Mahood:

The State of North Carolina has completed its review pursuant to 15 CFR 930 Subpart C - Consistency for Federal Activities, of the referenced action to protect live rock in the South Atlantic. The action will partially implement proposed Amendment 2 to the Coral and Coral Reefs Fisheries Management Plan (CD94-15). Based upon our review, we agree with your determination that the proposed action is consistent with the North Carolina Coastal Management Program.

If you have any questions, please contact Steve Benton or Caroline Bellis, Division of Coastal Management, at (919) 733-2293. Thank you for your consideration of the North Carolina Coastal Management Program.

Sincerely,

for Roger N. Schecter

RECEIVED
JUN 29 1994
SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

cc: W. Street, NC Division of Marine Fisheries
RF

P.O. Box 27687, Raleigh, North Carolina 27611-7687 Telephone 919-733-2293 FAX 919-733-1495
An Equal Opportunity Affirmative Action Employer 50% recycled/ 10% post-consumer paper

SOUTH CAROLINA COASTAL COUNCIL

Ashley Corporate Center
4130 Faber Place
Suite 300
Charleston, S.C. 29405
(803) 744-5838
FAX 744-5847

Keith M. Kinard
Chairman

H. Wayne Beam, Ph.D.
Executive Director

May 19, 1994

Mr. Robert K. Mahood
Executive Director
One Southpark Circle, Suite 306
Charleston, South Carolina 29407-4699

Re: South Atlantic Fishery Management Council
Coral and Coral Reefs
Various Counties
Federal Consistency

Dear Mr. Mahood:

The staff of the S. C. Coastal Council certifies that the above referenced project is consistent with the Coastal Zone Management Program. This certification shall serve as the final approval by the S. C. Coastal Council.

Interested parties are provided ten days from receipt of this letter to appeal the action of the Coastal Council.

Sincerely,

H. Stephen Snyder
Director of Planning
and Certification

DJT:A4:20238/jk

cc: Dr. H. Wayne Beam
Mr. Christopher L. Brooks
Ms. Penny Cornett
Mr. Foster Coleman
Mr. Terry Boyd

APPENDIX J

Response to Comments on DEIS

Section I- Comment & Response

Section II- Written Comment

Section I- Comment & Response

5/23/94 Michelle Rice Reef Relief

1. Comment: Support prohibition on harvest of live rock but does not support live rock aquaculture in nearshore waters where nutrient loading would add to already existing water quality problems.

Response: The major comments are consistent with the Council's proposed action regarding harvest prohibition. Aquaculture under this amendment pertains to the Exclusive Economic Zone not nearshore waters. Aquaculture should not increase nutrient loading because this will be a put and take activity with the placed material being removed by hand with limited disturbance to the bottom. Turbidity may be temporarily affected during placement or removal of large quantities of substrate but the habitat value of the placed material would outweigh the very short term disturbance to the water column.

6/16/94 Bob Rice

1. Comment: Prohibition of live rock harvest north of Dade County is unfair. Should allow 100 pound rubble rock trip limit and 2,000 pound yearly limit off all Florida through January 1, 1996.

Response: The South Atlantic Council considers live rock harvest the removal of fisheries habitat and determined that the phase out area would be limited to the areas closely associated with the rubble rock zones where the vast majority of harvest occurs. The Council prohibited all harvest of live rock by chipping. Outside of the Florida reef tract area most material would have to be chipped thus enforceability of the rule is enhanced by limiting the harvest area. In addition, there is a desire to assure that live rock removals do not increase or the activity expands to other areas off Florida or other South Atlantic states.

6/30/94 John Benn American Aquarist Society

1. Comment: Allow a limited harvest for personal use.

Response: The South Atlantic Council has determined that live rock harvest violates Council, NMFS and NOAA habitat policies and providing an exemption for the incremental removal of fisheries habitat is not appropriate. The Council has provided a limited phase out to harvesters in the marine life industry who provide retail establishments and aquarists with live rock. Providing the general public with an unlimited exemption for the removal of habitat is not consistent with the objectives of the management plan or the intent of this amendment.

2. Comment: Total prohibition effective January 1, 1996 is inappropriate given the status of federal aquaculturing system.

Response: The South Atlantic Council pursuant to this amendment will allow and facilitate aquaculture in the South Atlantic EEZ. The Council is providing a phase out period to allow harvesters, if they have not already done so, to enter live rock aquaculture in state and eventually federal waters. The state has a lease system in place and is finalizing the general permit for removal. Therefore, the South Atlantic Council has begun scoping on providing for live rock aquaculture in federal waters. The Council considers live rock harvest the removal of fisheries habitat and the removal of natural bottom must end as soon as possible. The Council has subsequently opted not to tie the development of aquaculture in the federal zone to the date of prohibition.

6/29/94 Shella Barger

1. Comment: Why are the 1992 landings used as a base for the quota.

Response: The Council desired to limit the harvest by selecting the most complete data set available prior to the 1993 state closure. This is a policy decision of the Council, they are not tied to setting quotas on the most recent or highest landings recorded. This is especially significant in this case because the Council views all wild live rock as fisheries habitat.

2. Comment: Some inaccuracy in figures used in document.

Response: The inaccuracies cited do not occur or have been corrected in the South Atlantic document. The Council used the official landings as recorded by FDEP. The Council has to assume that harvesters did not submit inaccurate value or landings information to FDEP. Considering these reporting requirements were mandatory to attain appropriate license and endorsements to land live rock in Florida, the information provided by FDEP represents the best available information.

3. Comment: The South Atlantic is not allowing a two year phase out, the emergency action was implemented on June 27, 1994.

Response: The emergency action does not affect the phase out, it only establishes the first years quota. The Council put the industry on notice in 1993 and during public hearings in January 1994 that they were considering an immediate live rock harvest prohibition. The Council modified the position to minimize habitat damage while providing a phase out through 1995 only to allow those who desire to continue to land live rock to pursue aquaculture in state and federal waters. The economic and social impacts to harvesters are minimized through this action.

7/5/94 Ellen M. Peel Center for Marine Conservation

1. Comment: The Center supports all actions proposed by the South Atlantic Council in the live rock amendment for it will conserve this non-renewable resource, while balancing the interest and demand by the public and private interests.

Response: The South Atlantic Council has determined that live rock harvest violates Council, NMFS and NOAA habitat policies and a prohibition is appropriate. The Council has considered all comments in developing this amendment and has conserved essential nonrenewable fisheries habitat while balancing public and private demands and interests.

Section II- Written Comment

Reef Relief

A Private Non-Profit Conservation Organization dedicated to
"Preserve and Protect the Living Coral Reef of the Florida Keys"

May 23, 1994

Roger Pugliese
South Atlantic Fishery Management Council
Southpark Building, Suite 306, One Southpark Circle
Charleston, SC 29407-4699

Re: Live Rock Harvesting

Dear Mr. Pugliese:

The Board of Directors of REEF RELIEF remains supportive of alternative C.2. "Prohibit Harvest of Live Rock". Live rock is part of the living coral reef. Harvesting coral is illegal in Florida and should not be condoned by the state of Florida or the Federal government.

The obvious implication of live rock harvesting is outright loss of habitat, biomass and associated production and live rock collection entails loss of actual micro-communities not just one species.

We normally encourage aquaculture in fisheries management as an option to avoid economic displacement. However, we do not support the aquaculture option in this case if it allows aquaculture to occur in nearshore waters where nutrient loading would add to the already existing water quality problems. Rather we encourage the use of self contained tanks on land for aquaculture of live rock. This method has worked well for conch and shrimp and eliminates the problem of nuisance algae growth, which would be a factor that could turn an otherwise financially stable endeavor into a losing business. Self-contained tanks could limit the nutrient level in the salt water, thereby reducing nuisance algal growth and insuring a balance growth of live rock and associated biomass.

Thank you for the opportunity to comment on the Draft Amendment 2 to the Fishery Management Plan for Coral and Coral Reefs of the Gulf of Mexico and South Atlantic. REEF RELIEF is a local, action-oriented conservation organization dedicated to preserving the only coral barrier reef in North America.

Sincerely,

Michelle Rice
Project Coordinator

Mailing Address: Post Office Box 430, Key West, Florida 33041
Environmental Education Center: 201 William Street, Key West, Florida 33040
Telephone: (305) 294-3100 / FAX: (305) 293-9515
Printed on Recycled Paper

June 13, 1994

REF: LIVE ROCK MEETING - June 22, 1994

TO WHOM IT MAY CONCERN,

I am unable to travel 225 miles on Wednesday, June 22nd to your meeting on the Live Rock; however why have you restricted collection of Live Rock north of Dade County. This is unfair to people who collect in waters north of Dade County in Federal waters. I know there are a lot less collecters north of Dade County, so you penalize them...talk about a rule that is unfair.

I do agree that Live Rock collection is "Out-of-Hand" and hope that a limit of 100 pounds per trip of loose, unchipped rock would be permitted. This limit of 100 pounds per day and a yearly limit of 2,000 pounds would make 90% of those who do harvest rock...stop as it would be unprofitable; however people who are building aquariums can still do so without putting a stress on this ruble rock.

A total ban of Live Rock is unfair to small collectors, who harvest Live Rock as a capital base. If you are to stop all rock harvesting please make your "North of Dade...all Florida harvesting by Jan. 1, 1996"!

Sincerely,

Bob Rice

Bob Rice
P. O. Box 2621
Stuart, Fla. 34995

P.S. Can I get a text of what was said at the June 22nd meeting?

American Aquarist Society

A Non-Profit Corporation Dedicated to the Interests of the Aquarium Hobbyist

Box 100, 3901 Hatch Blvd.
Sheffield, AL 35660

Telephone...205-386-7687
Facsimile...205-386-7815

June 28, 1994

Mr. Terrance Leary
Gulf of Mexico Fishery Management Council
Lincoln Center, Suite 331
5401 West Kennedy Boulevard
Tampa, Florida 33609

Dear Terry:

Subject: Amendment 2 to the Coral and Coral Reef FMP

The American Aquarist Society (AAS) appreciates the opportunity to comment on the latest (April 1994) draft of "Amendment 2 to the Fishery Management Plan for Coral and Coral Reefs of the Gulf of Mexico and South Atlantic." AAS has been monitoring the discussions and progress of Amendment 2. Recently, I was privileged to appear before the South Atlantic Council to present the aquarists' perspectives on Amendment 2. AAS, through its national board of distinguished aquarium hobbyists and focused Steering Committees, is closely in tune with the biological, political, and social realities involving the harvest of wild live rock.

In general, AAS believes that both Councils should provide for and allow a limited harvest of wild live rock for "personal use." This use should be strictly non-commercial in nature and reflect the quantity needs of an average marine aquarium. Of the current alternatives present in the April 1994 draft of Amendment 2, AAS clearly favors approval of Alternative E.1.d as modified by Alternative E.1.g. Stated otherwise, AAS supports:

> A personal use harvest and possession of up to a five gallon bucket container of live rock is allowed per person per day in the EEZ. Sale of such material is prohibited. A personal use permit is required to take live rock specified for ones personal use.

AAS believes that a "personal" or "recreational" allowance in this instance would be consistent with the applicable requirements of the National Standards. As set forth in National Standard 5:

> In designing an allocation scheme, a Council should consider other factors relevant to the FMP's objectives. Examples are economic and social consequences of the scheme, food production, consumer interest, dependence on the fishery by present participants and coastal communities, efficiency of various types of gear used in the fishery.

transferability of effort to and impact on other fisheries, opportunity for new participants to enter the fishery, and enhancement of opportunities for recreational fishing.

AAS is aware of the criticism that has surfaced at public hearings of Amendment 2 concerning methods used by some commercial collectors to harvest live rock. After an exhaustive review of the cited literature and transcripts of hearings, AAS is unable to find any specific condemnation of the methods used for "personal use" taking that are tied to the limited harvest quantities envisioned by Amendment 2. For these and other reasons, AAS favors the limited five gallon "personal use" allowance.

On a related matter, AAS also wishes to express its support for a five (5) gallon limit. Having experienced wild live rock collection in the EEZ, AAS feels compelled to request the higher allowance. From a practical standpoint, a two (2) gallon harvest amount is insufficient to aid in the set-up of the most nominal of marine aquariums. A five (5) gallon allowance more accurately reflects a harvest amount which would substantively aid in the maintenance of a home marine display.

Though the establishment of a "personal use" allowance is the primary interest of AAS, an additional item bears mention.

AAS is concerned that the Gulf Council will adopt a "drop dead" date as envisioned by some of the noted "Rejected Alternatives." These alternatives, appropriately noted as "rejected," would establish a specific date for the cessation of wild live rock harvest notwithstanding whether a viable federal aquaculturing system is in place. AAS, thus, lends its support that the Council adopt Alternative C.2 for its jurisdictional area.

AAS is notably alarmed that the South Atlantic Council is moving toward an absolute "drop dead" date of January 1, 1996. AAS considers this action inappropriate under the circumstances and status of a federal aquaculturing system as well as for the myriad of problems that are now surfacing in areas subject to jurisdiction by the Sanctuary. Such action certainly appears ill-advised and an abuse of discretionary rule-making authority.

In conclusion, AAS commends the time and effort the Gulf Council has spent addressing the issues involved in Amendment 2. At times it has readily appeared that the emotions and public harranging inflicted by some groups and individuals under the ostensible umbrella of "environmentalists" would overshadow legitimate rule-making efforts. The alternative for "personal use" allowance should be deemed appropriate as well as justified by interests of "recreational" users.

Again, we thank the Gulf Council for this opportunity to comment, and stand ready to assist the Council in its future endeavors affecting aquarium hobbyists. AAS expects to have a representative present in Islamorada to speak in favor of this communication and answer any questions which may arise.

Thank you for your time and consideration.

Cordially,

John R. Benn
General Counsel

JRB/jb

2

6-29-94

Rec'd. JUL 01 '94

Gulf of Mexico Fishery Management Council
5401 W. Kennedy Blvd.
Tampa, Fl. 33609-2468

RE: Environmental Impact Statement on Amendment 2

Dear Council Members,

In going through the draft on Amendment 2. I have found that old, incorrect, incomplete and estimated information has been repeatedly used. Not only are figures based on 1992 information, the economic figures on exvessel amounts and on the cost of obtaining a state lease are incorrect. Below is a list of questions I would like answers to. I know I have asked some of these questions before and have not received answers.
Why is the live rock harvest amount being used from 1992 which is the figure of 600,000 pounds?
Why is the quota amount of 252,000 pounds being used based on figures from 1992?
Why can't current amounts be used from 1993?
Is the trip ticket department so far behind that current figures can't be used?
If the trip ticket department is behind, how can figures be arrived at to closed an entire industry when the quota is reach?
Will the figures be incomplete or estimated?
Why are the remaining estimated 16 collectors being held accountable for the total collected amount on the west coast and closed when the quota is reached?
Why isn't the collected amount for the 16 collectors being used to calculate the quota amount?
If one of Gulf Council Members reached his or her credit limit would it be right to stop any additional credit to the rest of the council members or to shut down all of their businesses?

I contacted a few of the west coast collectors for total amounts of rock collected and the amount of income earned from the rock harvested. I have found with just a few of us that the exvessel amount is completely inaccurate. Many of us at previous meetings have brought this to the council's attention and the same inaccurate figure is still being used. The exvessel amount between just three of us is 145,100+ dollars. To be fair I only calculated the 102 harvesters that FDER records show in 1993 and multiplied that number by a low figure of 30,000 dollars per harvester, this will give an exvessel amount of over three million dollars. Now if you count the 147 individuals as page 45 states and only apply 28,000 dollars to each this would be an exvessel amount of 4,116,000 dollars. If this draft continues as written, over three million plus will be lost from circulating revenue.

Even in the draft two different exvessel amounts have been shown. On page 12. FMRI reports $603,000 exvessel value and on page 44 it was "about" $620,000 exvessel amount. No where in the draft does it explain how these figures were arrived at. To be fair, lets say only 80 harvesters show on FDER records and that the exvessel amount was only 25,000 dollars, this still amounts to two million dollars. This reduced calculation, to be fair, still proves that a "significant regulatory action" does exist.
The draft continues to say that the Gulf Council is allowing four years to continue harvest and the South Atlantic two years. However, the South has started emergency actions as of 6-27-94 and the Gulf Council if they continue on the current wording will allow less than two years, with

reduction in harvest amount to a daily limit and a yearly quota which will create closed seasons. The environmental impact statement did not take this into account. Complete assumptions exist on the part of the determination of a "significant regulatory action." All I read is possibility, IF. As long as, this conclusion is premised on the development of an aquaculture program that would effectively substitute wild live rock harvest. HOW CAN THIS BE DONE!!!
NO ONE, REPEAT, NO ONE KNOWS WHAT IS CONSIDERED AN EFFECTIVE SUBSTITUTE!!!!
AT THIS POINT NO ONE HAS A LEASE THAT IS COMPLETE, INCLUDING THE APPROVAL TO REMOVE THIS CLUTCH MATERIAL. Now we have been told by the State of Florida that only 25% can be harvested from the maximum amount allow of 100,000 pounds per acre. As long as stupid restrictions exist on the amount we can harvest of the clutch material that WE have deployed no effective substitute exist! If economic information was collected from all competition, employment, investment, productivity, innovation and the United State and foreign-based enterprises, complete qualification will be met on all points to support a "significant regulatory action" that will cause a "significant economic impact on a substantial number of small entities "

Page 11, Table 1, Florida live rock landings you will see that in 1991 the cost per pound was figured at $1.20, in 1992 it reduced to .95 and in 1993 which is noted to be incomplete is $1.02. HOW were these figures arrived at? Every year in business, cost has increased and so has the price and demand for rock. HOW CAN THESE FIGURES BE CONSIDERED, even for a guideline. THE NUMBERS ARE INACCURATE!!! In 1991 the cost of live worm rock was $3.00 per pound. If 33% of the west coast rock was worm rock the exvessel amount allow calculates out to be $192,455. Rubble collection is said to be 30% of the 1991 rock harvest. Rubble sold at .75 would be worth $43,803. If we were to use the thirty percent increase that FMFC assumes for 95 as current figures, which is more accurate for current cost, over $307,499 would produced an exvessel amount. Note: 1991 figures used for the estimates in the draft. This does not take in to account algae or plant rock amounts or prices.
Page 8, states that a assumed 30% increase(based on what figure?) would be worth about 3.5 million, for the year 95. HOW can assumptions like this be used????? If the 30% increase is true, the 1993 exvessel amounts are not accurately figured, nor is the guessed amount for the 1995 year. A 30% increase did not exist from 1991 to 1992 or from 1992 to 1993, so why has it been **ASSUMED** that a 30% increase will exist in 1995, when in fact no increase will exist in this fishery due to the emergency rules, control date set by NOAA and the draft rules currently being considered. NO LONGER does the threat of increased participants in the live rock harvest fishery exist!!
AGAIN, THE ENVIRONMENTAL IMPACT STATEMENT IS WRONG AND COMPLETELY INACCURATE!!!

I noted how the government cost of regulation is estimated at 70,000 dollars and that to obtain a state lease is only estimated to be at $1,050 dollars. HOW UN-TRUE! No consideration has been given to the cost incurred by persons undertaking aquaculture for all the other required surveys, fees, cost of clutch material, labor, deployment, boat expense and most important the cost of lost time played in the waiting game with state agencies and with mother nature!! Significant economic impact on small business entities does exist, NO QUESTIONS, Period!!

All harvestors who remain involved in the live rock industry hereby request this draft be invalidated and that a correct environmental impact statement be completed. This regulation can not continue with the above lacking information!!!

Shella Berger
Shella Berger

Center for Marine Conservation

July 5, 1994

Ms. Georgia Cranmore
National Marine Fisheries Service
9450 Koger Blvd.
St. Petersburg, FL 33702

Dear Ms. Cranmore,

The Center for Marine Conservation appreciates the opportunity to comment on Draft Amendment 2 (DSEIS) to the Fishery Management Plan for Coral and Coral Reefs of the Gulf of Mexico and south Atlantic drafted for the purpose of managing the harvest of "live rock." The Center has carefully followed the live rock issue in Florida over the past three years, first in state waters and now in adjacent federal waters. The need to conserve this non-renewable natural resource, while balancing the interest and demand by the public and private interests, has been carefully considered in our review.

First, the Center commends the speedy action taken by the NMFS and the respective Councils in closing the federal waters between the Pasco/Hernando County line to the Alabama/Mississippi state line in the Gulf of Mexico, and in the waters north of Dade County, Florida in the Atlantic to live rock harvest.

The Center supports the Amendment as drafted because it provides aquaculture as an equitable and rational replacement for the unacceptable harvest of wild live rock. If implemented properly, the important reefal community upon which live rock is associated will be protected along with the needs of the aquarium trade and personal hobbyists. The phased-in two year transition period from wild harvest to farmed culture is ambitious, but provides the harvesters a predictable time-frame to make adjustments necessary to reduce economic hardship. The corresponding quotas proposed for the transition period for the Gulf (252,000 pounds) and South Atlantic (485,000 pounds) appear reasonable in light of past harvest levels. All efforts should be focused to ensure enforcement of the above quotas and a definable system for aquaculture production to occur within the allotted time frame.

The Gulf Council's recommendation for a minimum 50 foot setback limit for placement of an aquaculture site should, we believe, include a range, as recommended by the South Atlantic Council, from 50 to 500 feet. This would provide the needed flexibility to ensure the safety of adjacent reefal habitat upon the specific aquaculture site.

The Center appreciates the significant efforts thus far by the National Marine Fisheries Service, the Councils, and industry in resolving this marine resource problem and looks forward to providing assistance in facilitating a smooth transition to a viable and professional live rock aquaculture industry for the nation.

Sincerely,

Ellen M. Peal

Ellen M. Peal
Special Counsel,
Florida Living Marine Resources Program

APPENDIX K

Federal Register Notice- Emergency Interim Rule

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 638

[Docket No. 940677-4177; I.D. 060194D]

Coral and Coral Reefs of the Gulf of Mexico and the South Atlantic

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Emergency interim rule.

SUMMARY: NMFS publishes this emergency interim rule at the request of the South Atlantic Fishery Management Council (South Atlantic Council) to prohibit all taking of live rock in the exclusive economic zone (EEZ) off the southern Atlantic states from the North Carolina/Virginia boundary to the Dade/Broward County line in Florida; to prohibit the taking of live rock by chipping in the EEZ from the Dade/Broward County line in Florida to the Atlantic/Gulf of Mexico boundary; and to limit the harvest of live rock from the EEZ off the southern Atlantic states in 1994 to 485,000 lb (219,992 kg).

EFFECTIVE DATE: June 27, 1994, through September 26, 1994.

ADDRESSES: Copies of documents supporting this action, including an environmental assessment, may be obtained from Georgia Cranmore, Southeast Regional Office, NMFS, 9721 Executive Center Drive, St. Petersburg, FL 33702.

FOR FURTHER INFORMATION CONTACT: Georgia Cranmore, 813-893-3161.

SUPPLEMENTARY INFORMATION: Coral and coral reefs in the EEZ off the southern Atlantic states and in the Gulf of Mexico are managed under the Fishery Management Plan for Coral and Coral Reefs of the Gulf of Mexico and the South Atlantic (FMP). The FMP was prepared by the Gulf of Mexico Fishery Management Council (Gulf Council) and the South Atlantic Fishery Management Council (South Atlantic Council) and is implemented through regulations at 50 CFR part 638 under the authority of the Magnuson Fishery Conservation and Management Act (Magnuson Act).

Live rock consists of living marine organisms, or an assemblage thereof, attached to a hard substrate, including dead coral or rock (excluding mollusk shells), and therefore is a "fish" within the meaning of the Magnuson Act. Live rock is collected by scuba divers and sold to the marine aquarium industry, which markets it as the basis for minireef aquaria. Live rock is a nonrenewable resource providing essential fishery habitat in the Gulf of Mexico and Atlantic Ocean.

On May 16, 1994 (59 FR 25344), NMFS published an emergency interim rule to control the taking of live rock in the Gulf of Mexico. A description of the fishery and the rationale for that rulemaking are contained in that rule and are not repeated here.

In part because of concerns about effort shifting from recently closed areas in the Gulf of Mexico to current or new harvest areas off the southern Atlantic states, the South Atlantic Council requested an emergency rule to: (1) Prohibit the taking of live rock in the EEZ off the southern Atlantic states from the North Carolina/Virginia boundary to the Dade/Broward County line in Florida; (2) prohibit chipping of live rock in the EEZ from the Dade/Broward County line in Florida to the Atlantic/Gulf of Mexico boundary; and (3) limit the harvest of live rock in 1994 from the EEZ off the southern Atlantic states to 485,000 lb (219,992 kg).

Reported landings from the Florida portion of the proposed closed area totaled less than 10,000 lb (4,536 kg) in 1993 or about 1 percent of all Florida landings. Florida is the only state in which live rock landings have been recorded. This emergency closure is designed in part to prevent expansion of harvesting effort into new areas.

Chipping means breaking up reefs, ledges, or rocks into smaller fragments, usually by means of a chisel and hammer. Chipping causes serious damage to hard bottom habitats including coral reefs in the Florida Keys. Recent public testimony to the Gulf and South Atlantic Councils indicated that chipping accounts for about 10 to 20 percent of the live rock harvest off the southern Atlantic states. In the Gulf of Mexico, chipping of limestone ledges and worm reefs accounts for about 90 percent of the live rock harvest.

During a proposed phase-out of live rock harvesting under Amendment 2 to the FMP, which is currently under development, the Gulf and South Atlantic Councils intend to limit harvest to loose rubble rock that is primarily the result of natural erosion processes. About 485,000 lb (219,992 kg) of rubble live rock were reported landed in Florida in 1992, and this is the basis for the 1994 quota. Data available to the South Atlantic Council indicate that live rock landings are increasing and the quota for 1994 is likely to be exceeded prior to implementation of management measures in Amendment 2.

The Florida Department of Environmental Protection (DEP) estimates that the quota will probably be met sometime in October 1994. If a shift of harvesting effort from the Gulf of Mexico to the Atlantic occurs due to the Gulf emergency rule or other factors, the quota could be reached much earlier. Amendment 2 is not expected to be implemented until mid November 1994. The South Atlantic Council therefore requested emergency action to implement the 1994 quota and to prohibit all chipping of live rock to prevent damage to the Florida reef tract and serious loss of fishery habitat in the EEZ off the southern Atlantic states, including the Florida Keys National Marine Sanctuary.

According to the Florida DEP, the closure of the EEZ north of Florida's Dade/Broward County line to live rock collecting may affect approximately 12 individuals who reported live rock landings in 1993; however, the ex-vessel value of these landings was only about $800 per Florida Saltwater Products License (SPL). In Dade and Monroe Counties, Florida, live rock landings in 1993 were reported by 96 SPL holders. These fishermen will be required to confine their harvest to loose rubble rock, which may have a marginal effect on the total value of their catch. A 485,000-lb (219,992-kg) quota will probably reduce potential 1994 landings by at least 15 percent or about $1,000 per SPL holder. Amendment 2 is expected to be submitted by the Gulf and South Atlantic Councils in July 1994 for review and, if approved, for implementation by the Secretary of Commerce. Amendment 2 would implement the measures in this emergency interim rule on a permanent basis and include a phase out schedule for live rock harvests in other areas.

Compliance With NMFS Guidelines for Emergency Rules

The South Atlantic Council and NMFS have concluded that the present situation constitutes biological and conservation emergencies, which are properly addressed by this emergency interim rule, and that the situation meets NMFS's policy guidelines for the use of emergency rules, published on January 6, 1992 (57 FR 375). The situation: (1) Results from recent, unforeseen events or recently discovered circumstances; (2) presents a serious management problem; and (3)

realizes immediate benefits from the emergency interim rule that outweigh the value of advance notice, public comment, and deliberative consideration expected under the normal rulemaking process. The basis for the conclusions regarding emergency guidelines (1) and (2) is summarized above.

Regarding the realization of immediate benefits, the South Atlantic Council has determined that an emergency rule under section 305(c) of the Magnuson Act is the only means for immediately addressing the biological emergency involving the live rock resources of the Florida Keys and the remainder of the areas off the southern Atlantic states. Going through the formal FMP amendment process without the emergency rule would delay implementation of the required measures and would result in substantial damage to live rock resources and fishery habitats off the southern Atlantic states. The immediate benefit of this emergency interim rule is that it will prevent expansion of live rock collection in the area north of Florida's Dade County, protect the Florida reef tract from chipping, and limit the rate of harvesting that causes serious damage to habitat in the area of the Florida Keys until a phase out can be implemented under Amendment 2 through the normal FMP amendment and rulemaking process.

NMFS concurs with the South Atlantic Council's findings about the biological emergency and the need for immediate regulatory action. Accordingly, NMFS publishes this emergency interim rule, effective initially for 90 days, as authorized by section 305(c) of the Magnuson Act. By agreement of NMFS and the South Atlantic Council, this emergency interim rule may be extended for an additional period of 90 days.

Classification

The Assistant Administrator for Fisheries, NOAA (AA), has determined that this rule is necessary to respond to an emergency situation and is consistent with the Magnuson Act and other applicable law.

This emergency interim rule has been determined to be not significant for purposes of E.O. 12866.

The AA finds that the immediate need to prevent environmental damage to the Florida reef tract and serious loss of fishery habitat in the EEZ off the southern Atlantic states constitutes good cause to waive the requirement to provide prior notice and an opportunity for public comment, pursuant to authority set forth at 5 U.S.C. 553(b)(B), as such procedures would be contrary to the public interest. Similarly, the need to implement these measures in a timely manner to address the conservation and biological emergencies described above, constitutes good cause under authority contained in 5 U.S.C. 553(d)(3), to waive the 30 day delay in effective date.

List of Subjects in 50 CFR Part 638

Fisheries, Fishing, Reporting and recordkeeping requirements.

Dated: June 21, 1994.

Henry R. Beasley,

Deputy Assistant Administrator for Fisheries, National Marine Fisheries Service.

For the reasons set out in the preamble, 50 CFR part 638 is amended, effective June 27, 1994, through September 26, 1994, as follows:

PART 638—CORAL AND CORAL REEFS OF THE GULF OF MEXICO AND THE SOUTH ATLANTIC

1. The authority citation for part 638 continues to read as follows:

Authority: 16 U.S.C. 1801 *et seq.*

2. In § 638.5, paragraphs (r), (s), and (t) are added to read as follows:

§ 638.5 Prohibitions.

* * * * *

(r) Harvest or possess live rock in or from the EEZ off the southern Atlantic states north of 25°58.5′ N. lat., as specified in § 638.28(b).

(s) Harvest live rock by breaking it up or dislodging pieces of it in the EEZ off the southern Atlantic states south of 25°58.5′ N. lat., or possess in or from that area live rock that has been broken up or dislodged, as specified in § 638.28(c).

(t) Harvest, possess, purchase, barter, trade, or sell live rock in or from the EEZ off the southern Atlantic states when the live rock fishery in that area is closed, as specified in § 638.28(d).

3. In subpart B, § 638.28 is added to read as follows:

§ 638.28 Live rock off the southern Atlantic states.

(a) *Definitions.* (1) *EEZ off the southern Atlantic states* means that portion of the EEZ from 36°34′55″ N. lat. (extension of the boundary line between Virginia and North Carolina) to the boundary between the Atlantic Ocean and the Gulf of Mexico, as specified in § 601.11(c) of this chapter.

(2) *Live rock* means living marine organisms, or an assemblage thereof, attached to a hard substrate, including dead coral or rock (excluding mollusk shells).

(b) *Closed area.* No person may harvest live rock in or from the EEZ off the southern Atlantic states north of 25°58.5′ N. lat. (extension of the Dade/Broward County, Florida, boundary), or possess live rock harvested from that area after the effective date of this rule.

(c) *Gear limitations.* No person may harvest live rock by breaking it up or dislodging pieces of it in the EEZ off the southern Atlantic states south of 25°58.5′ N. lat., and no person may possess in or from that area live rock that has been broken up or dislodged after the effective date of this rule.

(d) *Quota and closure.* In the EEZ off the southern Atlantic states, persons harvesting live rock are subject to a quota of 485,000 lb (219,992 kg) during 1994. When that quota is reached, or is projected to be reached, the Assistant Administrator will file a notice to that effect with the Office of the Federal Register. On and after the effective date of such notice, for the remainder of 1994, live rock may not be harvested or possessed in the EEZ off the southern Atlantic states, and the purchase, barter, trade, and sale of live rock in or from the EEZ off the southern Atlantic states is prohibited. The latter prohibition does not apply to live rock that was harvested prior to the effective date of the notice in the Federal Register.

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