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PART II: PLANNING/COOPERATION/INNOVATION--KEY
TO EXTENDED PRODUCTION
FROM OIL AND GAS STRUCTURES

THE ROLE OF ARTIFICIAL REEFS IN THE FUTURE OF THE GULF OF
MEXICO FISHERY MANAGEMENT PROCESS

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BACKGROUND AND PURPOSE

Artificial reefs, including benthic, mid-water and surface structures are well recognized for their ability to enhance marine habitat, fisheries production, and fishing opportunities. Reef type and location, of course, control the extent to which these functions are served. To date, however, most of the 120 permitted artificial reefs in the Gulf of Mexico, as well as the innumerable unauthorized reefs, have been constructed with a single purpose in mind--to enhance recreational fishing opportunities. Little effort or progress has been made in exploring, in a broader sense, the role that artificial reefs could or should have in Gulf of Mexico fishery conservation and management efforts. Consequently, this presentation described the existing federal fishery management program, both in terms of objectives and process, and provided insights regarding the role that artificial reefs can play in attaining federal fishery management objectives. Of note, the presentation recognized that the estimated 4,000 offshore oil and gas structures in the Gulf currently function as effective artificial reefs - a role which must receive serious consideration in decisions regarding the fate of these structures when their usefulness in offshore oil and gas production ceases.

THE FEDERAL FISHERY MANAGEMENT PROCESS

Passage of the Magnuson Fishery Conservation and Management Act in 1976 was the turning point in federal fisheries management effort. Through the Act, Congress set in motion a national program to conserve and manage U.S. fishery resources. Primary responsibility for accomplishing the purposes of the Act resides with the Secretary of the U. S. Department of Commerce, who acts through the National Marine Fisheries Service.

The discussion of the federal fisheries management program focused on three issues: program objectives, the process used to achieve those objectives, and program accomplishments.

Fishery Management Objectives

The objectives of the federal fishery management program are prescribed by the Magnuson Fishery Conservation and Management Act and include the following:

1. To conserve and manage fishery resources found off the U.S. coasts by establishing a Fishery Conservation Zone (an area extending 200 nautical miles seaward from the U. S. coasts), and exerting exclusive fishery management authority over all fish in the zone (except tunas) and over anadromous species found beyond the zone.
2. To support implementation of international agreements to manage highly migratory species.
3. To promote domestic commercial and recreational fishing.
4. To prepare and implement fishery management plans which adhere to national standards and achieve optimum yield from each fishery on a continuing basis (optimum yield is maximum, sustainable, biological yield adjusted by social, economic and ecological factors).

5. To establish eight Regional Fishery Management Councils to ensure full public participation in the development of fishery management plans (membership prescribed by law).
6. To encourage the development of underutilized or unutilized fisheries.

Management Process

In the presentation, an overview of the fishery management process was presented with particular emphasis on the makeup (membership) of the Gulf of Mexico Fishery Management Council and the national standards used by the Secretary of Commerce to determine the approvability of fishery management plans. The key steps outlined in the process discussion included the following:

1. Scoping process to identify fisheries in need of management and pertinent information.
2. Development of fishery management plans by Fishery Management Councils with public involvement.
3. Review and approval of plans by the Secretary of Commerce. Approval based on compliance with national standards.
4. Development, implementation and enforcement, by the Secretary, of regulations needed to place plans in effect. Civil and criminal penalties may be imposed for violations of regulations.
5. Periodic review and revision of plans by Councils.

Accomplishments

The Gulf of Mexico Fishery Management Council has been in operation since August 1976. Of the 15 plans projected for development in the Gulf of Mexico area, four have been approved and implemented: shrimp, coastal migratory pelagics (king and spanish mackerel), spiny lobster, and stone crab. Two more plans have been approved by the Secretary of Commerce (reef fish and coral), and they will be implemented as soon as final regulations have been developed.

THE ROLE OF ARTIFICIAL REEFS IN THE FISHERY MANAGEMENT PROCESS

Correlation of the various objectives of the federal fisheries management program with research findings and experience regarding artificial reefs reveals at least six major ways in which artificial reef construction can help further fisheries conservation and management efforts in the Gulf of Mexico.

1. Maintaining, Restoring and Enhancing Fishery Habitat

Artificial reefs can be used to expand habitat locally for habitat-limited species such as snapper, groupers and other fish dependent on coral reefs and bottom outcroppings. Projects conducted with spiny lobster indicate reefs can be used to reduce impact of coastal construction on marine organisms by providing temporary shelter for displaced organisms. Artificial reefs may also be specifically designed to create shelter, spawning, nursery and feeding areas for target species. A new emerging concept is to use artificial reefs to help mitigate habitat loss resulting from coastal perturbations.

2. Rebuilding Fish Stocks

Research has proven that artificial reefs can actually increase primary production and fish biomass in local areas.

Moreover, the Japanese who currently expend a minimum of \$60 million per year on artificial reef development, have demonstrated that reefs can be designed to enhance production of specific target species. Properly designed, sited and constructed artificial reefs, therefore, should be carefully considered in developing fishery management strategies needed to maintain and/or rebuild fish stocks. For example, reef fish stocks in the Gulf, which are currently considered to be overfished and stressed in many nearshore areas, may greatly benefit from artificial reef construction if combined with appropriate catch limitations (minimum size limits).

Establishment of special management areas (marine sanctuaries) for extensive artificial reef complexes could provide an extra measure of protection for stressed fish populations or for vulnerable life stages of various species. For example, fishing could be prohibited selectively around offshore structures and other artificial reefs on a spatial or temporal basis to manage and/or reduce harvest levels.

3. Increasing Food Production and Recreation Opportunities

By carefully analyzing the needs and fishing patterns of various user groups, artificial reefs can be built in a variety of locations and configurations to increase recreational and commercial fishing opportunities and catches. Construction of trolling alleys, fish aggregation systems, and benthic reefs, as well as enhancement of fishing piers, benthic reefs and offshore structures with additional artificial reef units, can lead to increased catches, profits and satisfaction for recreational and commercial users.

Use of artificial reef technology to further the concept of mariculture/aquaculture is an area that deserves additional attention. Offshore structures may be excellent facilities for culturing of shellfish and crustaceans or for hatchery operations.

4. Promoting Efficiency

Utilizing artificial reefs as a means to increase production, concentrate target species and to create recreational fishing opportunities closer to urban populations, can help reduce operating/trip costs for commercial and recreational fishermen. Increased operating costs are the single most important cause of business failure for commercial and recreational fishing businesses. Reduction of travel distance to fishing grounds can also provide an additional margin of safety for fishermen.

5. Reducing User Conflicts

Artificial reefs can be used effectively to provide fishing opportunities for all user groups and to spatially separate users, thereby reducing conflicts. However, proper siting of artificial reefs is essential to avoid creating additional user conflicts.

6. Developing Underutilized Species

Estimates of underutilized marine fishery biomass in the South Atlantic, Gulf of Mexico and Caribbean areas range from 5.2 - 10.3 billion pounds. Wherever the truth lies, it is clear that substantial opportunity exists for increased use of fishery resources in the Gulf for the benefit of recreational and commercial fishery industries and seafood consumers at-large. Artificial reefs can be used to help fishermen selectively target species of interest, particular pelagic species.

RECOMMENDATION

Artificial reefs can help resolve numerous problems confronting both federal and state fishery managers. To capture these benefits, a more reasoned approach is needed regarding the design, location, and management of artificial reefs. In recognition of this need, a major initiative is underway at both national and regional levels to develop a national artificial reef policy and program guidelines.

In the Gulf area, a cooperative state/federal effort is underway to begin development of a Gulf-wide artificial reef siting plan. In addition to developing specific artificial reef siting objectives and criteria, the plan will identify unacceptable and optimum sites for reef construction. Inherent in this process will be a close examination of the role offshore oil and gas structures can and should play in artificial reef and fishery management programs.