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OUTER CONTINENTAL SHELF PROGRAM: A REVIEW

INTRODUCTION

Georgia's interest in its outer continental shelf remained low until the 1970's, a decade of rapid coastal growth, offshore energy exploration, and the creation of a national Fishery Conservation Zone (FCZ). Up to that time, activities beyond the traditional shallow water trawling grounds were largely restricted to a small, highly mobile snapper-grouper fishery and to investigations by a federal laboratory in Brunswick and by the Bureau of Commercial Fisheries Exploratory Fishing Unit, St. Simons Island. Besides the information obtained on the snapper-grouper fishery (Struhsaker, 1969), the cruises of the federal vessels THEODORE N. GILL, SILVER BAY, OREGON I, COMBAT, and PELICAN obtained valuable baseline data that would be needed to help manage shelf resources in the Georgia Bight.

Following the closing of federal facilities during 1968-1973, state interest in its adjacent FCZ correspondingly increased as coastal fishing interests ventured further offshore and energy exploration began in earnest. Since then, state management strategies designed to deal with these new pressures offshore have been varied, although frequently sporadic.

ARTIFICIAL REEF PROGRAM

The concept of artificial reefs is not new, possibly dating back to as early as 1789 in Japan, where a billion dollar national reef development program exists today. In the United States, artificial reef construction began in the early 1800's when South Carolinians put branches into creeks to help improve sheepshead fishing. Unlike Japan, however, U. S. reef development has not evolved into a national program, but rather has proceeded haphazardly, depending primarily on separate state, local, and club efforts (Stone, 1982).

Utilizing wooden vessels, car bodies, refrigerators, and other scrap materials, Georgians began sporadic reef construction efforts as early as the 1930's (Harris, 1978). Faced with a sandy, flat, and basically featureless continental shelf, these early groups sought to create fisheries similar to those found at Gray's Reef, located only 17 miles east of Sapelo Island. Little evidence of these initial efforts remain today, due primarily to the sparcity of technology then available (Smith, 1974), but the potential of

this concept had become clear to Georgia's management concerns.

State involvement in a directed fisheries enhancement program offshore soon followed, beginning with preliminary research in the late 1960's and following with construction in the early 1970's. Although experimental inshore reefs proved ineffective, small offshore pilot reefs composed of scrap tires bound into units showed promise (Smith, 1972). Additional investigations by Game and Fish Commission biologists and Artificial Reef staff also indicated that durable, stable and inexpensive reef material could be constructed with tires (Smith, 1976), long considered a major disposal problem ashore.

With increased federal support from the Coastal Plains Regional Commission, the Georgia Department of Natural Resources (encompassing the old Game and Fish Commission) began major offshore reef construction in 1971. Directed at creating and improving recreational opportunities offshore, the newest undertaking was able to utilize a growing volume of artificial reef research findings and the experiences of other programs to address many potential managerial problems prior to actual construction offshore. Construction sites, for instance, were chosen on the basis of water depth, substrate, material type, non-reef user conflicts, proximity of population centers, and local recommendations. Reef configurations were aimed at providing habitat for those demersal and pelagic fish targeted by Georgia anglers (Smith, 1972). Large, highly-visible buoys were also placed and maintained to assist fishermen navigate safely to the reefs (Smith, 1974), most of which were finally placed well offshore and out of sight of land in order to achieve the necessary water depths and to avoid conflicts with commercial trawling interests (Harrington, 1972).

To date, the state's artificial reef project has resulted in eight reefs from 7-23 miles offshore (Harris, et. al., 1980), including a jointly constructed reef with South Carolina (Figure 1). Bottom materials utilized consist primarily of tire units while scrap vessels, ranging from a 33 foot utility boat to two 440 foot liberty ships, provide the vertical profile needed to attract popular pelagic species, such as king mackerel.

In 1978, CPRC and matching state funds earmarked for construction and buoy maintenance ended, reflecting existing economic conditions. Reef construction and expansion since that year has resultingly come to depend on available state funds and on the efforts of coastal sportfishing clubs, who

are assisted and coordinated by department personnel. An extremely important management consideration affecting actual public use of the offshore reefs, buoy maintenance was fortunately able to continue on almost uninterrupted with state and Dingell-Johnson support.

Offshore research on the artificial reefs similarly continued relatively unbroken until 1978. Discontinuance of offshore artificial reef investigations that year, however, only represented a shift in emphasis by the state to broader research objectives across the entire shelf, rather than loss of funding.

During that roughly ten-year period, Dingell-Johnson investigations had attempted to address problems and questions concerning the management of the offshore artificial reefs. In addition to the earlier studies concentrating on material design and durability, later studies concentrated on the biological effectiveness of the reefs (Harris, 1978; Ansley and Harris, 1981), canvassed user groups to evaluate angling pressure and success (Harris and Ansley, 1981), and published a brochure to help anglers locate reefs (DNR;1977, 1980).

Pending funding availability, Coastal Resources Division (CRD) of the Georgia Department of Natural Resources presently proposes to increase the size and number of its offshore reefs (Figure 2). Several nearshore reefs (generally within 3 miles) are proposed to provide opportunities to that majority of Georgians possessing small boats (<16 feet) and who may not possess navigational skills necessary to fish further offshore. In order to minimize reoccurring conflicts with commercial trawling interests, these nearshore attractants will be located, whenever possible, at existing "hangs" or obstructions.

Further offshore, two reefs are proposed at locations approximately 30 miles east of the Georgia coast in water depths of 90-100 feet (MLW). If permitted, the new sites will allow CRD to accept larger vessels and other structures for use in its program and reduce the amount of costly structural modifications required. The creation of additional reefs in the 40-80 feet depths is not anticipated, although additional development may be needed at some time adjacent to expanding coastal municipalities.

Future inshore enhancement efforts will depend largely on the success of two structures permitted for Little River and Jekyll pier in Glynn County. Efforts here, for now, will instead focus primarily on improving facilities

and accesses utilized by coastal fishermen.

OIL AND GAS DEVELOPMENT

Energy exploration off Georgia was initiated in the 1960's with geophysical surveys of the South Atlantic shelf area. This activity culminated in the drilling of a Continental Offshore Stratigraphic (COST) well east of Jacksonville, Florida. Since then, the Department of the Interior has conducted four lease sales (#43, #56, RS-2, #78), or "offerings"[1] in the South Atlantic.

Oil and gas interests initially focused on Sale 43 lease blocks southeast of Brunswick, Georgia, and eventually drilled six exploratory wells in the Southeast Georgia Embayment. All attempts, however, yielded no trace of hydrocarbons. Since then, oil and gas companies have shifted their attention northward, although some active blocks (lease sales #56 and RS-2) still remain off Savannah and two lease offerings are upcoming in 1985 and 1987. Deepwater mining for heavy metals and phosphate mining on the shelf have also been discussed, but are generally considered to be cost-prohibitive at this time.

Despite its relatively limited activity, the overall impact of offshore energy exploration was significant, especially for Georgia's coastal management agencies. Previously non-existent baseline data was gathered on offshore resources during a series of required geological and biological surveys of leased blocks (Dames and Moore, 1978 and 1979; OECS Corporation, 1978 and 1979) and through large scale studies funded by the Department of Interior (DOI). This information and related state and local findings became accessible as scientific reports and were outlined in DOI Summary Reports (Jackson, 1980; Havran, 1981; McCord, 1981; Deis et. al., 1982; Havran, 1983; Havran and Wiese, 1983), Atlantic Indexes (Salzmann, 1981; Collignon, 1981; McCord, 1983; Collignon, 1983), and Lease Sale Environmental Impact Statements (DOI/BLM, 1977 and 1981; DOI/MMS, 1983 and 1984). Ashore, additional funds were allocated to help management entities identify some of the sociological and ecological consequences of energy development activities and develop appropriate response strategies.

[1]Under revised procedures (Havran and Wiese, 1983), lease sales are now designated as area lease "offerings" and dated.

Since the completion of sampling activities associated with the South Atlantic Area OCS Living Marine Resources Study in 1983 and with lowered industry interest in the Georgia Embayment, division concerns have come to focus on the remaining active leases off its coast, as well as on regional issues, including migratory fish stocks and endangered Right Whale (Eubalaena glacialis) populations. The department and state also continue to participate in the Southeast Regional Technical Working Group, composed of members appointed from each affected state, as well as representatives from DOI and other federal agencies, industry, and the private sector (Havran and Wiese, 1983). As a member of the working group, each state is able to monitor developments occurring during the prelease and postlease process, evaluate its managerial implications, and submit recommendations.

COASTAL ZONE MANAGEMENT: COASTAL FISHERIES ASSISTANCE PROGRAM (CZMFAP)

Designed to ultimately produce a comprehensive state fisheries management plan compatible with national CZM guidelines, Georgia's Coastal Fisheries Assistance Program targeted a variety of objectives. These ranged from diversification of the state's marine fleet and evaluation of the industry's marketing techniques to investigations of offshore live bottom areas, benthos identification, fish life history studies, and gear evaluation. Approved in 1978, concurrent with the fourth year of CZM plan development in Georgia, Fisheries Assistance Program activities came to an abrupt halt the following year when state and federal agencies failed to agree on an acceptable CZM plan and all funding was immediately discontinued. One report was generated during CZMFAP's short tenure, An Economic Assessment of the Production, Marketing, and Expansion Potential of the Georgia Seafood Industry by Cato and Prochaska (1981). Other data remained either unprocessed, unanalyzed, or simply unwritten.

SOUTH ATLANTIC OCS AREA LIVING MARINE RESOURCES STUDY

Funded initially through DOI's Bureau of Land Management Service, the Living Marine Resources study combined the resources of three regional management agencies-South Carolina's Marine Research Institute, as primary investigator; Coastal Resources Division of the Georgia Department of Natural Resources; and Duke University's Marine Laboratory. A multi-year effort, the study reflected a regional reaction to activities associated with the early South Atlantic oil and gas lease sales, as well as a recognition by management agencies of the paucity of information related to shelf live bottoms and their associated fisheries.

Study objectives during Years I and II attempted to characterize and provide complete baseline data on shelf live bottoms in various bathymetric zones across the shelf. Final year (1983-1984) investigations then sought to provide direct information on the potential impacts of oil and gas development, as well as to provide insight into the naturally occurring shelf dynamics affecting offshore live bottoms. Several major reports with important management implications for the adjacent continental shelf resulted from the South Atlantic OCS Living Marine Study, including Year I (SCWMRRI, et. al., 1981), Year II (SCWMRRI, 1982), and Year III (SCWMRRI, 1984) final reports.

STUDIES AND ASSESSMENT OF GEORGIA'S MARINE FISHERIES RESOURCES, 1977-1981

Supported through state and federal funding sources (P.L. 88-309), management of Georgia's saltwater fisheries have largely focused on the important stocks of shrimp, crabs, and finfish occurring in inshore waters and on the adjacent nearshore shelf. Although limited, investigations into potentially valuable offshore species, however, have also been conducted. In 1979, for example, surveys by Coastal Resources Division investigators were initiated under the state's assessment program to describe relatively unexploited spiny lobster (Panulirus argus) populations reported from mid-shelf live bottoms, as well as determine whether commercial quantities could be harvested. Since investigations (Shipman et. al., 1983) eventually revealed only scattered, largely inaccessible stocks of lobsters, no additional management measures seemed needed and were not recommended.

STATE/FEDERAL COOPERATIVE CRUISES

Several joint state/federal exploratory cruises have occurred in the South Atlantic Bight, primarily aboard NOAA research vessels such as the

OREGON II and DELAWARE II. Reflecting management concerns of participating agencies and regional programs (i.e., SEAMAP[2]), objectives have been typically varied, ranging from bottom assessment to exploratory fishing for tuna, tilefish, scallops, and other deepwater stocks. Georgia fisheries personnel have also participated in other non-federal cooperative ventures aboard South Carolina's R/V ATLANTIC SUN and the PESCAPUERTA SEGUNDA, a Spanish trawler fishing for squid.

GEORGIA SALTWATER GAME FISH RECORDS PROGRAM

Established in the early 1970's and revamped in 1980, Georgia's Saltwater Gamefish Records Program currently maintains all-tackle records for 49 marine fish. Modeled closely after the International Game Fish Association's world records system, the Georgia program was similarly "designed to promote ethical and sporting angling practices, as well as a more acute appreciation of coastal resources (DNR, 1983)." Further, program managers also hoped to gain additional data on the coast's recreationally targeted fish species. Future objectives for the program currently center around the development of a mailing list that will not only allow the dissemination of program literature, educational materials, and state/national regulations, but also provide Coastal Resources Division a contact point with inshore and offshore recreational interests.

TOURNAMENT WEIGHMASTERS PROGRAM

Georgia's Tournament Weighmasters Program informally began in the mid 1970's when state fisheries personnel assisted the National Marine Fisheries Service by monitoring the coast's only annual open fishing tournament, the Savannah Billfish Tournament. Since then, however, Georgia's coastal tournaments have increased to 4-6 open events each year. Primarily targeting offshore species, such as king mackerel and billfish, present tournaments now attract as many as 75 boats, competing for total prizes that may exceed $50,000 in value.

In order to encourage these events, the state weighmasters program was unofficially initiated in 1978 to assist tournament officials and to provide

[2]The Southeast Area Monitoring and Assessment Program (SEAMAP) is a cooperative state-federal program for collecting and disseminating fishery-independent data. The final operations plan for the South Atlantic states (SEAMAP-SA, 1984) is currently in press.

complete weighmaster services. Largely relying on departmental and non-departmental volunteers, the program also presented Coastal Resources with unique opportunities to monitor offshore stocks and maintain contact with coastal anglers. Future directions anticipated for this activity include the compilation of a tournament planning package designed to encourage ethical sportfishing events (i.e., tag and release competitions) and further assistance in the planning/design of tournaments, especially potential inshore events.

GRAY'S REEF NATIONAL MARINE SANCTUARY

Prior to its designation as a National Marine Sanctuary, Gray's Reef was commonly referred to as Sapelo Live Bottom (SLB). In the early 1970's, the Georgia Game and Fish Commission became interested in the reef and, as part of its program to enhance offshore recreational sportfishing, buoyed the site in August, 1973. A brochure entitled "Sapelo Reef" was published to inform the public of the reef's location and provided anglers with a description of offshore game species and fishing techniques (Georgia Game and Fish Commission, 1973).

Gray's Reef was first discovered by researchers in 1961 while surveying offshore waters (Gray, 1961). The first systematic collection (the "Gray Collection") from local offshore waters came from this area. In later years, Hunt (1974) studied its geology and origin; Harris (1978 a,b) described the reef utilizing SCUBA observations and performed reef fish counts; Ansley and Harris (1981) performed reef fish standing stock assessment; Searles (1981) made limited seaweed collections; and the reef was selected as a study site in the BLM/MMS South Atlantic OCS Area Living Marine Resources Study (SCMRRI, DNR-CRD, and DU, 1981; SCMRRI and DU 1982; and SCMRRI, 1984).

Gray's Reef was nominated for Sanctuary status by the Georgia Department of Natural Resources' Coastal Resources Division (DNR-CRD) in June 1978. It was selected by NOAA's Sanctuary Programs Division (NOAA-SPD) as an active candidate in October 1979. Following publication of the environmental impact statement (DOC, 1980), President Jimmy Carter signed the designation documents in January 1981. Both DNR-CRD and NOAA-SPD soon published brochures (DNR, 1977 and 1981; DOC, 1981) describing the newest Sanctuary, its rules and regulations, and its location.

Sanctuary status provides for comprehensive management of an exceptional resource and preserves a valuable habitat for its particular recreational, ecological, and aesthetic values. A site-specific management plan (DOC, 1983) for the Gray's Reef National Marine Sanctuary (GRNMS) was implemented in January 1983. The major goals listed in the management plan are:

*Maintain and enhance protection;

*Promote and coordinate research to enhance scientific understanding and improve management decision making;

*Enhance public awareness and understanding of the Sanctuary environment; and

*Provide for multiple compatible use.

Funding for the management of GRNMS is provided through NOAA-SPD. DNR-CRD is currently on-site manager, while the University of Georgia's Marine Extension Service (UGA-MAREX) at Skidaway is the program's interpreter.

For various reasons (i.e., distance offshore, variable weather conditions, geographic location, etc.), GRNMS receives only light seasonal use. Resultingly, one of the program's major management activities is coordinating research at the Sanctuary. Since designation, research at Gray's Reef has increased significantly revolving around several major studies with definitive management objectives and implications. In July 1982, a reef fish workshop was help to develop and field test a suitable visual censusing method proposed for use at GRNMS (Nicholson, In Press). In August 1982, a study of the effects of a roller-rigged trawl on live bottom habitat was initiated and completed in August 1983 (Van Dolah, Hines and Nicholson, In Press). Henry and Van Sant (1982) also performed a preliminary hydrographic survey of the area, which was followed by a comprehensive hydrographic survey performed by the National Ocean Service (NOAA-NOS) in August 1983 (Henry, In Press). In addition, a guide to the reef fish (Gilligan, In Press) and a guide to the seaweeds (Searles, 1981 and 1983) of the Gray's Reef Sanctuary are currently being developed.

At present, GRNMS activities center around continued implementation of the management plan, which calls for coordinating and monitoring USCG surveillance, developing an emergency response plan, updating the resource studies and interpretive plans, coordinating and monitoring research, conducting buoy maintenance, compiling a comprehensive bibliography on live bottom habitat, monitoring visitor use, and cooperating with the program interpreter. Future activities at GRNMS will naturally be dependent upon the level of funding and on future directions within the national program.

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